# Norwegian economy

## Developments in 2000

According to preliminary national accounts figures, mainland GDP expanded by 1.8 per cent in 2000 after growing by 0.8 per cent the previous year. Almost a third of the growth in the level of activity in the mainland economy last year reflected a sharp rise in electricity production, which must be seen in connection with the special precipitation situation. Developments in the mainland economy through 2000 were generally weak, with virtual stagnation in both production and demand. Employment also showed signs of levelling off during the year, but rose by nearly 1/2 per cent on an annual basis, approximately the same as in 1999. For the first time in eight years unemployment rose on an annual basis, albeit very moderately. Labour force participation rates nevertheless remained at the high level from 1998/1999. The preliminary figures also indicate that growth in labour productivity picked up markedly again after exhibiting a sluggish trend the previous two years.

Wage growth slowed in 2000 for the second consecutive year. However, wage growth of slightly less than 4 1/2 per cent per normal man-year is still higher than the level of growth among Norway's main trading partners. With consumer prices showing a rise of 3.1 per cent, real wage growth also fell and was lower than productivity growth in the mainland economy for the first time in six years.

The sharp rise in oil prices over the past two years contributed to a current account surplus of nearly NOK 200 billion in 2000, almost NOK 150 billion more than in 1999.

The preliminary figures for 2000 underpin the earlier impression that the Norwegian economy passed a cyclical peak in 1998. The sluggish trend in mainland demand last year must be seen in connection with the tightening of monetary policy and a fiscal policy that can be described as cyclically neutral. Petroleum investment declined sharply for the second consecutive year, and in spite of considerable growth in activity levels among Norway's main trading partners, traditional merchandise exports only showed a modest rise.

### Economic policy

Central government expenditure and revenues are influenced partly by explicit fiscal measures (discretionary policy) and partly by changes in economic activity through built-in stabilizers. The Ministry of Finance's non-oil, cyclically adjusted budget indicator net of interest payments provides an estimate of the impulses from explicit fiscal decisions to economic developments. Measured by this indicator, the fiscal policy stance was contractionary through the cyclical upturn in the 1990s. Policy may also be characterized as contractionary in 1999, and may thus have contributed to the slowdown in the Norwegian economy. For 2000, it is now estimated that fiscal policy was more or less cyclically neutral.

General government net lending is provisionally estimated at NOK 221 billion in 2000, equivalent to 15.7 per cent of GDP. The central government's non-oil deficit is provisionally estimated at a little less than NOK 10 billion in 2000, or 0.7 per cent of GDP. The deficit has been reduced each year following the cyclical trough in the early part of the 1990s, when it was more than NOK 70 billion. If we look at the period from the cyclical peak in 1986 to the cyclical peak in 1998 as a whole, the non-oil budget deficit has on average corresponded to 3.6 per cent of GDP. This is somewhat more than half of the estimated return on the central government's remaining petroleum wealth (including capital in the sector) and the Government Petroleum Fund. This estimate is based on assumptions concerning future rates of return, oil prices, etc.

**Demand impulses 1991-2000**
Change in demand as a percentage of mainland GDP. Constant 1997-prices. Per cent

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption in households and non-profit organizations | 0.8 | 1.3 | 1.3 | 2.3 | 2.0 | 3.1 | 2.1 | 1.9 | 1.4 | 1.3 |
| Mainland investment excl. general government | -1.0 | -0.6 | -0.1 | 2.0 | 1.8 | 1.8 | 1.2 | 0.1 | -0.5 | 0.7 |
| General government demand | 1.5 | 1.6 | 0.2 | 0.4 | 0.2 | 0.8 | 1.2 | 1.1 | 0.7 | 0.3 |
| Petroleum investment | 1.2 | 0.7 | 1.0 | -0.8 | -1.0 | 0.2 | 1.0 | 1.8 | -1.2 | -1.9 |
| Traditional exports | -0.4 | 0.9 | 0.5 | 2.0 | 0.8 | 1.7 | 1.5 | 0.6 | 0.5 | 0.6 |
| Memorandum item[1]: | | | | | | | | | | |
| Mainland GDP, percentage growth from previous year | 1.4 | 2.2 | 2.8 | 4.1 | 2.9 | 3.8 | 4.2 | 3.3 | 0.8 | 1.8 |

[1] As some exports and all imports as well as petroleum production and shipping are excluded from the table, the demand impulses do not add up to GDP growth.
Source: Statistics Norway.

**Macroeconomic indicators 1999-2000**
Growth from previous period unless otherwise noted. Per cent

| | | | Seasonally adjusted | | | |
|---|---|---|---|---|---|---|
| | 1999 | 2000 | 00.1 | 00.2 | 00.3 | 00.4 |
| **Demand and output** | | | | | | |
| Consumption in households and non-profit organizations | 2.4 | 2.1 | 0.9 | 0.4 | -0.1 | -0.5 |
| General government consumption | 2.7 | 1.4 | 0.3 | 0.4 | 0.5 | 0.2 |
| Gross fixed investment | -5.6 | -2.7 | 9.9 | -4.9 | -6.5 | -1.2 |
| - Mainland Norway | -2.1 | 3.5 | 1.7 | 0.7 | -2.4 | 0.8 |
| - Petroleum activities[1] | -12.6 | -26.6 | -24.4 | -22.4 | -1.6 | -3.1 |
| Final domestic demand from Mainland Norway[2] | 1.6 | 2.2 | 0.9 | 0.4 | -0.4 | -0.1 |
| Exports | 1.7 | 2.8 | -1.1 | -1.7 | 2.5 | 1.8 |
| - Crude oil and natural gas | -0.1 | 6.4 | 2.1 | -5.3 | 4.2 | 4.2 |
| - Traditional goods | 2.6 | 3.0 | -2.2 | 2.3 | -1.9 | 0.8 |
| Imports | -3.1 | 1.2 | 3.0 | 0.4 | -2.3 | -2.4 |
| - Traditional goods | -2.0 | 2.4 | -2.3 | 5.3 | -1.5 | -1.2 |
| Gross domestic product | 0.9 | 2.2 | 1.2 | -1.0 | 0.7 | 0.1 |
| - Mainland Norway | 0.8 | 1.8 | 0.9 | 0.1 | 0.0 | -0.2 |
| **Labour market[3]** | | | | | | |
| Man-hours worked | 0.3 | -0.8 | -0.1 | 1.0 | -1.4 | -0.9 |
| Employed persons | 0.7 | 0.4 | -0.2 | 0.5 | -0.3 | 0.1 |
| Labour force | 0.8 | 0.6 | -0.0 | 0.0 | -0.2 | 0.3 |
| Unemployment rate, level[4] | 3.2 | 3.4 | 3.7 | 3.2 | 3.4 | 3.5 |
| **Prices** | | | | | | |
| Consumer price index[5] | 2.3 | 3.1 | 2.9 | 2.9 | 3.5 | 3.1 |
| Export prices, traditional goods | 0.1 | 12.6 | 4.8 | 4.1 | 1.5 | 2.6 |
| Import prices, traditional goods | -2.3 | 6.1 | 4.2 | -0.4 | 1.6 | 1.1 |
| **Balance of payment** | | | | | | |
| Current balance, bill. NOK | 46.9 | 195.6 | 42.2 | 39.0 | 54.3 | 60.2 |
| **Memorandum items** (Unadjusted, level) | | | | | | |
| Money market rate (3 month NIBOR) | 6.4 | 6.6 | 5.8 | 6.4 | 7.0 | 7.4 |
| Average borrowing rate[6] | 8.4 | 8.1 | 7.6 | 7.7 | 8.2 | 8.5 |
| Crude oil price NOK[7] | 141.2 | 251.7 | 221.3 | 236.0 | 272.6 | 277.8 |
| Importweighted krone exchange rate, 44 countries, 1997=100 | 101.1 | 103.6 | 101.7 | 104.4 | 104.2 | 103.7 |
| NOK per euro | 8.31 | 8.11 | 8.11 | 8.20 | 8.10 | 8.04 |

[1] Figures for petroleum activities now covers the sectors oil and gas extraction proper, transport via pipelines and service activities incidental to oil and gas extraction.
[2] Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.
[3] Figures for 1999 and 2000 are from the national accounts. The quarterly figures are from Statistics Norway's Labour force survey (LFS), since the new quaterly national accounts series for employment are too short for seasonal adjustment.
[4] According to Statistics Norway's labour force survey (LFS).
[5] Percentage change from the same period the previous year.
[6] Household's borrowing rate in private financial institutions.
[7] Average spot price, Brent Blend.
Sources: Statistics Norway and Norges Bank.

made in the National Budget for 2001. The figures illustrate that the central government is now swiftly increasing its total net wealth.

The overriding objective of Norwegian monetary policy is to ensure a stable exchange rate over time. In the last two years Norges Bank has emphasized that if this objective is to be achieved, monetary policy must help to ensure that over time price and cost inflation in Norway is approximately on a par with developments in the euro area. In order to contribute to achieving the objective of monetary policy, Norges Bank raised its key rates by 1.5 percentage points in 2000 after having reduced them by 2.5 percentage points the previous year. Both money market rates and financial institutions' interest rates have closely shadowed changes in key rates, the latter with a certain lag. At the beginning of 2001, money market rates were thus a good 1.5 percentage points higher than one year earlier, but a good 0.7 percentage point lower than at the beginning of 1999. With a continuation of the current level of interest rates, both nominal interest rates and real interest rates will still be higher in 2001 and 2002 than through the period 1995-1999. On the whole, it thus appears that monetary policy in recent years has shifted to a more contractionary stance after a sharp decline in interest rates in the period 1992-1997 implied that monetary policy generally had an expansionary effect during the cyclical upturn in the 1990s.

Interest rate changes have a direct impact on cyclical developments in the mainland economy via private sector demand, primarily households. However, monetary policy may also influence cyclical developments through changes in the exchange rate. A common perception is that an increase in interest rates in Norway relative to interest rates abroad can contribute to strengthening the Norwegian krone in the short term, thereby curbing activity in internationally exposed sectors. However, there is considerable uncertainty concerning the exact relationship between the exchange rate and the interest rate, and the exchange rate can also be influenced by factors other than the interest rate.

Even though the interest rate differential between the Norwegian krone and the euro has narrowed from 4 to about 2 1/2 per cent over the last two years, the krone has generally appreciated against the euro in this period. In this same period, the krone has largely depreciated against the US dollar and pound sterling, and on a trade-weighted basis the exchange rate between the krone and the currencies of our main trading partners was at approximately the same level at the beginning of 2001 as at the beginning of 1999.

## Sluggish trend in demand through 2000

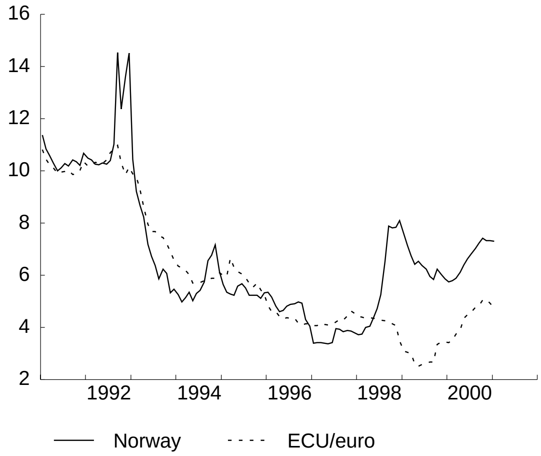
Mainland demand rose by 2.2 per cent in 2000. However, more than half of the annual growth reflected the carry-over at the beginning of the year, and growth through the year was relatively weak. This pattern is repeated for both household consumption and mainland investment.

Preliminary national accounts figures indicate that household consumption grew at a slightly faster pace than income last year. The saving ratio thus appears to have edged down from the level in 1998-1999. However, the saving ratio does not deviate substantially from the level prevailing at the start of the cyclical upturn in 1993. In these seven years as a whole household consumption has thus shadowed developments in household income. Household adaptation to fluctuations in income growth and changes in interest rates have, however, contributed to some variation in the saving ratio from one year to the next.

Developments in consumption through 1999 and 2000 were probably heavily influenced by changes in interest rates. Consumption picked up considerably through 1999 and into the first quarter of 2000 as interest rates were gradually reduced from the high level around the beginning of 1999. Interest rates increased again in the second half of 2000, and consumption growth gradually came to a complete halt.

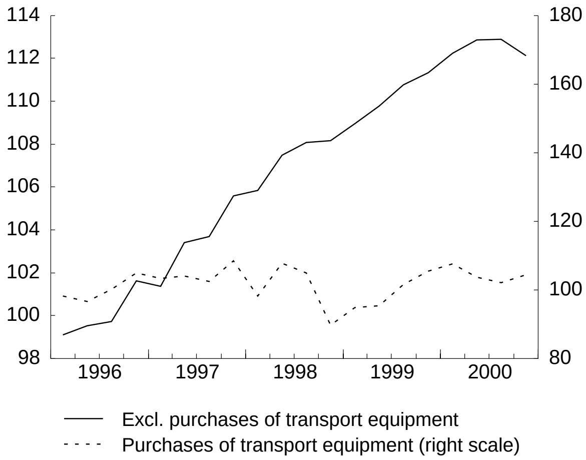
The pronounced u-shaped path of interest rates over the last two years means that we can see no clear traces of the rise in interest rates in the second half of 2000 in the figures on household income for the year

**3-month Euro-rates**
Per cent



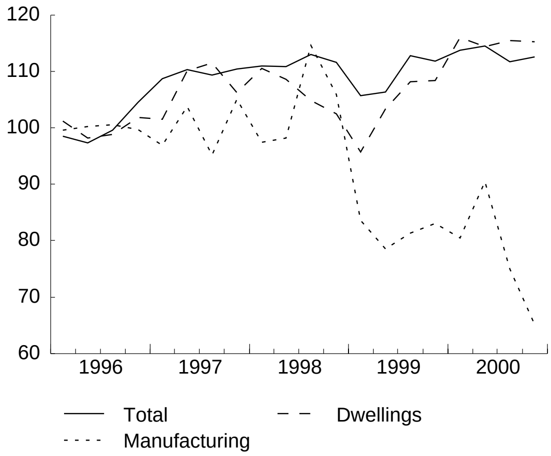

Source: Norges Bank.

**Consumption in households. 1996 - 2000**
Seasonally adjusted volume indices, 1996=100



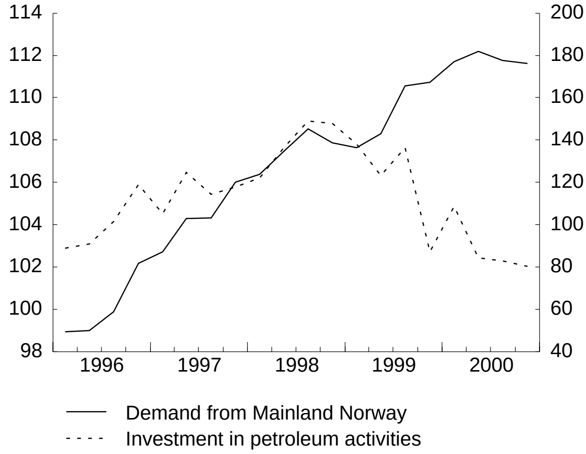

Source: Statistics Norway.

**Gross fixed capital formation, Mainland Norway. 1996 - 2000**
Seasonally adjusted volume indices, 1996=100



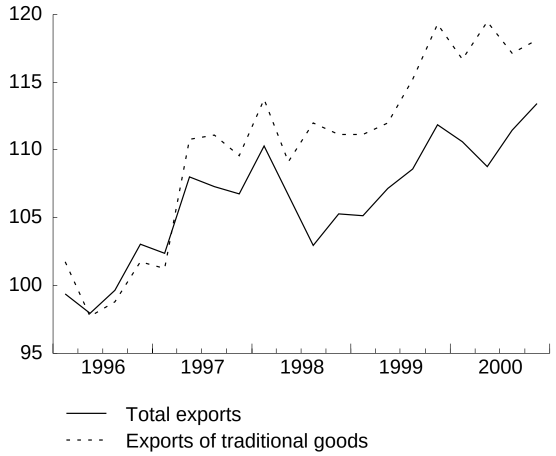

Source: Statistics Norway.

**Demand from Mainland Norway and investment in petroleum activities. 1996 - 2000**
Seasonally adjusted volume indices, 1996=100



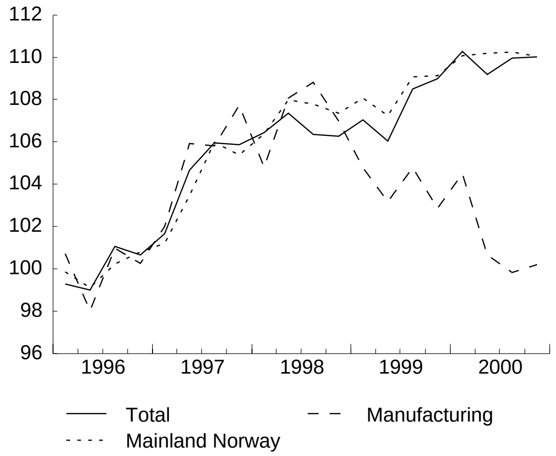

Source: Statistics Norway.

**Exports. 1996 - 2000**
Seasonally adjusted volume indices, 1996=100




Source: Statistics Norway.

**Gross domestic product. 1996 - 2000**
Seasonally adjusted volume indices, 1996=100




Source: Statistics Norway.

as a whole. With a continuation of the current level of interest rates, however, the increase through last year will in isolation contribute to curbing growth in household income this year because Norwegian households as a whole have more debt than assets at variable rates.

As a result of the increase in interest rates in the second half of 2000, the sharp rise in house prices came to a halt. On an annual basis, the rise in prices was nevertheless higher than the average for the previous five years. Relatively strong income growth and a sluggish trend in residential construction over a period of several years have probably contributed to this. A close to doubling of house prices from 1993 to 2000 has substantially improved households' capacity to furnish security for loans. According to figures from Norges Bank, household debt in real terms nevertheless increased by only 2 per cent from 1992 to 1996, whereas real disposable income rose by more than 14 per cent in the same period. In the following three years, household debt increased approximately on a par with household income, while debt in 2000 appears to have increased at a considerably faster pace than income. Household net lending is provisionally estimated at about NOK 25 billion in 2000, noticeably higher than the average for the last ten years. Household net financial assets thus increased further in relation to income last year, illustrating that the financial position of households as a group is now considerably more favourable than at the end of the cyclical upturn in the 1980s.

Mainland investment showed a seasonally adjusted decline through 1998 and the first half of 1999, but picked up somewhat over the next four quarters. Even though this component of total demand declined in the second half of 2000, mainland investment still made a positive contribution to growth in total demand on an annual basis. Investment in general government and in manufacturing and other goods-producing industries pushed down growth, whereas investment in dwellings and in other private service industries rose sharply. Petroleum investment showed a considerable contraction in volume for the second consecutive year and generated a substantial negative contribution to growth in total demand last year.

Traditional merchandise exports expanded by 3 per cent in 2000, approximately on a par with the result for the previous two years. The growth contribution from this demand component has thus for several years been appreciably weaker than in the mid-1990s in spite of sharp growth in the markets for Norwegian export products. The relatively sluggish trend in traditional exports last year means that Norwegian exporters lost market shares for the fourth consecutive year following a period of eight years when market shares had a greater tendency to rise than to fall. It is natural to see this development in connection with changes in relative hourly wage costs. Measured in a common currency, hourly wage costs in manufacturing increased more slowly in Norway than among our main trading partners from the end of the 1980s through 1994, whereas they thereafter increased at a faster pace in Norway than among our trading partners.

Measured in NOK, prices for traditional export goods rose sharply from 1999 to 2000 after having remained fairly stable through the previous four years. The figure was pushed up in particular by increases in prices for metals and refined petroleum products.

Exports of oil and natural gas rose slightly in 2000 after declining somewhat for two years. Growth in petroleum exports over the past few years has been substantially lower than expected earlier, partly reflecting technical problems and delayed starts of some new projects on the Norwegian shelf.

Traditional merchandise imports grew in volume by 2.4 per cent last year after showing an equivalent decline the previous year. Developments through the past two years have been approximately the same as for mainland demand, thereby underpinning the impression that the Norwegian economy stagnated in 2000. However, prices for traditional imports rose markedly in 2000. As with exports, increases in commodity prices in particular pushed up the average. Norway recorded a terms-of-trade gain for trade in traditional goods of around 6 per cent from 1999 to 2000. If we exclude changes in prices for refined petroleum products, which are more important for export prices than for import prices, the gain is reduced to about 3 1/2 per cent.

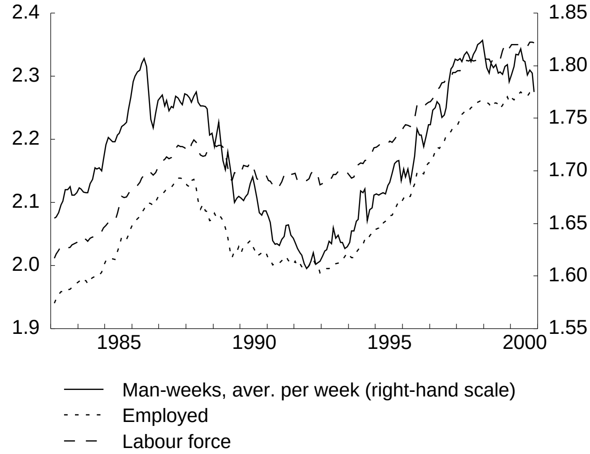
## Rainy weather boosted mainland growth

Mainland GDP expanded by 1.8 per cent in 2000, noticeably faster than in 1999. Developments through the year, however, were fairly weak. Private service industries and goods-producing industries, excluding manufacturing, made a positive contribution to growth in the mainland economy last year, while manufacturing production fell for the second consecutive year. There were, however, signs of a levelling off in manufacturing production in the second half of 2000. Value added in the electricity sector rose by more than 18 per cent last year, and this industry therefore made a substantial contribution to mainland growth. Excluding the electricity sector, value added in mainland Norway grew by 1.3 per cent in 2000, against 0.7 per cent in 1999.

## Stable labour market

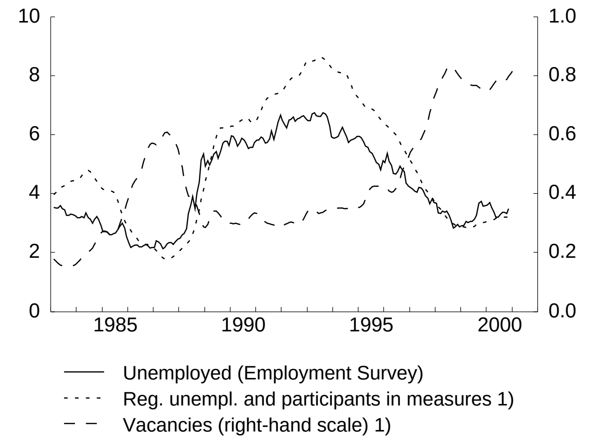
The number employed increased by 0.4 per cent in 2000, slightly less than in 1999. Employment growth is now approximately on a par with growth in the working population, whereas it was considerably higher through the five-year period 1994-1998. As in 1999, employment growth in private service industries and

**Labour force, employment and number of man-weeks. 1983-2000**
Millions. Seasonally adjusted and smoothed indices.



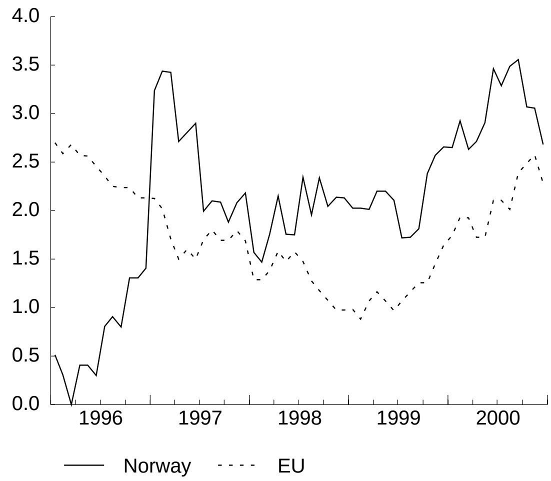

Source: Statistics Norway.

**Unemployed and number of vacancies, monthly figures. 1983-2001**
Per cent of labour force. Seas. adj. and smoothed



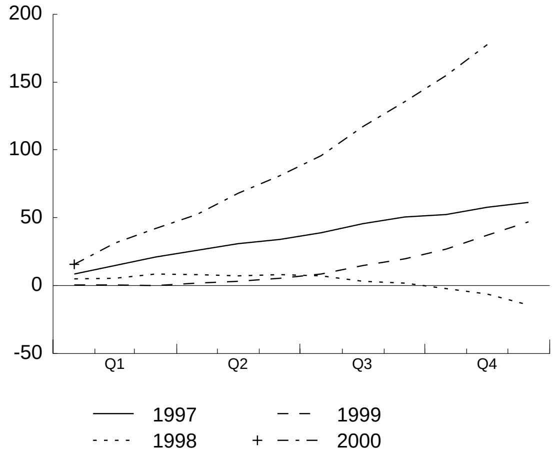

1) Backwards adjusted for breaks in the series from january 1999.
Sources: The Directorate of Labour and Statistics Norway.

**Harmonized consumer price index.1996-2000**
Percentage change from same month previous year.




Source: Eurostat and Statistics Norway.

**Current external balance 1997-2000**
Cumulative figures in NOK billions month by month




Source: Statistics Norway.

in the general government sector boosted the average, while employment in manufacturing fell for the second year in a row. The number employed in primary industries also contracted. Nearly 71 per cent of the population in the age group 16-74 years was employed last year, the same as in 1998 and 1999. This is the highest employment share that has been registered in Norway and is also very high by international standards. The number of man-hours worked fell by 0.8 per cent in 2000 after expanding by 0.2 per cent the previous year.

Growth in the labour force has also slowed in recent years. On an annual basis, the labour force increased by about 1/2 per cent last year, and unemployment rose from 3.2 per cent in 1999 to 3.4 per cent in 2000. Measured at an annual rate, unemployment has now been virtually stable for three years after declining sharply from 1993 to 1998. Adjusted for the revision of Statistics Norway's Labour Force Survey (LFS) in 1996, unemployment was close to one percentage point higher than the level in the period of strong expansion in 1986-1987.

Seasonally adjusted and smoothed monthly figures from the LFS indicate stable employment through the second half of 2000 after showing a moderate rise the previous four quarters. Adjusted for random effects at the beginning of 2000, unemployment has shown a moderate rise over the past two years. This tendency is also found in changes in the Directorate of Labour's figures on registered unemployed and persons participating in ordinary labour market programmes. Adjusted for normal seasonal variations, however, this series showed signs of levelling off around the beginning of 2001. Moreover, the number of vacancies has moved on a weak upward trend the past year after declining the previous 18 months. Compared with the developments in unemployment, this may indicate growing geographical, sectoral or skills imbalances in the labour market.

The decline in unemployment after 1993 was accompanied by a gradually tighter labour market, which contributed to substantially higher wage growth in the period 1996-1999 than in the previous four-year period. Wage growth in 2000 is provisionally estimated at 4.3 per cent, measured per normal man-year. This is nearly 1 percentage point lower than in 1999 and a good 2 percentage points lower than in 1998. However, wage growth is still higher than among our main trading partners. Real wages increased by a little more than 1 per cent last year. Whereas the tighter labour market contributed to noticeably faster growth in real wages compared with labour productivity in the mainland economy through the period 1996-1999, this situation was reversed last year.

### Higher price inflation in 2000

Higher wage growth through the second half of the 1990s did not translate into an appreciably faster rise in inflation. Price inflation in 1998-1999 was thus exactly the same as in 1992-1993, at 2.3 per cent. The rise in price inflation to 3.1 per cent in 2000 appears to have been substantially influenced by factors other than cost developments. Higher energy prices and a weaker exchange rate probably contributed to pushing up inflation by 1 percentage point from 1999 to 2000. In contrast to 1999, changes in indirect taxes also contributed to pushing up inflation moderately last year.

In the last ten years, consumer prices have risen by on average 2.3 per cent a year, which is less than the average for Norway's main trading partners in the same period. In the last four years, however, inflation has been about one percentage point higher in Norway than the average for our main trading partners. The inflation differential against the EU has been of about the same order. The inflation differential between Norway and trading partners/EU narrowed through the second half of 2000.

### High oil price resulted in record current account surplus

The current account surplus amounted to NOK 196 billion in 2000, nearly NOK 150 billion more than in 1999, and the highest surplus ever recorded. The record improvement in the balance of payments must be seen in connection with the surge in oil prices. More than 90 per cent of the improvement can be ascribed to a higher value for crude oil and natural gas exports, while the surplus on the balance of goods and services rose by a little less than NOK 12 billion. The deficit on the interest and transfers balance increased by a good NOK 1 billion in spite of a pronounced increase in Norway's net foreign assets. This somewhat paradoxical situation may be partly related to a widening interest rate differential between Norway and other countries, and partly to a sharp increase in holdings of equities and other non-interest bearing financial assets.

## Outlook for 2001 and 2002

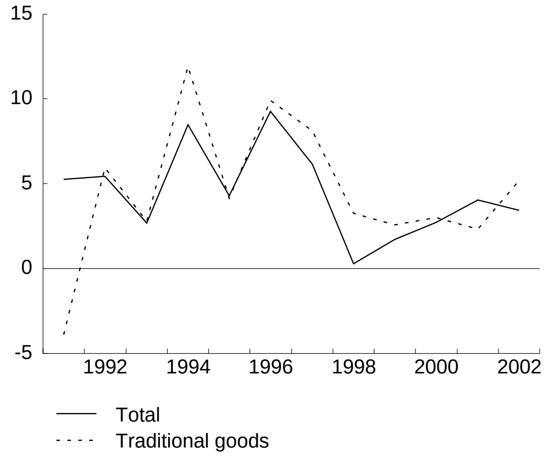
The picture of the Norwegian economy that emerges on the basis of the preliminary national accounts figures for 2000 and our forecasts for the next few years must be said to be unusually favourable. Now that the boom in the mainland economy appears to be over and production is close to trend levels, the economy will expand at a faster rate again, approximately on a par with trend growth. In spite of slightly lower oil prices and a weaker dollar, the current account will show very high surpluses. Inflation will gradually subside to a level that does not deviate substantially from the inflation rate among trading partners. The same will be true for wage growth in 2002. It is not difficult, however, to point to assumptions other than those we have applied that can alter this picture. A strong international recession may result in a more pronounced downturn in Norway. This might occur not least if the effects on the oil market and Norwegian petroleum investment should prove to be considerable. It is conceivable that sizeable petroleum revenues may lead to a more expansionary fiscal policy through tax

**Main economic indicators 2000-2002. Accounts and forecasts**
Percentage change from previous year unless otherwise noted

| | Accounts 2000 | Forecasts 2001 SSB | Forecasts 2001 MoF | Forecasts 2001 NB | Forecasts 2002 SSB | Forecasts 2002 NB |
|---|---|---|---|---|---|---|
| **Demand and output** | | | | | | |
| Consumption in households and non-profit organizations | 2.2 | 1.6 | 2.4 | 1 1/2 | 2.7 | 2 1/2 |
| General government consumption | 1.4 | 2.3 | 2.4 | 3 | 1.9 | 2 |
| Gross fixed investment | -2.7 | -1.7 | -3.2 | -1 3/4 | 1.9 | 1 1/4 |
| Petroleum activities | -26.6 | 0.0 | -15.9 | -4 | 7.4 | -2 |
| Mainland Norway | 3.5 | -0.8 | -0.1 | -1 1/4 | 0.6 | 2 1/4 |
| Firms | -5.9 | -1.6 | -1.0 | -3 1/4 | -1.6 | 3 1/4 |
| Housing | 10.7 | 6.3 | 8.5 | 10 | 9.5 | 4 |
| General government | 0.0 | -4.3 | -4.4 | -4 1/2 | -1.2 | -1 1/2 |
| Demand from Mainland Norway[1] | 2.2 | 1.3 | 2.0 | 1 1/2 | 2.1 | 2 1/4 |
| Stockbuilding[2] | 0.4 | 0.0 | 0.0 | .. | 0.0 | .. |
| Exports | 2.8 | 4.0 | 6.0 | 4 1/4 | 3.4 | 3 |
| Crude oil and natural gas | 6.4 | 3.8 | 6.9 | 6 | 0.9 | 2 |
| Traditional goods | 3.0 | 2.3 | 4.7 | 3 1/4 | 5.2 | 3 3/4 |
| Imports | 1.2 | 2.6 | 2.6 | 2 | 5.0 | 4 |
| Traditional goods | 2.4 | 2.4 | 3.2 | 2 1/2 | 4.3 | 4 |
| Gross domestic product | 2.2 | 1.6 | 2.6 | 2 | 1.8 | 1 3/4 |
| Mainland Norway | 1.8 | 1.1 | 1.8 | 1 1/4 | 1.8 | 1 3/4 |
| **Labour market** | | | | | | |
| Employed persons | 0.4 | 0.6 | 0.6 | 3/4 | 0.4 | 1/2 |
| Unemployment rate (level) | 3.4 | 3.5 | 3.3 | 3 1/4 | 3.6 | 3 1/4 |
| **Prices and wages** | | | | | | |
| Wages per standard man-year | 4.3 | 4.3 | 4 | 4 1/4 | 3.8 | 4 1/2 |
| Consumer price index | 3.1 | 2.5 | 2 3/4 | 3 | 1.4 | 2 1/2 |
| Export prices, traditional goods | 12.6 | 1.9 | 1.2 | 2 | -1.7 | - 1/2 |
| Import prices, traditional goods | 6.3 | 1.6 | 1.6 | 2 | 1.6 | 1 1/4 |
| Real prices, dwellings | 10.4 | 2.9 | .. | 3/4 | 7.6 | 1 1/2 |
| **Balance of payment** | | | | | | |
| Current balance (bill. NOK) | 195.6 | 169.6 | 159.9 | 225 | 161.4 | 160 |
| Current balance (per cent of GDP) | 13.9 | 12.0 | 11.3 | 15 | 11.1 | 11 |
| **Memorandum items:** | | | | | | |
| Household savings ratio (level) | 6.3 | 7.6 | 6.4 | 7 1/4 | 8.3 | 7 1/2 |
| Money market rate (level)[3] | 6.6 | 7.1 | 7.1 | 7.1 | 6.1 | 6.1 |
| Average borrowing rate (level)[4] | 8.1 | 8.9 | .. | .. | 8.1 | .. |
| Crude oil price NOK (level)[5] | 252 | 205 | 180 | 259 | 190 | 206 |
| Export market indicator | 10.3 | 7.1 | .. | .. | 6.4 | .. |
| Importweighted krone exchange rate (44 countries)[3,6] | 2.5 | -1.2 | .. | -1.1 | -0.8 | 0.0 |

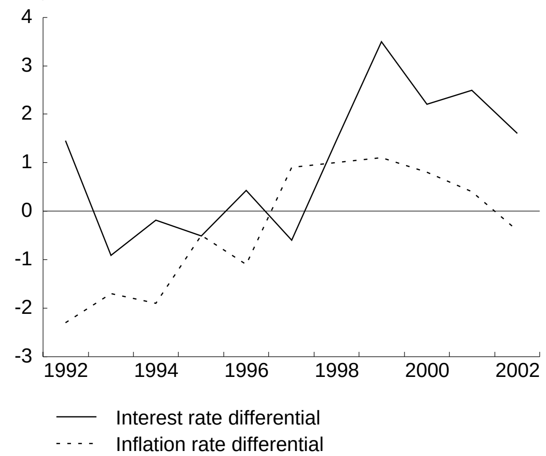
[1] Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.
[2] Change in stockbuilding. Per cent of GDP.
[3] The NB figures are technical assumptions. The interest rate forecast reflects the implicit expectations of the market participants.
[4] Households' borrowing rate in private financial institutions.
[5] Average spot price Brent Blend.
[6] Increasing index implies depreciation.
Sources: Statistics Norway (SN), Ministry of Finance, Nasjonalbudsjettet 2001 (MoF), Norges Bank, Inflasjonsrapport 4/2000 (NB).

**Exports**
Percentage growth



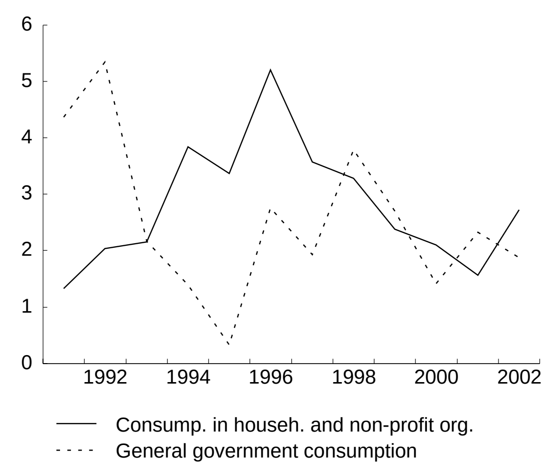

Source: Statistics Norway

**Interest rate and inflation differential between NOK, and the ECU/euro. 1992-2002**
Projections for 2001-2002




Sources: Norges Bank and Statistics Norway.

**Consumption**
Percentage growth




Source: Statistics Norway

reductions or spending increases, which would mean that price and cost inflation are not reduced to the level among trading partners. The household saving ratio may show a different development than assumed and result in higher consumption growth. A new boom in petroleum investment might generate stronger growth in the Norwegian economy than we have assumed and again demonstrate that we are desynchronized in relation to the business cycle of our trading partners. It is virtually impossible to predict correctly all the key factors that determine developments in the Norwegian economy in the period ahead. The use of our model, however, gives us an opportunity to reason systematically concerning the importance of these phenomena for the Norwegian economy.

### Slower international growth

As pointed out earlier, GDP growth among Norway's trading partners is expected to be lower in 2001 after rising appreciably from 1999 to 2000. In 2002, economic growth is assumed to be approximately the same as in 2001. GDP growth among our trading partners is estimated at a little less than 3 per cent in both 2001 and 2002. The slowdown in economic growth in the US is the main reason for this. In a separate analysis we assess the consequences of a more pronounced downturn in the US economy than we have assumed here. Market growth for Norway's traditional merchandise exports will also be curbed as growth in activity among our trading partners slows. However, the level of market growth has been revised upwards for the entire period 1999-2002 as a result of new information from the OECD. Market growth is estimated at 7.1 per cent this year and 6.4 per cent next year, after having passed a pronounced peak of 10.3 per cent last year. This scenario is generally the same as presented in the last quarterly report. However, as a result of relatively high cost inflation the last few years, Norwegian exports of traditional goods will increase at an appreciably slower pace than market growth in both 2001 and 2002, even thought the difference will gradually narrow.

The increase in the dollar price of crude oil up to November 2000 was sharper and lasted longer than most observers had expected. In addition, the appreciation of the US dollar contributed to an even greater increase in the krone price. In December, however, the oil price fell sharply, but has since moved up again in connection with OPEC's production cuts in January. The average price last year was a good NOK 250 per barrel, against NOK 140 in 1999. Other international commodity prices have also edged up, measured in dollar terms, from the low level following the Asian crisis. The krone price for Norwegian export goods has increased even more, by an average of 12.6 per cent. This is partly related to the appreciation of the dollar and partly to the higher than average rise in commodity prices for a number of important Norwegian export goods, such as alumunium.

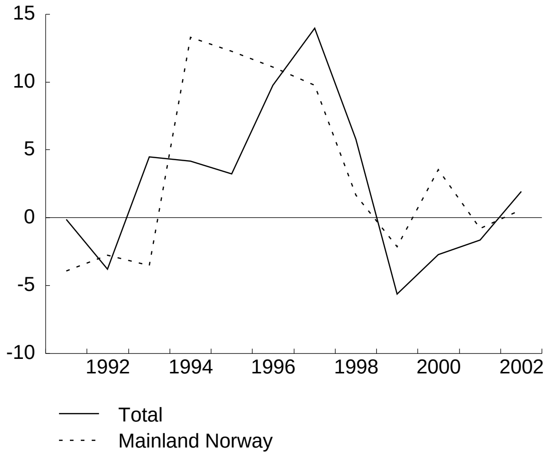
International price inflation quickened in 2000. The consumer price index in the US rose by 3.4 per cent, against 2.2 per cent in 1999, while inflation in the EU was 2.1 per cent, against 1.2 per cent the previous year. The sharp increase in oil prices and high activity levels in the world economy were important reasons for this. In 2001 and 2002, lower oil prices and somewhat lower GDP growth are expected to contribute to a slight reduction in price inflation, particularly in the US.

### Monetary policy and exchange rates

The import-weighted krone exchange rate depreciated by 2.5 per cent from 1999 to 2000, primarily as a result of the strong dollar exchange rate. Measured against the euro, the krone was strong in 2000, particularly towards the end of the year. In January 2001, the situation had changed, with a krone exchange rate against the euro that was more in line with the implicit exchange rate target, while the dollar depreciated against both the euro and the Norwegian krone. The import-weighted krone exchange rate reached its weakest level in the second quarter of last year and has since appreciated somewhat. In the period ahead we have assumed a depreciation of the dollar against the euro along with an approximately unchanged krone exchange rate against the euro. This will result in an appreciation of the import-weighted krone exchange rate. Our estimates entail a projected krone appreciation of about one per cent in both 2001 and 2002. For the dollar exchange rate, these estimates mean that the average will be a little less than NOK 8 for 2002 as a whole. The estimates imply that the krone will appreciate more quickly than we assumed in our last report. As a result, our previous estimate for the rise in import prices for traditional goods has been revised down in 2001, whereas the projected level for 2002 remains unchanged.

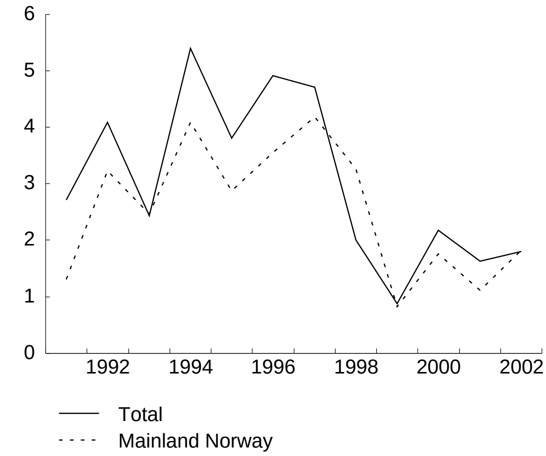
The prospect of lower growth in the US economy has already resulted in a pronounced decline in money market rates in the US. With the prospect of more moderate growth in the international economy, further interest rate increases by the ECB are now less probable. We have assumed that nominal rates at about the current level (4.7 per cent) will be reduced to about 4.5 per cent from the third quarter of 2001 and remain stable thereafter. In Norway, interest rates are still expected to decline slightly this year. As earlier, we assume that interest rates will fall by half a percentage point during the third quarter. Compared with the euro rate, this means that the interest rate differential will remain approximately unchanged, while the real interest rate differential will gradually widen appreciably inasmuch as the inflation rate in Norway is projected to be below 2 per cent in the second half of 2001. We therefore assume that interest

**Gross fixed capital formation**
Percentage growth




Source: Statistics Norway

**Gross domestic product**
Percentage growth

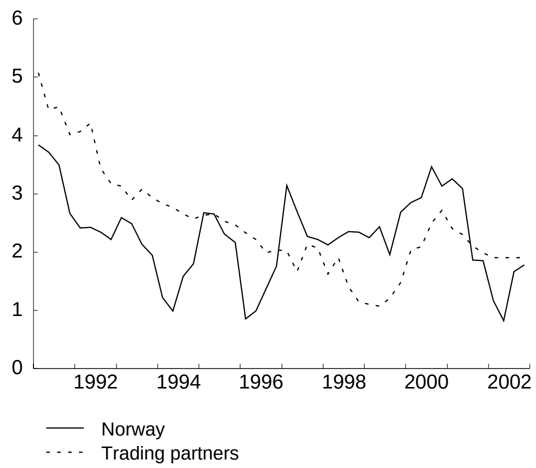



Source: Statistics Norway

**Labour market**
Percentage change


1) Adj. for stat. rev. from 1996.
Source: Statistics Norway

**The consumer price index**
Percentage change from the same quarter the previous year




Source: Statistics Norway and Norges Bank.

rates in Norway will decline further by half a percentage point after the turn of the year.

## Stable real impulses and substantial inflationary impetus from fiscal policy

The estimates for fiscal policy are largely the same as presented in our last quarterly report where we had incorporated the fiscal policy programme adopted by the Storting (Norway's parliament) before Christmas. The then adopted measures that have the greatest effect include the reform of the VAT system, with an increase in the general rate from 1 January 2001 and the introduction of VAT on services from 1 July combined with a halving of the VAT rate on food. A reduction in the petrol tax in two stages and an increase in the electricity tax come in addition. Since the Storting adopted the budget, it has been decided that a supplementary tax on new commercial buildings will not be introduced after all. We assume that this will result in slightly higher growth in mainland business investment than projected in our previous quarterly report. The growth projections for social security and government spending on goods and services remain unchanged.

## Greater impetus from petroleum activities?

Petroleum investment continued to contract through 2000, declining by 26.6 per cent on an annual basis, which is consistent with the projections in our last report. We expected the contraction to continue into 2001, but assumed that investment would gradually increase through the year and in 2002. Statistics Norway has not conducted a new investment intentions survey among oil companies that can provide a basis for revising our projections compared with earlier. Over the last few months, however, oil companies have indicated that they are now raising their investment estimates. This may suggest that Statistics Norway's next investment intentions survey, which will be published at the beginning of March based on information largely obtained in February, will show higher estimates for 2001. Against this highly uncertain background, we have now increased our projections for petroleum investment in 2001, with the level on an annual basis the same as in 2000. In 2002, we assume that the level will increase by 7 per cent, slightly higher than projected in our last report.

As we have pointed out earlier, it seems to take about 2 years between a turning point in oil prices, and hence oil companies' profitability, and the turning point in petroleum investment. Our projections are still consistent with this main rule, but have been revised up a little more inasmuch as oil prices were somewhat higher in 2000 than assumed earlier. Our current estimates may prompt the objection that the international growth outlook is now more uncertain than earlier, which may result in lower growth in demand for oil and falling prices. On the other hand, OPEC has recently demonstrated its ability to act as a fairly unified cartel.

Norwegian oil production is assumed to show little change the next few years compared with the level in 2000. Gas production, on the other hand, is expected to increase by a good 10 per cent this year and next. Should the oil market be characterized by excess supply, it is not inconceivable that the Norwegian authorities will decide to reduce Norwegian production slightly in order to contribute to stable prices in the range USD 20-25 per barrel. However, we have assumed the same oil price, measured in dollar terms, as in our previous report, i.e. USD 26 per barrel in the first quarter of 2001 and USD 24 thereafter. With a weaker dollar in the period ahead, this nevertheless entails lower real oil prices in most countries compared with our previous report.

## Household income and demand

Household consumption has exhibited sluggish growth in recent months and annual growth in 2000 was slightly lower than estimated earlier. New upward revisions of housing investment in 2000 show, however, that the composition of total household demand has changed. This tendency is expected to continue in the period ahead. There is slightly greater uncertainty associated with the rise in prices for existing dwellings than earlier, but the level of house prices is still high despite a marginal decline through the second half of 2000. With the prospect of a decline in interest rates through 2001 even if real interest rates remain high, and a continued tight labour market, house prices are not expected to fall in the period ahead but start to increase again. Combined with continued growth in household real income, this will contribute to a further expansion in housing investment.

Continued income growth is expected to translate into slightly higher growth in household consumption through 2001 and into 2002. Our projections nevertheless imply an appreciable increase in the household saving ratio in both 2001 and 2002 in relation to 2000. Although changes in the saving ratio can partly be explained by higher real interest rates, low increases in house prices through 2000 and into 2001, and rising real income growth, this does not provide a complete explanation as to why consumption growth is so weak at the moment. However, preliminary national accounts figures and other estimates indicate that the saving ratio fell by about half a percentage point from 1999 to 2000. Our projections for 2001 and 2002 point to an increase in the household saving ratio of close to 1.5 percentage points compared with 1999. The estimate for 2002 is lower than in our last report, but the projections still entail an unusually high saving ratio and may be an indication that our projection for consumption growth may be low.

**Small changes in mainland investment**

As a result of sluggish growth in the mainland economy, only small changes in the level of investment are expected in the period ahead. In line with the estimates in the National Budget, general government investment is expected to edge down this year, which will push down mainland investment. The projected increase in housing investment will have the opposite effect (see above). The contraction in manufacturing investment is expected to come to a halt in the course of 2001 and then increase somewhat, largely as a result of major investment projects in power-intensive industries. Investment in other mainland enterprises, on the other hand, is expected to show little change. The decision to abandon a supplementary tax on new commercial buildings must be expected to contribute to reducing the likelihood of a decline in investment through 2001. The fact that the investment tax will not be removed as early in 2002 as originally thought, also points to a steadier path for investment than assumed earlier.

**Moderate growth in the mainland economy**

Growth in the mainland economy was close to 2 per cent in 2000, in line with our previous projection. Higher electricity production boosted growth by half a percentage point and also contributed to high productivity growth in the mainland economy in 2000. In 2001, a fall in electricity production will have the opposite effect. A projected slowdown in growth among Norway's trading partners also points to lower growth in traditional exports this year. Growth in exports of oil and gas has also been revised down in 2001, with the result that total exports will grow at a slower pace than estimated earlier. In 2002, growth in exports of traditional goods is assumed to pick up somewhat, as the loss of competitiveness is reduced over time and export growth approaches market growth. Higher estimates for petroleum investment the next few years will also generate a positive growth impetus to the Norwegian economy. This also applies to manufacturing industry where we now believe the contraction has come to a halt and we may record some output growth in the period ahead. Growth in household demand is moderate this year, but will also show faster growth ahead and will contribute to boosting growth in the mainland economy next year.

**Little change in unemployment**

Unemployment passed a cyclical trough a little more than two years ago, but the increase in unemployment has been modest since then. Unemployment is expected to show little change the next two years. Additional vacation days and more public holidays will contribute to a decline in average working hours per employee of more than one per cent from 2000 to 2001. Also in 2002, the number employed will increase at a faster pace than the number of man-hours worked because the fifth holiday week will then have been fully phased in. With only a very modest increase in the total labour force participation rate, we therefore believe that unemployment as measured by LFS, will show little change the next two years.

**Price inflation will edge down, but will show strong variations**

Consumer price inflation was 3.1 per cent in 2000, with 0.1 percentage point of this increase reflecting a revision of the method for computing the CPI. As discussed in detail in our previous report, the approved indirect tax programme will have a considerable influence on consumer price inflation. Whereas no major changes in consumer price inflation, measured at an annualized rate, are expected in the first half of 2001, the year-on-year rate is projected to fall sharply from July when the VAT rate on food is halved and petrol taxes are reduced further. This will occur despite the introduction of VAT on a number of services at the same time. At the beginning of 2002, the year-on-year rate will fall further because the effect of the VAT increase with effect from 1 January this year will then be eliminated, while indirect tax changes effective from the summer of 2001 will continue to have an effect up to the summer of 2002. These assessments are based on the assumption that no major new changes in indirect taxes are adopted with effect from the beginning of 2002. The direct effects on the year-on-year rate of increase in the CPI will not be exhausted until July 2002. We project that consumer price inflation in the second half of 2002 will be just under 2 per cent, and this estimate is the same as presented in our last report. This rate of inflation is also on a par with our projection for consumer price inflation in the euro area in the same period.

Excluding the revision of the CPI in 2000, consumer price inflation is projected to decline by a good one percentage point from the second half of 2000 to the second half of 2002. The main reason for the more subdued rate is a lower rise in import prices as a result of lower oil prices and an appreciation of the krone, whereas it depreciated in 2000. Moreover, hourly wage costs will decline as a result of an estimated inc-

**Effects of a recession in the US**
Deviation from the level in the baseline scenario, in percent unless otherwise specified

| | 2001 | 2002 |
|---|---|---|
| Consumption in households and non-profit organizations | 0.1 | -0.5 |
| Investment, Mainland Norway | -0.2 | -1.6 |
| Exports | -0.3 | -1.1 |
| Imports | 0.1 | -0.9 |
| GDP | -0.2 | -0.9 |
| Mainland Norway | -0.2 | -0.8 |
| Employed persons | -0.2 | -0.5 |
| Unemployment rate, deviation from the level in the baseline scenario, in percentage points | 0.1 | 0.3 |
| Wages | -0.2 | -1.5 |
| Consumer price index | -0.5 | -1.5 |
| Real prices, dwellings | -0.6 | -3.2 |
| Household savings ratio | 0.3 | 0.3 |
| Savings ratio, deviation from the level in the baseline scenario, in percentage points | 0.2 | 0.7 |
| Current balance, deviation from the level in the baseline scenario, bill. NOK | -31.8 | -64.1 |
| *Assumptions:* | | |
| Export market indicator | -0.8 | -1.5 |
| Importweighted krone exchange rate[1] | -1.6 | -2.1 |
| Consumer price index, euro area | -0.4 | -1.4 |
| Crude oil price, NOK | -12.2 | -24.2 |
| Import prices, traditional goods | -1.8 | -4.0 |
| Euro-rate, deviation from the level in the baseline scenario, in percentage points | -0.2 | -1.0 |
| Oil investment | 0.0 | -6.9 |

[1] Negative sign denotes appreciation.
Source: Statistics Norway.

rease in productivity growth. A common cyclical pattern is that productivity growth picks up as the economy shifts to a downturn, or at least is not experiencing a boom. On the other hand, experience shows that productivity growth falls towards the end of a boom, a situation we saw clearly in Norway at the end of the 1990s. (See separate box on driving forces behind consumer price inflation.)

Our projection for wage growth in the period ahead does not deviate substantially from our earlier estimate. There will be no centralized wage negotiations in the spring of 2001, but a new main settlement will take place in 2002. Weaker profitability in the period ahead as a result of an appreciating currency and approved pay increases and reforms may contribute to low wage drift. The continued tight labour market combined with a large number of vacancies points to the opposite. If labour market imbalances are not reduced, wage differentials may widen in the period ahead.

## Large current account surpluses in spite of falling oil prices

The current account surplus came to nearly NOK 200 billion in 2000, or 14 per cent of GDP. Higher oil and gas exports will compensate somewhat for the fall in oil prices, but not sufficiently to prevent a deterioration in the trade balance through the projection period. Current account surpluses will nevertheless be considerable and equivalent to more than 10 per cent of GDP each year ahead. The interest and transfers balance will also gradually show smaller deficits, which will partly compensate for lower trade surpluses. In contrast to the previous two years, however, Norway must expect a substantial terms-of-trade loss this year and next, with national real disposable income declining in 2001 and possibly in 2002 as well.

## Effects of a more pronounced downturn in the US economy

There are many uncertain factors associated with the outlook for 2001 and 2002. For a small and open economy like Norway, assumptions concerning developments in the international economy will always be important. We have recently experienced the effects of wide fluctuations in international commodity prices and what this may mean for the Norwegian economy. In this section, we look more closely at the importance of far more negative developments in the US economy than we have assumed in our baseline scenario.

Growth in the US economy appears to have slowed substantially in the second half of 2000, but the preliminary figures show that growth remained positive in the fourth quarter. In our baseline scenario, we assume that GDP growth in the US will be 2.5 per cent in 2001 and 3.5 per cent in 2002. If we define a recession as a shift in growth from higher than trend growth to lower than trend growth, the US passed a cyclical peak in the summer of 2000 and has since been contracting. Inasmuch as many analysts have maintained that the “new economy” has contributed to higher underlying growth in the US than previously, our projections for growth in the US this year and next imply that the level of GDP in the US will gradually fall towards its trend rate. According to a widely applied US standard, however, the term recession will not be used until the seasonally adjusted level of GDP falls in two consecutive quarters. Many now fear that this will occur at the beginning of 2001. Irrespective of terminology, it is relevant to assess how a more pronounced cyclical downturn, with lower GDP growth in the US than we have assumed, will affect the international and Norwegian economy the next two years. This is discussed in the following section.

Changes in the US economy compared with our baseline scenario are assumed to begin in the second quarter of 2001. Partly on the basis of analyses published in the latest issue of National Institute Economic Review, we have chosen to apply the following assumptions. We assume that US consumption and business investment decline by 1 per cent in 2001, and rise by 3.5 per cent in 2002, compared to the level in our baseline scenario. A sharp depreciation of the US dollar will contribute to strengthening competitiveness somewhat. This will curb the effect on GDP, which is as-

## Driving forces behind price inflation

Norwegian final prices, such as the consumer price index (CPI), are often regarded as a measure of inflation. They are generally influenced by the following factors:

- labour costs (hourly wages and productivity)
- interest rates
- indirect taxes
- prices determined on the world market (e.g. oil prices)
- exchange rates
- profit margins and competitiveness
- administered prices (to some extent agricultural products)
- prices largely determined by nature (e.g. electricity)

Labour costs constitute the most important cost factor that influences consumer prices. Labour costs account for an estimated 40 per cent of production costs of total household consumption. The other dominant component is import prices (combination of costs and profit margins abroad and exchange rates), which can be directly and indirectly estimated at about the same order. In spite of the heavy weight of these components, other factors can also have a considerable impact on the rate of increase in the CPI through pronounced changes in other variables. In recent years, movements in the CPI have been heavily influenced by developments in crude oil prices and producer prices for electricity (labour costs have little influence on these prices) and changes in indirect taxes.

It is difficult to provide a precise definition or measure of the concept "driving forces behind consumer price inflation". Using our model as a starting point, the challenges are linked in particular to the following: In "reality" everything is interrelated, but we seek to simplify so that we can identify elements/variables that we can regard as "determined outside the model" and which could thus be causes and not only consequences of something else. When we have found such candidates the question is: Current developments in variables can be said to be "a driving force", but one must have a notion of what a neutral development would be. The latter question is related to the fact that changes in one variable at a given time has implications for other economic variables over a long period: By way of example, fluctuations in inflation today can in principle stem from impulses far back in time. The question is then for what time period the impulses should be studied.

In this box we circumvent these problems by looking at only some of the driving forces, notably some that are of significant importance and some that are easy to analyze. We have chosen to look at the effects of the actual deviation of some variables in 2000 from the 1999 level and the assumed deviations in 2001 and 2002 on the annual rate of increase in prices. The approach involves counterfacutal/alternative estimations using Statistics Norway's macro-econometric model KVARTS, where we set the relevant variables at the 1999 level (on a quarterly basis) for the subsequent years.

In recent years, substantial impulses to consumer price inflation have come from sources other than wage growth. The table shows that of the factors analyzed, the largest contribution to inflation in 2000 comes from the depreciation of the Norwegian krone. The rise in oil prices in USD made a contribution of almost the same order. Developments in producer prices for electricity contributed, however, to reducing inflation. On an annual basis, money market rates edged down from 1999 to 2000, and the effect of this – in isolation of possible effects on the exchange rate – was a slight downside contribution to the rise in the CPI. If we also add the estimated effects of real changes in the indirect tax programme, these factors made a 1.2 percentage point contribution to inflation in 2000. Adjusted for these factors, inflation would have been a little less than 2.0 per cent last year.

The most important contribution to inflation in 2001 stemming from the deviation of the values of the relevant variables in 2000 and 2001 from their 1999 levels come from the estimated interest rates changes, but the oil price is estimated to make en equally important contribution. The overall inflation contribution from the factors analyzed is 0.6 percentage point in 2001. For 2002, interest rates and the exchange rate make a slightly negative contribution, while it now seems likely that indirect taxes will make a negative contribution of as much as 0.6 percentage point.

We have not studied the effect of labour costs in this analysis partly because of purely methodological problems. By cleansing the increase in the CPI of the factors analyzed, we are left with the effects of developments in labour costs (productivity and hourly wages), profit margins and competitiveness, prices on the world market excluding oil, administered Norwegian prices and the dynamic effects of all developments prior to 1999.

**The effects of deviations from 1999**
Contribution to the rise in the consumer price index in percentage points

| | 2000 | 2001 | 2002 |
|---|---|---|---|
| Contribution from real rise in crude oil prices and electricity prices | 0.28 | 0.22 | 0.07 |
| Electricity | -0.35 | 0.03 | 0.04 |
| Crude oil | 0.62 | 0.20 | 0.03 |
| Exchange rates | 0.78 | 0.12 | -0.17 |
| Interest rates | -0.07 | 0.27 | -0.14 |
| Components above - combined | 0.96 | 0.60 | -0.24 |
| Estimated isolated contribution from changes in indirect taxes beyond inflation adjustment | 0.25 | 0.0 | -0.6 |

sumed to fall by close to 1 per cent in 2001 and 1.5 per cent in 2002 compared with the projections presented above. This means that GDP growth in the US in the alternative scenario is only 1.5 per cent in 2001 and 3 per cent in 2002. In a historical context this is not a strong cyclical downturn in the US, but only slightly more moderate than the downturn at the beginning of the 1990s. Moreover, we assume that the dollar in this scenario depreciates by 10 per cent against the euro compared with our baseline scenario. Since we assume that the krone exchange rate shadows the euro, this means that the dollar exchange rate declines to about NOK 7 towards the end of 2002. US imports of goods and services are assumed to contract by a good 4 per cent in 2001 and a good 7 per cent next year as a result of the fall in domestic demand and more expensive imports. It is assumed that the Federal Reserve will only make slight adjustments to its key rates compared with the current level, with interest rates already reduced by one percentage point in January 2001. This assumption is applied because the Fed must deal with higher inflation as a result of the sharp depreciation of the dollar.

In the euro area, the decline in the US will result in lower GDP as a result of reduced demand. We assume that GDP will fall by 3/4 per cent in 2001 compared with our baseline scenario where growth in the EU is estimated at close to 3 per cent in both 2001 and 2002. It is assumed, however, that the European Central Bank will reduce interest rates, made possible because the appreciation of the euro will reduce inflation in the euro area. This will gradually stimulate GDP again so that the level at the end of 2002 will not be influenced. Interest rates are assumed to start falling after the decline has started and be amplified later in 2001, with interest rates about 1 percentage point lower compared with the baseline scenario in 2002. Should the European Central Bank respond more weakly than this, the decline in GDP in the euro area will be more prolonged and stronger. These assumptions imply that the real interest rate is approximately unchanged in the euro area.

The effects of a recession in the US on the Norwegian economy depend on the policy response of the authorities. Under the current stabilization policy regime, it is not easy to estimate the effect because our experience concerning the central bank's response is limited. We have chosen to assume that Norwegian money market rates will largely shadow European rates and that the exchange rate against the euro is stable. As for EU countries, this results in a further appreciation of the effective krone exchange rate in relation to our baseline scenario. We assume that average market growth among our trading partners increases in step with a weighted average of imports among trading partners. Slower international growth will therefore result in lower market growth compared with the level assumed in the baseline scenario. In 2001, we have, on an uncertain basis, assumed that this growth is gradually reduced, so that the level in 2002 is 1.5 per cent lower. The estimates are based on the assumption that the fiscal policy programme is not changed as a result of the recession in the US.

For the Norwegian economy, interest rates and international market growth are not the only factors that have an influence. It is reasonable to assume that prices for many commodities will fall as a result of these changes. Changes in oil prices are particularly important. A weaker dollar exchange rate automatically results in a fall in the oil price measured in krone terms given an oil price in US dollars. One may assume that OPEC, with the help of production limitations, will to some extent manage to keep oil prices at a high level, measured in US dollar terms. We have, however, assumed that the oil price falls to USD 20 per barrel from the second quarter of 2001 until the end of 2002. Along with the decline in the dollar exchange rate, this results in an oil price in krone terms of about NOK 140 per barrel in the fourth quarter of 2002 in this scenario compared with close to NOK 190 per barrel in the baseline scenario. We assume that as a result of relatively low oil prices, petroleum investment shows no increase from 2001 to 2002, i.e. a decline of 6.9 per cent in 2002 compared with the level in the baseline scenario. For other commodity prices, we have assumed that it takes slightly longer before prices fall and that the decline in prices is more moderate. It is assumed that metal prices, prices for pulp and paper and industrial chemicals gradually fall from the third quarter of 2001 to a level that is 5 per cent lower than in the baseline scenario, while import prices for processed manufactured goods only decline by 1 per cent compared with the baseline scenario, and in general not until 2002.

The effects on the Norwegian economy will at first be influenced by lower market growth, which reduces exports and production in Norway. Falling prices that increase household real disposable income and boost consumption marginally will have the opposite effect. In this scenario, there is actually deflation in Norway in the first half of next year. In isolation, lower price inflation in Norway will push up the real interest rate, which will have a negative impact on consumption, house prices and housing investment. Admittedly, interest rates in Norway also decline, but this takes a little longer. The current account balance deteriorates by close to NOK 32 billion in 2001 and NOK 64 billion in 2002, but continues to show considerable surpluses. The sizeable fall in oil prices measured in krone terms is the main factor behind this. The krone nevertheless appreciates as a result of a weaker dollar and pound sterling (which we assume shadows the dollar). The import-weighted krone exchange rate appreciates almost immediately by a good 2 per cent. Even though lower price inflation contributes to higher real income growth, the real interest rate effect dominates developments for households in 2002. As a result, developments in GDP will be more contractive in Norway than in the EU, but far from as negative as in the US. The recession has a more severe impact on manufacturing industry than other industries.

### Substantial uncertainty, but small systematic errors in the estimates

In Economic Survey (ES) 1/1988, Statistics Norway presented quantified forecasts for the Norwegian economy for the first time, and since 1990 we have published with few exceptions projections for the same and subsequent year in February, June, September and December each year. A presentation of an evaluation of these 13 years of forecasting is provided below. The evaluation concentrates on growth in mainland GDP and the consumer price index (CPI). We have been particularly concerned with the extent to which the forecasts have deviated systematically from the outturn, and the spread in the deviations. We have also used this analysis to shed light on the uncertainty in the corresponding estimates for 2001 and 2002.

The consumer price index is not revised after its publication. However, there is often some deviation between the preliminary accounts figures for GDP that are published in February the year following the accounting year, and the final figures, which are available several years thereafter. These figures may also be revised after that time as result of more thorough revisions of the national accounts calculations. For this reason, the accounts figures used in our comparisons are of some importance to the evaluations. We have chosen to compare our figures with the preliminary accounts figures for three reasons. First, the final accounts figures for the years following 1997 are still not available. The forecasts for the Norwegian economy for those years must thus be compared with preliminary accounts figures irrespective. Second, the forecasts are made using preliminary accounts figures for the recent past. Third, in connection with the main revision in 1995, definitional changes were made and new primary statistics were incorporated, resulting in substantial changes in the final national accounts figures. As a result, forecasts and final figures are not linked to the same variables, and are thus not directly comparable.

### How accurate have the forecasts been?

Figures 1 and 2 show the average deviation between forecasts at different points in time and preliminary accounts figures for growth in mainland GDP and the rise in the CPI. The figures also provide an indication of the spread in the deviations in that they included three intervals around the average. These intervals are calculated using the historical spread, but do not tell how many of the deviations actually lie within the intervals. The intervals are chosen because by making some reasonable assumptions, i.e. that all deviations

**Figure 1. Estimates for percentage change in mainland GDP. Deviations from preliminary accounts figures and spread**
The intervals show 0.68, 1.04 and 1.65 standard deviations respectively

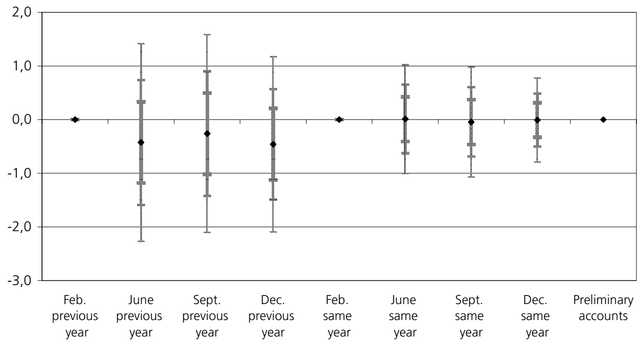



**Figure 2. Estimates for percentage change in the CPI. Deviations from accounts figures and spread**
The intervals show 0.68, 1.04 and 1.54 standard deviations respectively

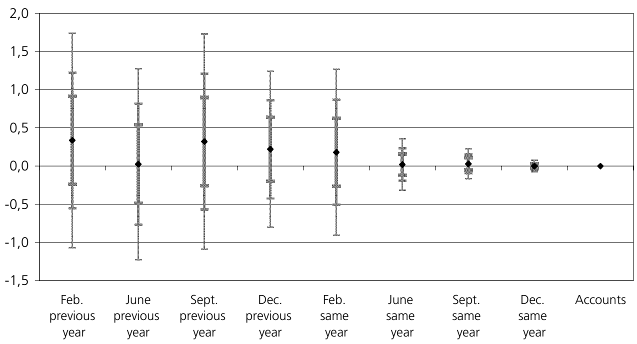



**Figure 3. Estimates for percentage change in mainland GDP**
The probability that the preliminary accounts figures will lie withing the three intervals is 50, 70 and 90 per cent respectively

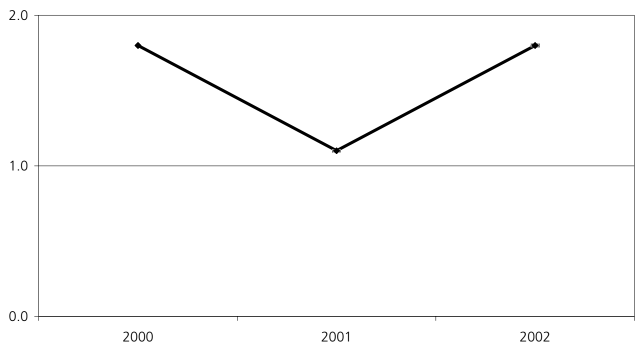



**Figure 4. Estimates for percentage change in the CPI**
The probability that the accounts figures will lie within the intervals is 50, 70 and 90 per cent respectively

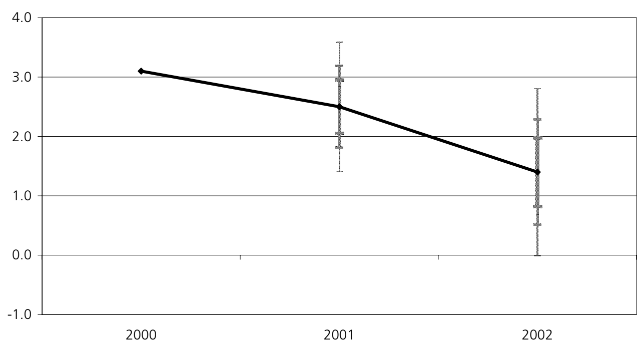


**Figure 5. Estimates for percentage change in mainland GDP published in February of the previous year. Absolute deviation from preliminary accounts**

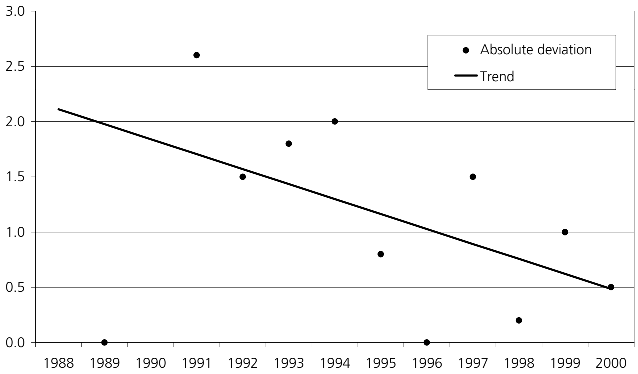



**Figure 6. Estimates for percentage change in the CPI published in February of the previous year. Absolute deviation from preliminary accounts**

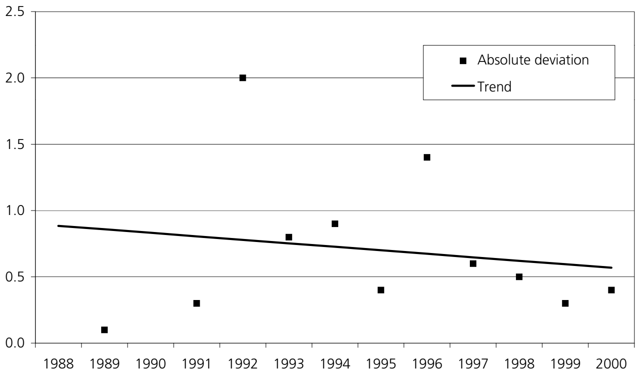



**Figure 7. Estimates for percentage change in mainland GDP published in February of the same year. Absolute deviation from preliminary accounts**

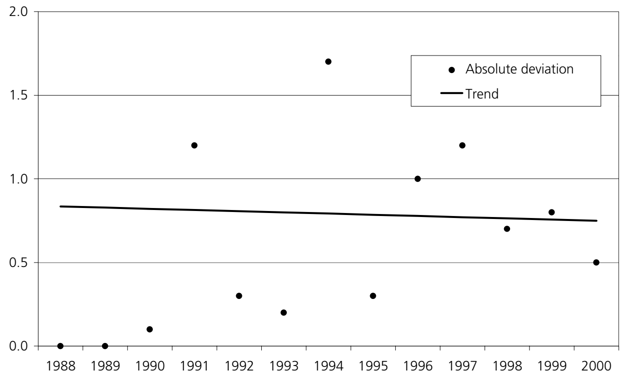
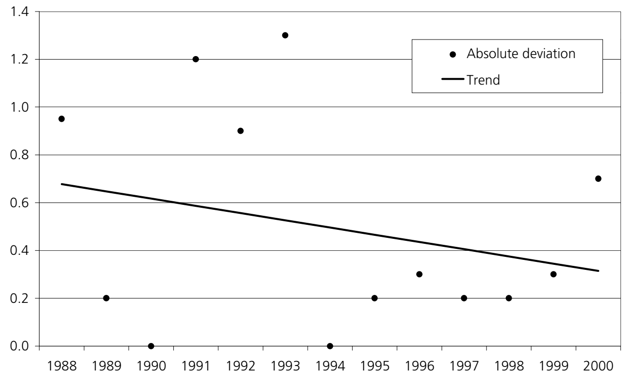



**Figure 8. Estimates for percentage change in the CPI published in February of the same year. Absolute deviation from preliminary accounts**




are independent and belong to a given statistical distribution (normal distribution), we can calculate the probability that future deviations will lie within the interval. Under this assumption the deviations between future estimates and accounts figures will remain within these intervals in respectively 50, 70 and 90 per cent of the cases.

On average, the first forecasts for mainland GDP growth two years ahead have been 0.3 percentage point higher than actual growth, estimated using preliminary accounts figures. In the subsequent quarters, the forecasts have been on average 0.4, 0.3, 0.5 and 0.1 percentage point below actual growth. According to preliminary accounts figures, average mainland GDP growth was by comparison 1.9 per cent for the period 1988-2000. The last three forecasts have been more accurate. Average estimates for the rise in the CPI have been more accurate and are off the mark by no more than 0.3 percentage point, compared with an actual rate of inflation of 3 per cent on average for the period 1988-2000. Whether the size of the average deviation qualifies as a systematic error can be tested statistically. Generally, it is more difficult to reject an assumption of no systematic error if the deviation is small, if the spread is substantial and if the number of observations is small. None of the average deviations can be characterized as systematic errors according to such a test.

The spread in the deviation between the growth projection for mainland GDP published in February of the year preceding the projection year and preliminary accounts has been substantial from an historical perspective. The forecasts in 1991 and 1999 were the farthest off the mark by 2.6 and 1.8 percentage points respectively. Of the 11 forecasts published at that time 5 deviate from the preliminary account figures by more than 1 percentage point. At the next time of publication, however, the difference between the forecasts and the accounts figures is substantially smaller, and one year prior to the publication of the accounts figures only 4 out of the 13 forecasts were off the mark by more than 1 percentage point. In the last three reports prior to the publication of the preliminary accounts figures, most of the forecasts deviate from the outturn by less than 0.5 percentage point.

A similar pattern applies to the forecasts for the rise in the CPI. The first five forecasts show fairly wide deviations from the final accounts, while the estimates from June of the same year are very accurate. Thereafter, there are virtually no estimates that deviate by more than 0.3 percentage point from the actual rise in the CPI. The variations in the preceding forecasts are 3-4 times as great. This is because the actual rise in the CPI is gradually known through the year.

**Forecasts for 2001 and 2002 are uncertain**
Figures 3 and 4 show the estimated uncertainty in the forecasts for 2001 and 2002 published in this report. Mainland GDP growth is projected at 1.1 per cent in 2001 and 1.8 per cent in 2002. Based on the analysis above there is a 50 per cent probability of a mainland GDP growth rate between 0.4 and 1.8 per cent in 2001 and between 0.8 and 2.8 per cent in 2002. With a probability of 70 per cent, percentage growth will range between 0.1-2.1 in 2001 and 0.3-3.3 in 2002. The interval between –0.5 and 2.7 in 2001 and –0.6 and 4.2 in 2002 covers the percentage growth with a probability of 90 per cent.

The rise in the CPI was 3.1 per cent in 2000. For 2001 and 2002, the CPI is projected to rise by 2.5 and 1.4 per cent. There is a 50 per cent probability that the forecasts for 2001 and 2002 turn out to be off the mark by less than 0.4 and 0.6 percentage point respectively. There is a 70/90 per cent probability that we are off the mark by less than 0.7/1.1 percentage points in 2001 and by 0.9/1.4 percentage points in 2002.

**Are there benefits associated with Statistics Norway's forecast activity?**
In an article published in Statistics Norway's "Økonomiske analyser" in December 1998 (in Norwegian only), Bjønnes, Isachsen and Stoknes compared forecasts from seven different institutions, including Statistics Norway. The comparison was limited to four economic variables for the period 1988-1996. Statistics Norway's score was average, neither among the best nor the worst. Furthermore, the study showed that forecasts based on the same growth as in the last observed year would on average have been the least accurate. Even though the purpose of model-based forecasting activity is to shed light on the causes of unexpected developments and to assess the importance of other assumptions in addition to being accurate, the study showed that the forecasts are more accurate than such a "naive" method.

Figures 5-8 show developments over time in the absolute deviation between forecasts and preliminary accounts figures for mainland GDP and the CPI when the forecasts are published in February the year prior to the forecasts and in February of the projection year. All the figures show that the forecasts have improved over time. This may reflect reduced economic uncertainty but also the benefits of the experience accumulated through forecasting activity.

## How accurate were Statistics Norway's forecasts for 2000?

Statistics Norway's Economic Surveys have for the past two years presented forecasts for macroeconomic developments in 2000 eight times. The first time was in Economic Survey (ES) 1/1999. Several of the Economic Surveys include alternative scenarios, but these are not included in this report. The table below shows changes in Statistics Norway's forecasts over time as result of the incorporation of new information and new assumptions.

It is not surprising that the greatest error has been a substantial underestimation of the oil price and thus the current account balance. When the forecast for 2000 was made towards the end of January 1999, oil prices were at a record-low level and the current account balance of the previous year was negative. We assumed that oil prices would increase somewhat and that the current account balance would improve from a deficit of NOK 9 billion in 1998 to a surplus of as much as NOK 66 billion in 2000. The actual improvement in the current account balance turned out to be far greater than estimated. Subsequently, the forecasts for these two variables have, with few exceptions, steadily approached the outturn. The forecasts for interest rates and import prices have followed the same pattern, with a clear underestimation in 1999, while the forecasts from February 2000 have been fairly accurate. In spite of this, the forecasts for mainland economic growth, prices and wages in 2000 have been fairly accurate throughout the period. The activity level in the mainland economy was underpredicted to some extent for a long period, and unemployment was slightly overestimated. For the first forecasts, this primarily reflected the underestimation of economic growth in 1999. Growth was slow, but not as slow as we assumed. Of the demand components, the main contribution to this development came from the forecasts for mainland investment. If electricity production had not increased over the forecast periode, and as known it is not easy to forecast the weather one to two years ahead, the projection for mainland GDP growth in 2000 would have been perfectly accurate in February 1999, as would the forecasts in several of the subsequent reports.

**Statistics Norway's forecasts for 2000**
Growth rates in per cent

| | ES1/99 | ES2/99 | ES3/99 | ES4/99 | ES1/00 | ES2/00 | ES3/00 | ES4/00 | ES1/01 |
|---|---|---|---|---|---|---|---|---|---|
| Consumption in households and non-profit organizations | 2.0 | 2.5 | 2.4 | 2.8 | 2.7 | 2.7 | 3.0 | 2.5 | 2.1 |
| General government consumption | 1.9 | 1.5 | 1.4 | 1.6 | 2.0 | 2.0 | 2.0 | 2.0 | 1.4 |
| Gross fixed investment | -6.4 | -8.9 | -8.8 | -6.9 | -5.8 | -3.4 | -2.3 | -2.1 | -2.7 |
| - Petroleum activities | -18.3 | -25.0 | -29.0 | -23.6 | -21.6 | -21.8 | -23.9 | -26.8 | -26.6 |
| - Mainland Norway | -2.5 | -2.5 | -1.5 | 0.0 | -0.6 | 2.8 | 4.0 | 3.4 | 3.5 |
| Exports | 6.9 | 7.9 | 9.1 | 8.5 | 6.2 | 4.5 | 3.6 | 2.3 | 2.7 |
| - Crude oil and natural gas | 13.9 | 15.2 | 19.0 | 15.6 | 10.1 | 11.1 | 6.7 | 6.2 | 6.4 |
| - Traditional goods | 3.0 | 3.5 | 3.2 | 4.9 | 5.0 | 4.5 | 4.9 | 3.5 | 3.0 |
| Imports | 0.2 | -0.8 | -1.1 | 0.8 | 0.8 | -1.1 | 1.0 | 2.0 | 1.2 |
| - Traditional goods | -0.2 | 0.6 | -0.3 | 2.8 | 2.2 | 0.1 | 4.0 | 3.6 | 2.4 |
| GDP | 2.8 | 3.1 | 3.6 | 3.3 | 2.7 | 3.1 | 2.7 | 2.3 | 2.2 |
| - Mainland GDP | 1.3 | 1.1 | 1.0 | 1.3 | 1.3 | 1.7 | 2.0 | 1.8 | 1.8 |
| Employed persons | 0.4 | -0.3 | 0.2 | 0.0 | 0.1 | 0.6 | 0.7 | 0.6 | 0.4 |
| Unemployment rate (level) | 3.9 | 3.9 | 3.5 | 3.5 | 3.6 | 3.6 | 3.3 | 3.4 | 3.4 |
| Wages per man-hour | 4.0 | 3.5 | 3.5 | 3.6 | 3.7 | 4.1 | 4.5 | 4.4 | 4.3 |
| Consumer price index | 2.7 | 2.1 | 2.0 | 2.1 | 2.4 | 2.8 | 3.0 | 3.1 | 3.1 |
| Export prices, traditional goods | 2.9 | 3.0 | 4.0 | 3.3 | 7.2 | 8.8 | 11.3 | 11.0 | 12.6 |
| Import prices, traditional goods | 0.9 | 0.9 | 1.1 | 1.7 | 2.4 | 4.3 | 4.8 | 5.3 | 6.1 |
| Money market rate (level) | 4.5 | 4.5 | 5.0 | 5.2 | 5.7 | 6.3 | 6.6 | 6.6 | 6.6 |
| Average borrowing rate (level) | 6.7 | 6.4 | 7.3 | 7.4 | 8.0 | 8.1 | 8.1 | 8.1 | 8.1 |
| Current balance, bill. NOK | 66 | 47 | 82 | 98 | 130 | 158 | 169 | 189 | 195 |
| Export market indicator | 5.5 | 5.9 | 5.9 | 6.4 | 6.9 | 6.9 | 7.0 | 7.0 | 10.3 |
| Crude oil price, NOK | 101 | 107 | 125 | 151 | 169 | 207 | 231 | 255 | 252 |

Source: Statistics Norway.