Economic Survey*

Prospects

2000 was a year of consolidation for the Norwegian economy. Growth in production and employment was very moderate and the economic boom of the last half of the 1990s ended. Cost inflation continued, but at a more moderate pace than in previous years even though unemployment was low and some labour market segments were tight. Despite sharp growth in oil revenues, fiscal policy was neutral while monetary policy shifted to a more contractionary stance. Surpluses in central government accounts and the balance of payments were record high. Excluding the rise in energy prices and the effect of exchange rate movements, price inflation remained moderate, partly because productivity growth in the mainland economy picked up following a sluggish trend in recent years. The picture of the Norwegian economy that emerges at the beginning of 2001 must therefore be said to be unusually favourable. Through our own and, not least, others' help, the Norwegian economy has experienced a soft landing following a relatively turbulent period.

However, the fall in unemployment from 5-6 per cent in the first half of the 1990s to close to 3 per cent the last three years has already given us four years of persistently stronger price and cost inflation than among our trading partners. The objective of today's monetary policy is to bring cost inflation in Norway down to the level in these countries, an objective that is expected to be attained in 2002. However, the effect of persistently higher cost levels on the scale of the internationally exposed sector cannot be expected to be exhausted so swiftly; the loss of market shares is expected to be considerable for some years ahead. In practice, the current orientation of monetary and fiscal policy therefore implies a continued contraction of the internationally exposed sector and thus an increased use of petroleum revenues in the future. The question of increasing the use of petroleum revenues today is therefore actually a debate on whether it is appropriate to plan on further increases in the years ahead.

A number of lessons may be drawn from developments in recent years. First, even a soundly implemented stabilization policy will have a price in the form of varying effects on sectors and groups. Sizeable fluctuations in nominal and real interest rates must necessarily have varying effects, not least across generations. The purpose of the planned supplementary tax on new commercial buildings was that it should result in reduced activity, in this case in the construction industry. This is the way policy instruments must be applied if stabilisation policy is conducted to counter shocks to the economy. However, politicians seem to back down when the use of instruments they have established (monetary policy) or they themselves have used (fiscal policy) actually function as intended. This must either imply an implicit desire to have another instrument – and therefore other groups – bear the brunt, or reduced ambitions for stabilization policy, which in practice may mean that the labour market, i.e. the unemployment queue, will be responsible for demand management.

* Translated from Økonomiske analyser 1/2001 by Janet Aagenæs and Helle Snellingen.

Second, many appear to be of the view that in recent years monetary policy has taken over as the main instrument in the conduct of stabilization policy, while fiscal policy in practice has had the aim of having a neutral effect. This description, however, disregards the important point that fiscal policy also has an effect through built-in stabilizers and that these, quantitatively and for long periods, have been more important in stabilizing cyclical fluctuations than explicit fiscal measures. In the formulation of budgetary policy, considerable emphasis should be placed on built-in stabilizers, as they swiftly and without time-consuming new measures make a solid contribution to stabilization policy. It is also important to bear in mind that monetary policy may have clear limitations; for example it may be a temporary phenomenon that a substantial interest rate differential between Norway and our trading does not have a greater impact on the exchange rate.

Third, we have once again registered the importance of being a small and open economy. Norway is very exposed to fluctuations in the international economy, whether this be rapid changes in market growth, commodity prices (such as the price of oil), exchange rates or interest rates. As a result of our petroleum resources, we now have a higher income per capita than most other countries in the world, but these resources have also contributed to making the Norwegian economy more unstable. Institutions and a political culture have been established to address these challenges. However, these can only compensate for our vulnerability, not eliminate the cause itself.

On the other hand, petroleum revenues can be used to increase our scope for manoeuvre. If we can draw any conclusion from three decades of petroleum revenues, it is perhaps that it is economic policy leeway itself that has been important. Our ability to make use of this should the need arise has given us an opportunity to avoid or counter recessions, and thus achieve more favourable economic developments. The actual use of petroleum revenues has naturally also been important, but hardly decisive. One obvious example is how we responded to the fall in oil prices in 1985/1986 compared with how we reacted in 1998/1999. In reality, the adjustments deemed necessary the last time were insignificant compared with what we experienced 15 years ago, even though it must also be taken into account that the challenges were far more modest. However, we cannot exclude the possibility that once again we will find ourselves in a demanding situation, when the very existence of scope for manoeuvre provides us with options and time to reflect.

As we are now approaching the peak for oil production, it is even more important to focus on how we shall develop our economy further when growth cannot be driven by oil. The return on the capital we are today saving in the form of the Petroleum Fund, etc. will still only account for a small share of our total revenue base. A key factor in this connection is that petroleum revenues are no different from other financial resources. Important decisions concerning consumption and investment must be based on an assessment of the social benefits and costs of various measures. Admittedly, the results of this analysis are conditioned on the profile we choose for the use of oil revenues in the economy. The decision to invest in one area or another, however, must be based on our evaluation of what we can derive from this investment and not whether oil revenues can finance this. Oil revenues shall give us increased scope for consumption. They must then not be used as an investment bank with return criteria that deviate from the requirements that are normally established for investment projects. If we manage to increase productivity growth by a few tenths of a percentage point each year, this will over time contribute to increased living standards beyond that which can be provided by drawing on the Petroleum Fund. The present dispute over the right to employ part of the petroleum wealth does not necessarily have this objective.

International economy

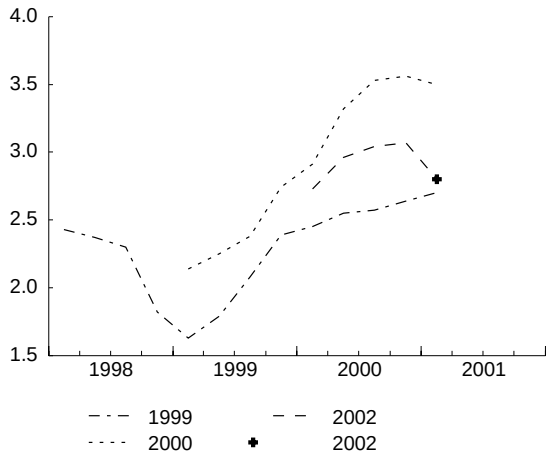
At the beginning of 2001, it seems clear that growth in the US, which has persisted for a long time, is now slowing. In the last two months, the forecasts for GDP growth in 2001 have been revised down from close to 3 1/2 per cent to a little more than 2 1/2 per cent, and in January the Federal Reserve lowered its key rates by a total of one percentage point. The important role of the US in international trade and capital markets means that this will have consequences for economic developments in the rest of the world. If the slowdown is not stronger than implied by the projections from Consensus Forecasts (CF), we nevertheless expect growth in the EU to remain fairly high. An improvement in the labour market, a more expansionary fiscal policy and higher investment to prevent capacity constraints may contribute to this. We are more in doubt as to what extent the very moderate improvement in the Japanese economy will tolerate a slowdown in the US, but so far CF's forecasts suggest stable developments in the period 2000 to 2002. As an average for our main trading partners, CF's forecasts imply growth of 2.8 per cent in both 2001 and 2002, against 3.5 per cent last year. More moderate economic growth and the decline in oil prices from the very high levels recorded last autumn generally point to slightly lower inflation in 2001 than in 2000. However, there are other factors which point to the opposite, and we therefore do not expect a dramatic reduction in inflation figures. Interest rates in the US have already been reduced this year, and the cuts in interest rates may well have been the first of several. Interest rates in the euro area may also fall slightly later this year.

International trade

World trade is expected to slow somewhat in 2001 and 2002 following a pronounced upswing towards the end of 1999 and very brisk growth last year. The OECD projects that international trade will expand in volume terms by close to 10 per cent this year and 8 per cent in 2002, compared with more than 13 per cent last year. An important driving force behind the expansion in world trade has been persistently high growth in US imports as a result of the strong cyclical expansion there. Now, expectations of lower economic growth in the US are correspondingly an important reason behind the expectations of slower growth in international trade the next two years. However, important demand impulses have also come from Asia, Latin America and Central and Eastern Europe, and these are to a greater extent expected to persist in the period ahead. In the EU, the depreciation of the euro has contributed to curbing the effect on imports of relatively sharp growth in domestic demand. It appears that this is now being reversed, and with the prospect of only a weak slowdown in economic growth the EU may therefore be a more important driving force in international trade the next few years.

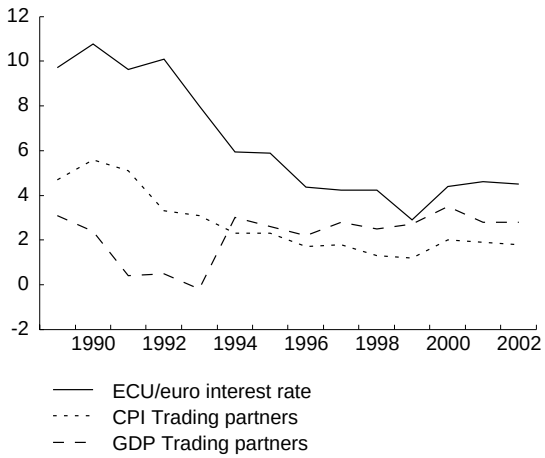
In step with the expansion in international trade in 1999, non-oil commodity prices rebounded after the fall in the wake of the Asian crisis. Measured in US dollar terms, prices still increased only marginally from 1999 to 2000 and remained at a low level compared with the average for the 1990s. However, this must be seen in connection with the appreciation of the dollar; measured in pound sterling or the euro, the rise in prices was pronounced from 1999 to 2000. Prices for metal goods and industrial raw materials rose at a considerably faster pace than food and agricultural prices. The Association of European Conjuncture Institutes (AIECE) projects a very moderate rise in dollar prices for non-oil commodities and a depre-

GDP growth forecasts for Norway's main trading partners for 1999 - 2002 given on different dates



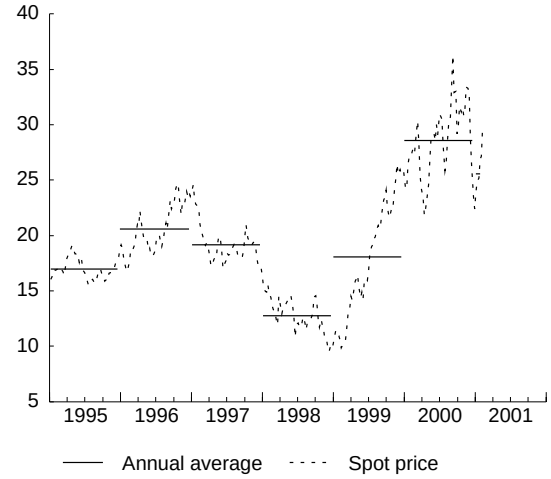
Source: Consensus Forecasts.

GDP and consumer price growth for Norway's main trading partners, and 3 months ECU/euro rate
Per cent



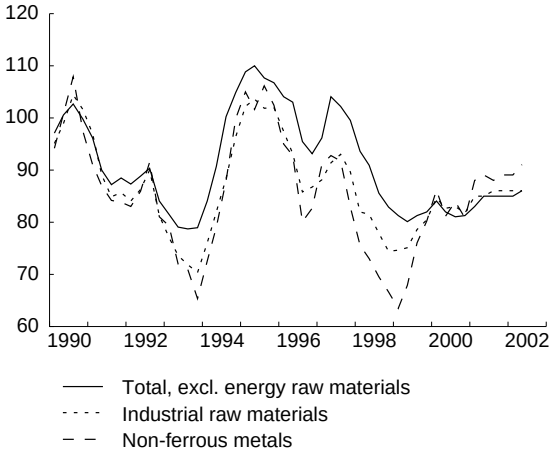
Sources: Consensus Forecasts and Statistics Norway.

Spot price, Brent Blend. 1995-2001
Dollar per barrel



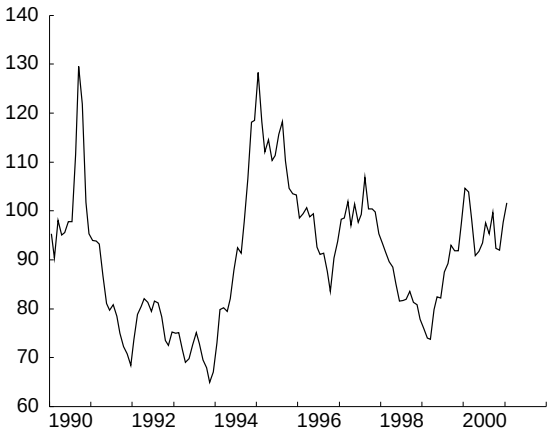
Source: Norges Bank.

Commodity prices on the world market 1990 - 2002
Dollar based indices. 1990 = 100



Sources: HWWA-Institut fur Wirtschaftsforschung and AIECE.

Aluminium price. 1990 - 2001
Dollar based index. 1979=100



Source: Norges Bank.

ciation of the dollar of about 5 per cent against the euro in 2001.

Less extreme oil market

The spot price of Brent Blend averaged a little more than USD 28 per barrel in 2000, compared with just under USD 18 per barrel in 1999. Oil prices fell from USD 33 to USD 22 per barrel from end-November to end-December last year. Oil prices have since edged up and stood at about USD 27 per barrel at the end of January this year. The average price so far this year is approximately the same as in December, a good USD 25 per barrel.

Several factors contributed to the sharp rise in oil prices through large parts of 1999 and 2000. In March 1999, OPEC decided to reduce production by 1.7 million b/d after having already cut production twice in 1998. Moreover, demand in Asia increased as a result of positive developments in the region following the crisis in 1997-1998, while economic growth in North America remained buoyant.

The steadily stronger upturn in the world economy was an important factor behind the continued rise in oil prices in 2000. OPEC increased production four times last year, but until the more dramatic fall in prices in December this only had a brief impact on oil prices. High oil prices in 2000 must also be seen connection with low figures for stocks of refined petroleum products in the US, and to some extent Europe, which led to growing concern about the ability to satisfy future consumption. It was not until the end of last year that stocks of heating oil in the US began to increase slightly.

Following the sharp fall in prices in December, OPEC decided at its extraordinary meeting in mid-January this year to reduce production by 1.5 million b/d from 1 February until the end of the year. In addition, oil exports from Iraq have been considerably lower the last 1-2 months even though the country concluded a new and expanded oil-for-food agreement with the UN in December.

As a result of the high oil price and expectations of slower economic growth in the US, the International Energy Agency (IEA) has reduced its estimate for global oil demand this year. Reduced demand for heating oil and an increase in stocks may contribute to curbing further price increases, but this is contingent on Iraq increasing its exports to the level prior to the latest agreement with the UN.

Formally, OPEC has for the time being suspended its guideline which implies that if the oil price should remain outside the range USD 22-28 per barrel for twenty days, the cartel would adjust production to the level required to bring prices back to that range. At the same time, OPEC responded with production cuts

in January earlier than implied by the guideline. We therefore believe that any fall in oil prices below USD 22 per barrel will be short-lived and expect the price to stabilize within OPEC's target range.

Towards slower growth in the US

Following a decline in GDP growth from an annualized 5.6 per cent in the second quarter to 2.2 per cent in the third quarter, preliminary figures for the fourth quarter show a further fall in the growth rate to an estimated 1.4 per cent. While the third quarter figures were pushed down by a temporary and sharp decline in government expenditure, the fourth quarter figures were influenced by a contraction in business investment for the first time in more than eight years. There is no longer any doubt that a change is under way in the US. CF's latest forecasts point to GDP growth of 2.6 per cent in 2001, against 5.2 per cent in 2000. This implies a downward revision of growth projections of close to one percentage point in just two months. Low growth towards the end of 2000 means that the growth carry-over into 2001 is very low. Even the low projection of 2.6 per cent therefore requires growth of nearly 3 1/2 per cent through the year, whereas in January Federal Reserve Chairman Greenspan predicted zero or negative growth in the first quarter of 2001. The possibility of a further downward revision in growth forecasts can therefore not be excluded.

In early January, the Federal Reserve reduced interest rates by half a percentage point. This came between the regular FOMC meetings, and most observers were highly surprised. At the FOMC meeting at the end of the same month, the Federal Reserve again lowered interest rates and announced that it would reduce them further if necessary. On the one hand, this provides a positive impetus and thus increases the probability of a soft landing. Many nevertheless perceived the cut in interest rates as a risk signal because it suggests that the Fed is concerned about the present economic developments. The downward revision of economic forecasts for this year must also be seen in the light of a number of recent signs of a slowdown. Retail trade is sluggish and consumption growth in the fourth quarter was noticeably lower than earlier in 2000. Export growth was also more moderate. Even more dramatic was the fall in investment in the fourth quarter. Business investment has expanded every quarter since 1992 and has been an important driving force behind the prolonged period of expansion. The picture, however, is not entirely clear-cut; the increase in sales of new homes in December was the highest in more than seven years and the number of new jobs in January was considerably higher than expected. This is nevertheless not sufficient to change the overall impression that a pronounced slowdown in growth is taking place in the US. Following a historically long period of expansion, this slowdown has been expec-

Economic forecasts for Norway's main trading partners
Annual percentage change

Country (Share of Norwegian exports[1])	1999	2000	2001	2002
USA (8.3)				
GDP	4.2	5.1	2.6	3.5
Consumer prices	2.2	3.4	2.7	2.4
Unemployment rate[2] (level)	4.2	4.0	4.4	4.5
Japan (4.0)				
GDP	0.8	1.9	1.8	1.9
Consumer prices	-0.3	-0.7	-0.3	0.0
Unemployment rate[2] (level)	4.7	4.7	4.7	4.7
Germany (11.3)				
GDP	1.6	3.1	2.7	2.7
Consumer prices	0.6	1.9	1.7	1.5
Unemployment rate[2] (level)	10.5	9.5	8.8	8.3
France (6.0)				
GDP	2.9	3.2	3.0	3.0
Consumer prices	0.5	1.7	1.4	1.4
Unemployment rate[2] (level)	11.2	9.7	8.8	8.2
United Kingdom (10.9)				
GDP	2.3	3.0	2.6	2.6
Consumer prices[3]	2.3	2.1	2.2	2.4
Unemployment rate[2] (level)	4.3	3.7	3.6	3.6
Italy (3.0)				
GDP	1.4	2.7	2.6	2.7
Consumer prices	1.7	2.5	2.2	1.8
Unemployment rate[2] (level)	11.4	10.7	10.0	9.5
Sweden (12.8)				
GDP	3.8	4.0	3.4	3.0
Consumer prices	0.3	1.3	1.8	2.0
Unemployment rate[2] (level)	5.6	4.7	4.1	3.7
Denmark (7.5)				
GDP	2.1	2.6	2.2	2.2
Consumer prices	2.4	2.9	2.3	2.1
Unemployment rate[2] (level)	5.2	5.2	5.1	5.1
The Netherlands (6.3)				
GDP	3.9	4.0	3.5	3.2
Consumer prices	2.2	2.5	3.6	2.4
Unemployment rate[2] (level)	3.2	2.8	2.5	2.3
Memorandum items:				
GDP EU	2.4	3.3	2.9	2.9
GDP trading partners	2.7	3.5	2.8	2.8
CPI euro-zone[4]	1.2	2.3	2.1	1.8
CPI trading partners	1.2	2.0	1.9	1.8
Euro interest rate	2.9	4.4	4.6	4.5

[1] Exports of traditional goods. Figures for 2000 in per cent, according to Monthly Bulletin of External Trade, Statistics Norway.
[2] Per cent of labour force.
[3] Exclusive of interest rates.
[4] The ECB targets the harmonised consumer price index, HCPI, which in general may deviate somewhat from CPI.
Sources: Consensus Forecasts. Figures for unemployment rate for Sweden, Denmark and the Netherlands are from OECD. The estimates for interest rates are from Statistics Norway.

ted for a long time and we can point to several reasons why it finally materializes.

Business investment, which has generated strong growth impulses throughout the cyclical upturn, has gradually been curbed by the rise in oil prices and interest rates through 1999 and 2000. The appreciation of the US dollar in the last half of the 1990s must also have gradually eroded the competitiveness of US companies. Growth in private consumption was also reduced through 2000, which must be seen in connection with developments in the stock market. The sharp rise in equity prices has been an important reason for the pronounced growth in private consumption in recent years, but as a result of the fall in equity prices in 2000 changes in household wealth are now contributing to pushing down consumption growth. Moreover, delayed effects of interest rate increases have the same impact. High oil prices also mean that consumers have less money at their disposal and thus reduce their demand for other goods. This effect is stronger in the US than in Europe because the US has very low environmental taxes on oil products and consumers thus feel the effects of changes in prices for crude oil more clearly in prices for final products, in addition to the fact that they use more oil, particularly petrol. However, the increase in consumption has also been fuelled by higher employment and rising real wages, and the positive contribution from real wages is expected to continue in the period ahead. The trade balance may also make a positive contribution. Expectations that the growth rate differential between the EU and the US will narrow point to a reduced negative impetus from foreign trade the next few years. This underpins expectations of a fairly mild slowdown in 2001. CF projects that the growth rate will pick up again in 2002. Forecasts far ahead in time are highly uncertain, but in addition to any improvement in the current account, lower interest rates and President Bush's promised tax cuts may bolster growth.

Inflation in the US has picked up markedly over the last few years and stood at 3.4 per cent in 2000, more than one percentage point higher than in 1999. The rise in oil prices is an important reason for this, but other prices also began to rise at a faster pace in the first half of 2000. Very high capacity utilization and record-low unemployment may contribute to amplifying domestic inflationary impulses in the period ahead. Admittedly, because of strong productivity gains, this has resulted in only a very moderate rise in labour costs so far, but the acceleration in the second half of 2000 was still noticeable. With the economy now starting to expand at a slower rate, productivity growth may be curbed inasmuch as there is a tendency for productivity to grow more strongly during an upturn than during a downturn. This would then reduce the scope for increasing wages without an accompanying increase in unit production costs, and this in turn might lead to stronger price pressures in the US economy. If the reversal of the dollar exchange rate continues, external inflationary impulses will have the same effect. Lower oil prices and more moderate growth the next few years may, on the other hand, contribute to lower price inflation. This mixed inflation picture combined with the prospect of lower growth contributes to considerable uncertainty about developments ahead. Perceptions have also changed rapidly; as late as November last year the OECD recommended an increase in interest rates of 0.5 percentage point in 2001, whereas the economic debate in January was concentrated on how much interest rates would be reduced through the year.

The slower growth rate in the economy points to a further decline in interest rates in the period ahead, but signs of continued inflationary pressures may restrain the Federal Reserve. There is still considerable uncertainty concerning the magnitude of the dampening effects in the US economy. A slowdown approximately on a par with that envisaged by CF will mean lower growth, but probably not major problems. However, the shift to lower growth may also be hard and brutal, and the very low growth rate in the fourth quarter of 2000 may be an indication that the likelihood of this has increased. Even though current account imbalances have so far not created problems, they remain an important element of uncertainty. If confidence in the US economy wanes, the trade deficit may trigger a rapid depreciation of the dollar, and higher inflation may then result in renewed increases in interest rates. In that event, the overall cooling effects may entail an abrupt slowdown in the US.

Continued uncertainty about Japan

Japan's GDP fell in the second half of 1999 but growth picked up last year, and Consensus Forecasts now projects annual growth at a little less than 2 per cent this year and next. This entails a pronounced upward revision of forecasts from one year earlier. In 1999, exports were hampered by a marked appreciation of the yen against the dollar, but this trend was reversed last year. Combined with sharp growth in public sector investment, higher exports are the main factor behind the improvements in the Japanese economy in 2000. Industrial production has expanded every month for over a year, but this situation was reversed when the latest figures showed a slight decline. Household consumption developed better than many feared last year, but remains sluggish. This may be related to low wage growth, higher unemployment and an unusually high saving ratio. On the other hand, tax reductions made a positive contribution, and a possible improvement in the labour market may result in a slight decline in the saving ratio this year. Despite high government debt, the authorities approved a new government stimulus package as late as November 2000. It is difficult, however, to envisage robust growth that is solely based on impetuses from

the public sector and abroad. The interest rate in Japan is only 0.25 per cent, thereby providing limited possibilities for a further decline in order to stimulate the economy. At the same time, prices are falling, and even such low nominal interest rates thus entail positive real interest rates. Signs of a faster and stronger than expected slowdown in the US have also increased uncertainty about developments in Japan. Dependence on external growth impulses is considerable, and if the reduced projections for the US materialize, the forecasts may well be revised further down for Japan as well.

Peak has been passed in Europe

The forecasts for EU countries indicate that GDP growth will slow somewhat this year and next after having been about one percentage point higher in 2000 than in 1999. One important explanation is the prospect of a slowdown in growth in the US. Higher export demand has been and still is a very important factor behind the upturn in Europe. Perhaps the greatest uncertainty is now linked to how great this dependence is – to what extent Europe itself will be able to expand when the US locomotive slows down.

The upturn began in the second half of 1999 and continued into the first half of last year when domestic demand rose markedly in the EU, primarily fuelled by household demand and private investment. Higher employment, higher real wages and tax reductions have stimulated private consumption, while the rise in oil prices has reduced growth in real disposable income. In France, the introduction of a 35-hour working week has resulted in higher employment, but also lower growth in real wages as a concession for reduced working hours. Exports expanded at an even stronger pace than domestic demand, primarily as a result of high international economic growth and – for the euro countries – a steadily weaker euro. The increase in exports was particularly strong in Germany and Italy, which in previous years had been particularly hard hit by the Asian crisis. Exports from the UK, on the other hand, have been hampered by a strong currency. The rise in exports from the EU has been accompanied by an approximately equivalent increase in imports, thereby reducing the contribution of foreign trade to GDP growth.

Consensus Forecasts expects slightly lower growth in the EU area the next two years, primarily as a result of slower growth in the US. With estimated growth of close to 3 per cent this year, the growth rate will nevertheless be fairly high compared with the last 20 years. Substantial tax reductions in Germany and France will contribute to an expansionary fiscal policy in the projection period and, combined with rising employment, this is expected to contribute to maintaining brisk domestic demand. Monetary policy may also be eased somewhat. Moreover, household demand will stimulate continued investment in capacity expansion. Some countries have also approved reductions in corporate taxes. In addition to the slowdown in the US, continued moderate growth in Japan implies a weak external growth impetus. If the euro also appreciates, some of the euro area's competitive edge will be eroded. With moderate changes in the exchange rate, the currency will still be weak compared with the 1990s. The relatively weak euro and the expansionary fiscal policy are two important reasons why the slowdown in the US will not necessarily have serious consequences for Europe.

In 2000, the EU experienced a marked acceleration in inflation. In the euro area, inflation in 2000 came to 2.3 per cent, measured by the Harmonized Index of Consumer Prices, which is noticeably higher than the European Central Bank's target (less than 2 per cent). Most forecasts indicate that inflation will be very close to this target again in 2001. The acceleration in prices has taken place all over the euro area in recent months, and in September to November last year none of the euro countries satisfied the ECB's inflation target. However, inflation edged down again in December. The main reasons for higher inflation have been the rise in oil prices through the second half of 2000 and the euro's sharp depreciation. The domestic inflationary impetus remains very moderate, and inflation excluding energy and food remained at or below 1.5 per cent throughout 2000. Outside the euro area, both Sweden and the UK recorded low inflation rates through 2000, while in the period ahead inflation in these countries is expected to be closer to the average for the euro area. In the next two years, falling oil prices and, for the euro countries, a stronger euro are expected to reduce the external inflationary impetus. Moreover, wages in most EU countries are expected to show a very moderate increase. These forecasts are uncertain, however, and with relatively robust economic growth, a steadily tighter labour market and a possibly delayed feed-through of high oil prices to domestic prices, increased domestic inflationary pressures cannot be ruled out. The inflation picture in the EU is therefore also somewhat mixed, a factor that may explain why expectations concerning interest rates vary. Last year, the European Central Bank raised interest rates by a total of 1.75 percentage points, and in November the OECD projected a further rise of 0.5 percentage point this year. However, slower growth and the reduction in interest rates in the US have prompted a number of analysts to project a decline in interest rates. With the prospect of moderate growth and slightly lower inflation, but still a noticeably milder slowdown than in the US, we conclude that the ECB may reduce interest rates somewhat later this year.

The relatively auspicious outlook for the EU may be jeopardized by developments outside the area. Despite the upswing in domestic activity, continued export growth is important for the favourable forecasts.

A harder-than-expected landing in the US may therefore have noticeable consequences for the EU, but the uncertainty lies in the strength of these effects. Export growth may also be hampered if the euro should appreciate more strongly than expected, thereby eliminating the euro area's exchange rate competitive advantage. Oil prices represent another element of risk. If these prices again rise, growth in real income will slow, which will reduce both domestic demand and enterprises' willingness to invest. Moreover, a renewed increase in oil prices might trigger a tightening of monetary policy. A tightening of monetary policy might also be triggered by internal developments in the EU, particularly higher-than-projected wage growth as a result of higher price inflation and a tighter labour market. In any intensified effort to combat increasing inflationary pressures, the economic upturn may quickly suffer.

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.

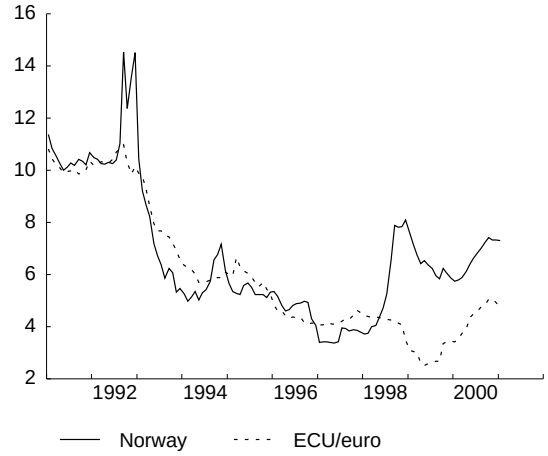
made in the National Budget for 2001. The figures illustrate that the central government is now swiftly increasing its total net wealth.

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.

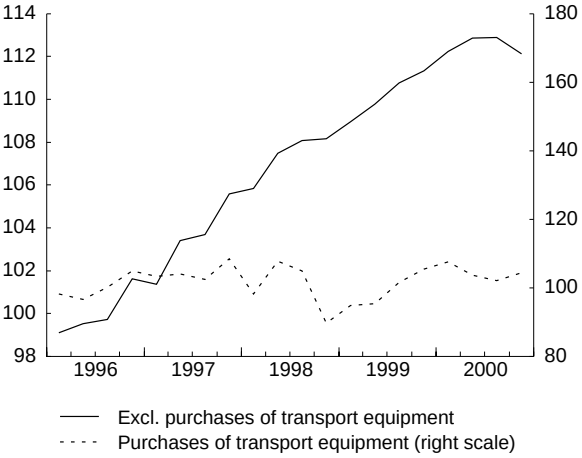
Even though the interest rate differential between the Norwegian krone and the euro has narrowed from 4 to about 2 1/2 per cent over the last two years, the krone has generally appreciated against the euro in this period. In this same period, the krone has largely depreciated against the US dollar and 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.

3-month Euro-rates
Per cent



Source: Norges Bank.

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



Source: Statistics Norway.

Sluggish trend in demand through 2000

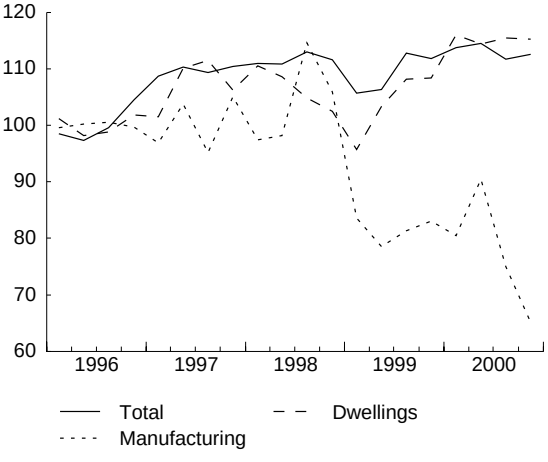
Mainland demand rose by 2.2 per cent in 2000. However, more than half of the annual growth reflected the carry-over at the beginning of the year, and growth through the year was relatively weak. This pattern is repeated for both household consumption and mainland investment.

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.

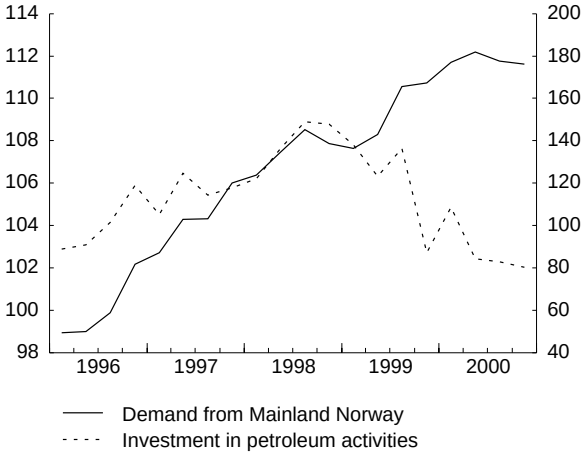
The pronounced u-shaped path of interest rates over the last two years means that we can see no clear traces of the rise in interest rates in the second half of 2000 in the figures on household income for the year

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



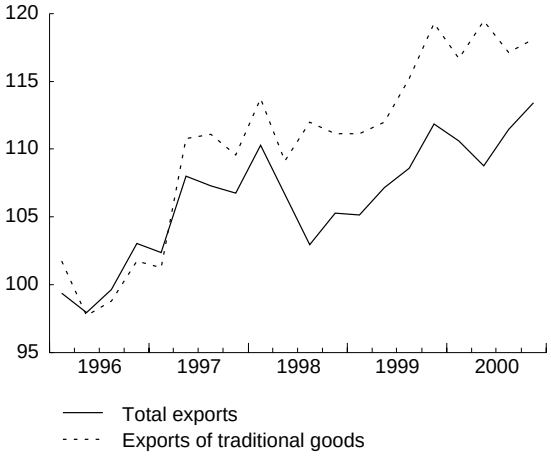
Source: Statistics Norway.

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



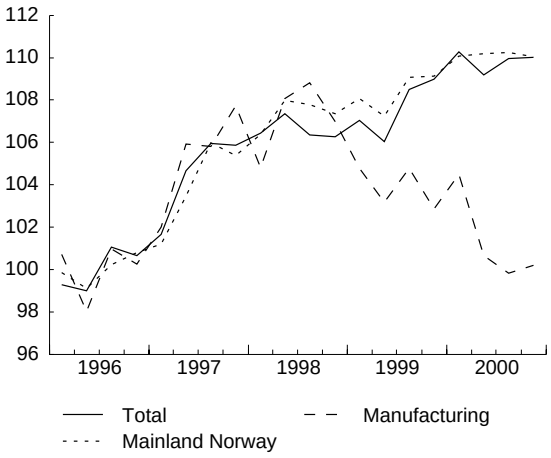
Source: Statistics Norway.

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.

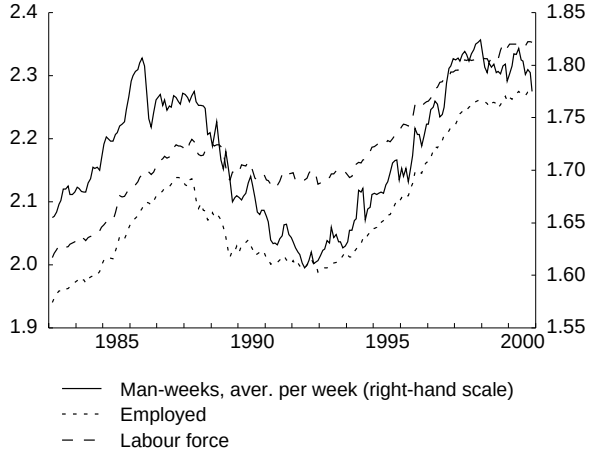
Rainy weather boosted mainland growth

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

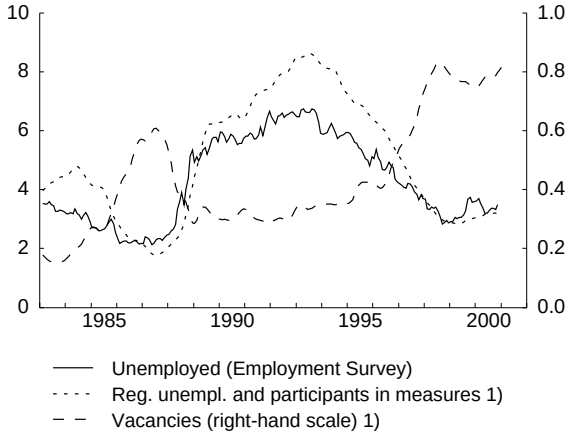
The number employed increased by 0.4 per cent in 2000, slightly less than in 1999. Employment growth is now approximately on a par with growth in the working population, whereas it was considerably higher through the five-year period 1994-1998. As in 1999, employment growth in private service industries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

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



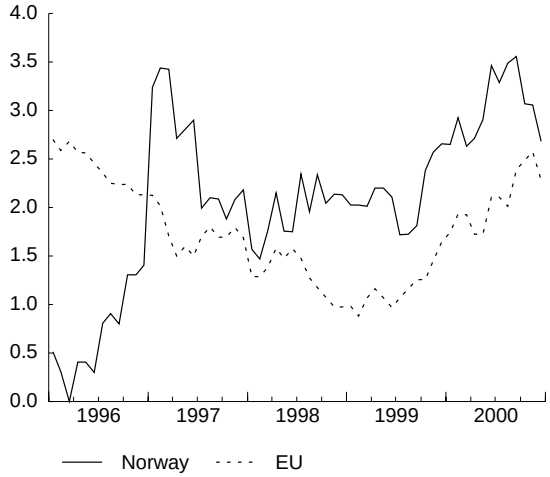
Source: Statistics Norway.

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



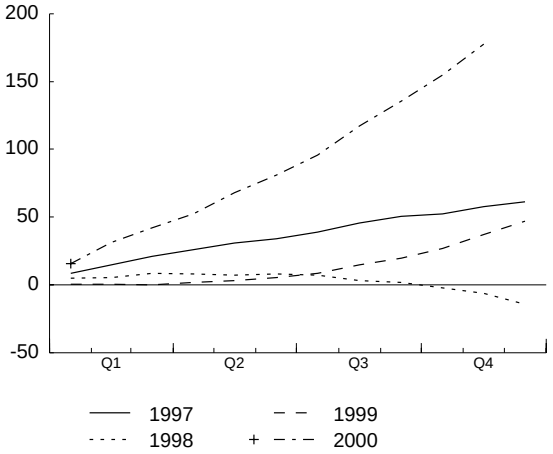
1) Backwards adjusted for breaks in the series from january 1999.
Sources: The Directorate of Labour and Statistics Norway.

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

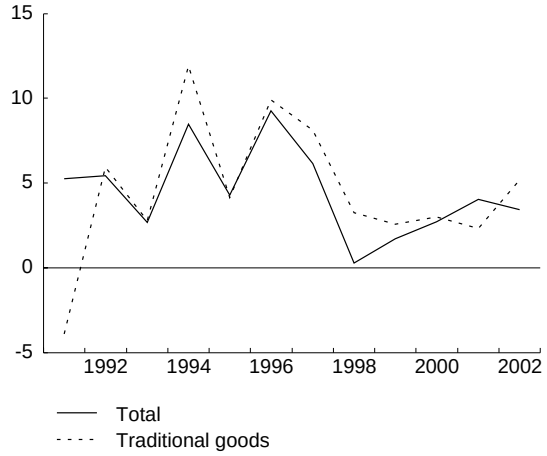
The picture of the Norwegian economy that emerges on the basis of the preliminary national accounts figures for 2000 and our forecasts for the next few years must be said to be unusually favourable. Now that the boom in the mainland economy appears to be over and production is close to trend levels, 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	Forecasts				
		2001			2002	
	2000	SSB	MoF	NB	SSB	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

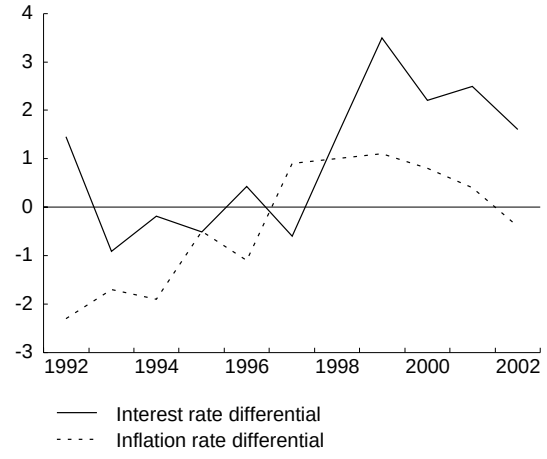
[1] Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.
[2] Change in stockbuilding. Per cent of GDP.
[3] The NB figures are technical assumptions. The interest rate forecast reflects the implicit expectations of 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



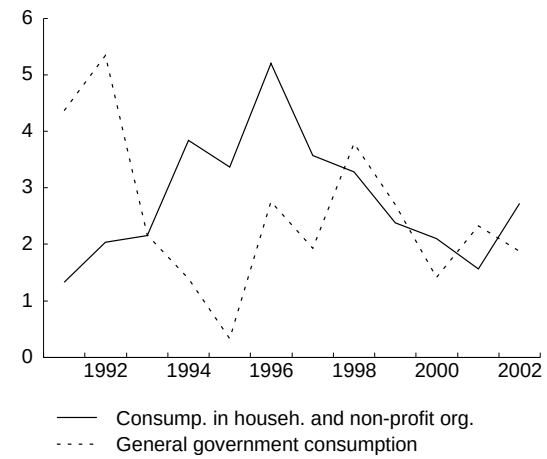
Source: Statistics Norway

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 avera-

ge rise in commodity prices for a number of important Norwegian export goods, such as alumunium.

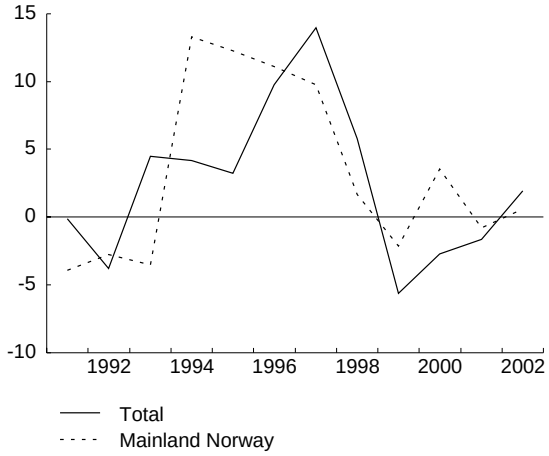
International price inflation quickened in 2000. The consumer price index in the US rose by 3.4 per cent, against 2.2 per cent in 1999, while inflation in the EU was 2.1 per cent, against 1.2 per cent the previous year. The sharp increase in oil prices and high activity levels in the world economy were 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.

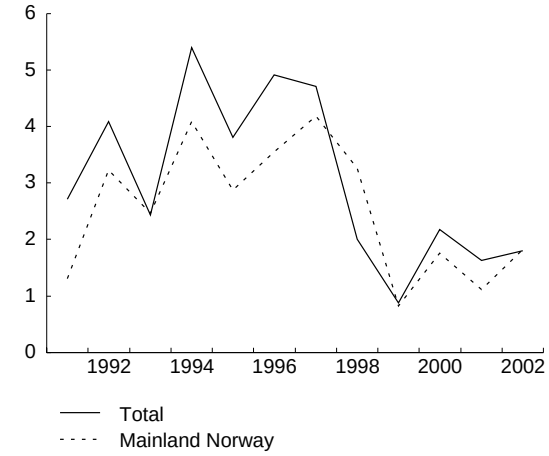
The prospect of lower growth in the US economy has already resulted in a pronounced decline in money market rates in the US. With the prospect of more moderate growth in the international economy, further interest rate increases by the ECB are now less probable. We have assumed that nominal rates at 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

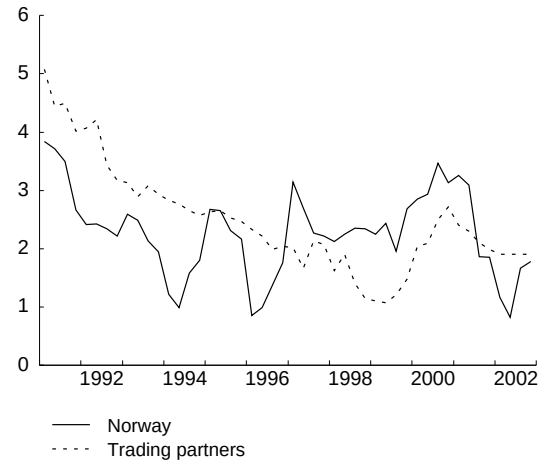


Source: Statistics Norway

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

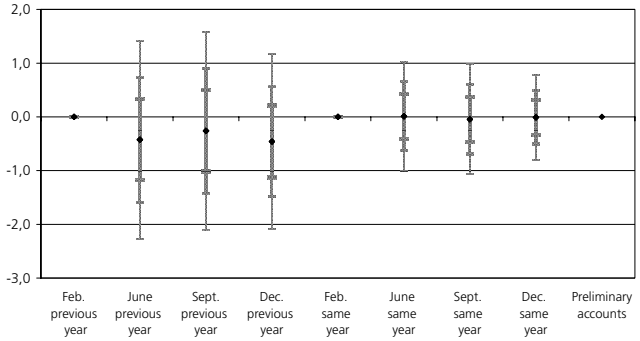


Figure 2. Estimates for percentage change in the CPI. Deviations from accounts figures and spread
The intervals show 0.68, 1.04 and 1.54 standard deviations respectively

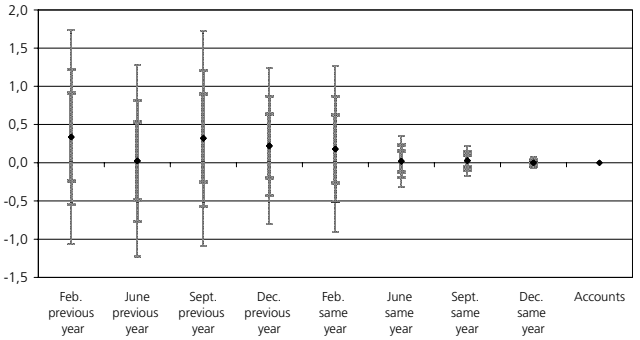


Figure 3. Estimates for percentage change in mainland GDP
The probability that the preliminary accounts figures will lie withing the three intervals is 50, 70 and 90 per cent respectively

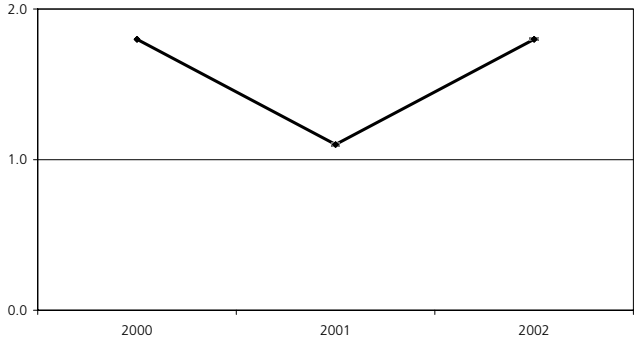


Figure 4. Estimates for percentage change in the CPI
The probability that the accounts figures will lie within the intervals is 50, 70 and 90 per cent respectively

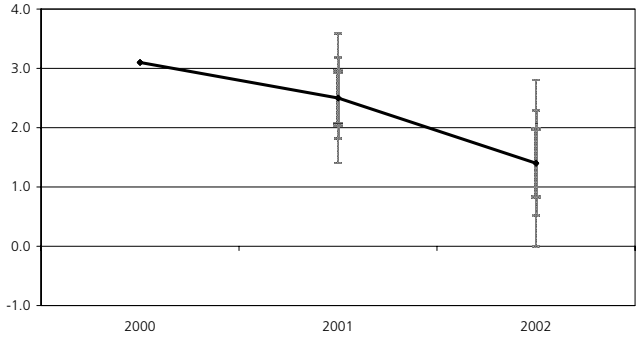


Figure 5. Estimates for percentage change in mainland GDP published in February of the previous year. Absolute deviation from preliminary accounts

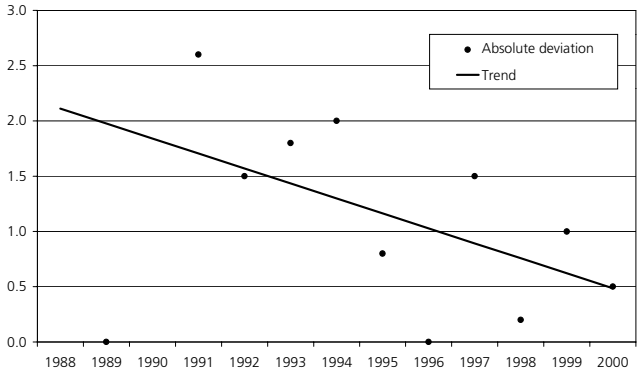


Figure 6. Estimates for percentage change in the CPI published in February of the previous year. Absolute deviation from preliminary accounts

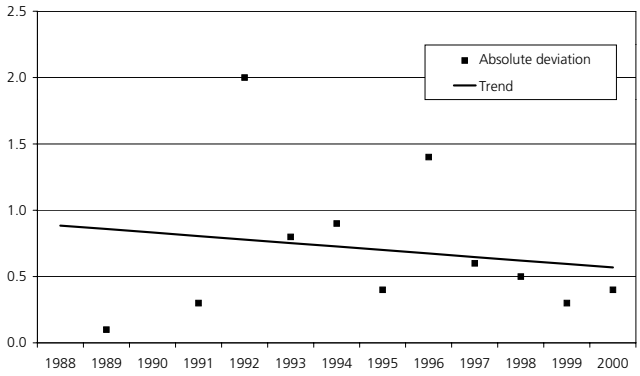


Figure 7. Estimates for percentage change in mainland GDP published in February of the same year. Absolute deviation from preliminary accounts

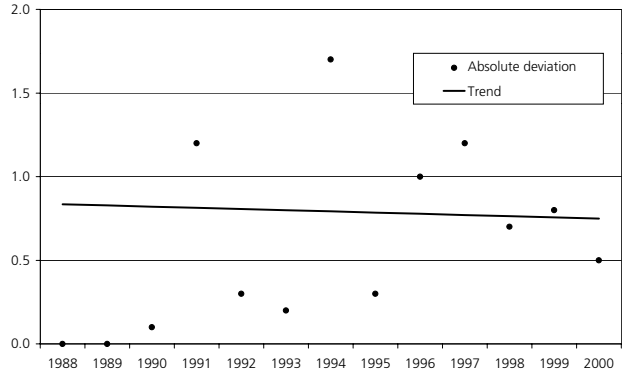
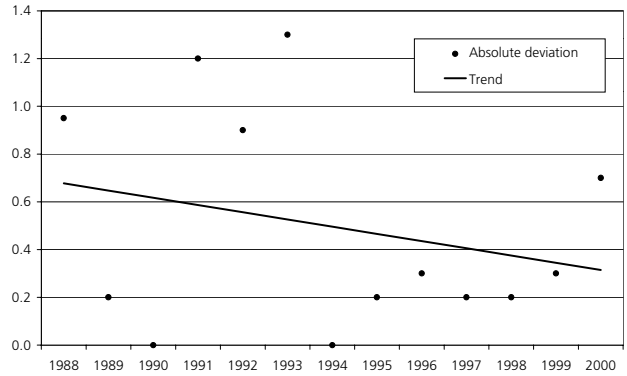


Figure 8. Estimates for percentage change in the CPI published in February of the same year. Absolute deviation from preliminary accounts



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.

General government sector and economic policy in 2000

Fiscal policy

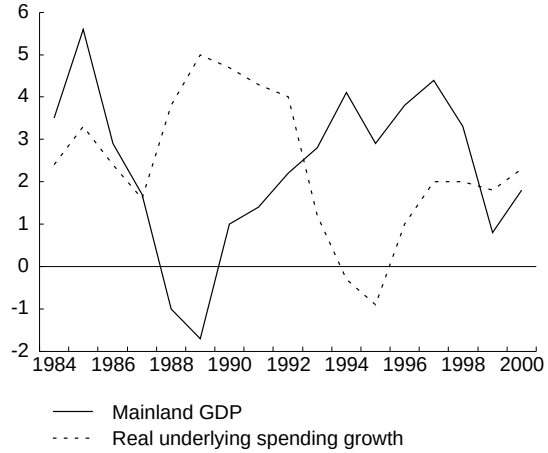
The management of central government expenditure and revenues has a considerable influence on aggregate domestic demand and activity in the mainland economy. In the formulation of fiscal policy, emphasis is placed on its contribution to stabilizing current economic developments without undermining the scope for manoeuvre in the medium and long term. Over the past 20 years, fiscal policy has primarily been oriented towards reducing cyclical fluctuations in the Norwegian economy. In effect, real underlying growth in central government spending was lower than mainland GDP growth through both upturns 1984-1986 and 1993-1998, while the opposite was the case during the downturn in 1988-1992. The Ministry of Finance's non-oil, cyclically adjusted budget indicator net of interest payments shows virtually the same picture. However, according to this indicator the discretionary part of fiscal policy contributed to amplifying the cyclical effects in 1985 and 1998, and to a moderate extent also in 1984 and 1993. Furthermore, both this indicator and central government underlying spending growth indicate that there was some fiscal slippage later in the cyclical upturn in the 1990s, and the budget for 1998 can be characterized as almost cyclically neutral. Measured by the Ministry of Finance's non-oil, cyclically adjusted budget indicator net of interest payments, the fiscal stance was tightened again in 1999 by a good 3/4 per cent of mainland GDP. For 2000 and 2001, the fiscal stance can again be characterized as approximately neutral, as measured by this indicator.

In view of the guidelines for transfers between the central government budget and the Government Petroleum Fund, the most appropriate approach would be to view the balance on the central government budget and the Government Petroleum Fund as a whole when comparing central government budget key figures over time. A comparison with the figures for the total surplus on the central government budget and the Government Petroleum Fund shows that a deficit of about NOK 44 billion in 1993 was reversed to a surplus of about NOK 70 billion in 1997. The improvement in the budget balance primarily reflects the sharp upswing in the economy, combined with a substantial increase in central government revenues from petroleum activities. The total surplus on the central government budget and The Government Petroleum Fund was subsequently more than halved between 1997 and 1998. The decline must be seen in connection with the fall in the average oil price from NOK 135 in 1997 to NOK 96 in 1998. Partly because a share of central government revenues from petroleum activites are paid with a lag, the total surplus on the central government budget and The Government Petroleum Fund only increased by about NOK 6 billion between 1998 and 1999, in spite of moderately higher oil prices in 1999 compared with 1997. The lag in the payment of high petroleum taxes for 1999 and a further rise in oil prices in 2000 contributed to a further increase of close to NOK 123 billion in the surplus for 2000.

Government budget for 2000

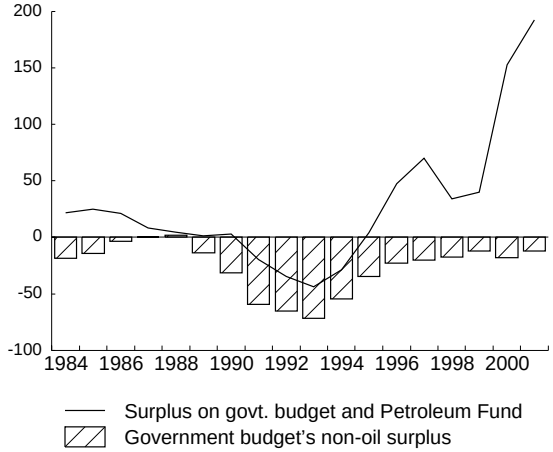
Proposition no. 32 to the Storting, the Final Budget Bill (including social security) for 2000, shows estimates for the accounts for 2000. The total surplus on the central government budget and the Government Petroleum Fund, including the return on the Fund, is estimated at NOK 162.6 billion. This is more than four times the amount for 1999, and twice the amount

Government budget's real underlying spending growth and growth in mainland GDP. 1984 - 2000
Percentage change from previous year



Sources: Statistics Norway and Ministry of Finance.

Surplus on government budget and Government Petroleum Fund. 1984 - 2000 and forecast for 2001
NKr billion



Source: Ministry of Finance.

Key figures for central government budget and the Government Petroleum Fund. 1999-2001
In billions of NOK

	1999[1]	2000[2]	2001[3]
Total revenues	**499.6**	**641.1**	**679.4**
Revenues from petroleum activities	75.6	184.4	206.0
Revenues excl. petroleum revenues	424.0	456.8	473.4
Taxes from Mainland Norway		379.7	407.5
Other revenues	44.3	49.2	56.9
- Total expenditure	**467.0**	**489.6**	**502.4**
Expenditure on petroleum activities	31.0	23.3	17.0
Expenditure excl. petroleum activities	436.0	466.2	485.4
= Surplus before transfer to the Government Petroleum Fund	**32.6**	**151.6**	**177.0**
- Net cash flow from petroleum activities	44.6	161.1	189.0
= Non-oil surplus	**-12.1**	**-9.5**	**-12.0**
+ Reversed from the Government Peteroleum Fund	18.5	9.5	12.0
= Surplus on the central government budget	**6.4**	**0.0**	**0.0**
+ Net allocation to the Government Peteroleum Fund	26.1	151.6	177.0
+ Interest and dividends, Government Petroleum Fund	7.3	11.0	15.2
= Total surplus on the central government budget and the Government Petroleum Fund	**39.9**	**162.6**	**192.2**

[1] Accounts 1999.
[2] Estimated accounts 2000.
[3] Approved budget 2001.
Source: Ministry of Finance.

Some key concepts

General government net lending indicates the transaction-based change in the sector's net claims on and indebtedness to households, enterprises and the foreign sector. Net lending emerges as the difference between general government total revenues and expenditure. The definition in the national accounts is:

Net lending = Gross saving – Gross fixed investment – Net expenditure on land – Net capital transfers

Net lending for general government is the sum of net lending in the central and local government sector. General government net lending is stated in accrued values. If net lending for general government is stated in book values, adjustments must be made for the difference between book and accrued taxes. Book taxes are taxes that are paid in a period, while accrued taxes are taxes that have been assessed, but not necessarily paid in the same period.

The Ministry of Finance's non-oil, cyclically adjusted budget indicator net of interest payments shows changes in the surplus on the government budget adjusted for petroleum revenues and expenditure, cyclical conditions and factors that are assumed to have no effect on the level of activity in the economy. The following is done to arrive at an estimate for how much of the change in the budget balance is due to cyclical conditions: For direct and indirect taxes, the isolated effect on the budget balance of a deviation in output growth from trend growth is calculated. Separate calculations are also made of how the budget is influenced by the deviation from trend in new car registrations. Furthermore, payments of unemployment benefits are adjusted by starting with the deviation from a trend-estimated unemployment level. When unemployment is higher than this, the balance is adjusted for estimated additional expenditure on unemployment insurance, and the same approach is applied in the case of lower unemployment.

The indicator for real underlying spending growth in the government budget is based on central government budget expenditure minus expenditure on petroleum activities, unemployment benefits and interest expenditure. In addition, adjustments are made for accounting factors that influence the comparability of budget figures for subsequent years.

that was expected in the approved central government budget for 2000. The increase in the surplus compared with the approved budget is ascribable to a revenue increase of NOK 100 billion, including interest income and dividends in the Government Petroleum Fund, while expenditure increased by an estimated NOK 16.6 billion. The main explanation for the upward revision of the revenue estimate is an increase in the net cash flow from petroleum activities.

The net cash flow from petroleum activities is estimated at NOK 161.1 billion in 2000. Like the total budget surplus, this represents almost a fourfold increase from 1999 and a twofold increase in the estimate in the National Budget for 2000 (NB2000), while this is in line with the estimate in the National Budget for 2001 (NB2001). The main reason behind the sharp increase is the rise in oil prices through 1999 and 2000. In NB2000 it was assumed that the average oil price would be NOK 125 per barrel both in 1999 and 2000, whereas the figures in NB2001 were revised upwards to NOK 141 for 1999 and NOK 235 for 2000. The final result for 2000 was NOK 252 per barrel. In addition to the price rise, oil and gas production increased from NOK 227 million Sm^3 oil equivalents in 1999 to an estimated NOK 252 million Sm^3 in 2000 (NB2001), which was still close to NOK 20 million Sm^3 less than expected one year earlier.

The total surplus on the central government budget and The Government Petroleum Fund, excluding the net cash flow from petroleum activities and the return on the Petroleum Fund, shows the budget balance in terms of the non-oil deficit. For 2000, the deficit is now estimated at NOK 9.5 billion, which is NOK 3.8 billion less than in the approved budget for 2000. The improvement primarily reflects a substantial upward adjustment of the estimates for direct and indirect tax revenues. The debt restructuring at NSB Gardemoen AS, the postponement of the sale of bank shares and increased expenditure as a result of compensation to the local government sector for an increased number

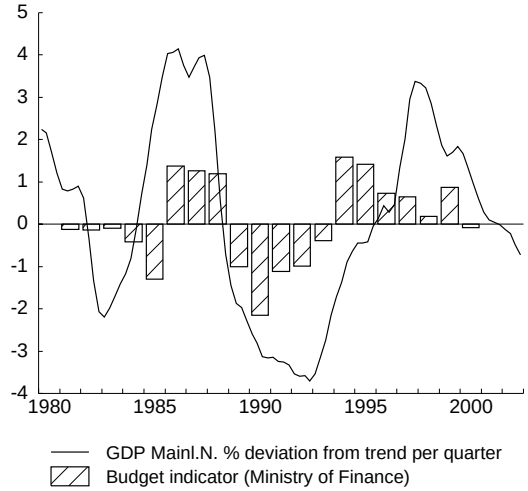
Cyclical fluctuations and fiscal policy

Over the past 20 years, annual growth in mainland GDP has averaged about 2.2 per cent. Growth in activity levels in the economy has, however, not been stable over time, but has varied around a more long-term average trend (trend growth). During an upturn, actual growth in the level of activity is normally higher than trend growth, while the opposite applies during a downturn. The economy can be said to be in an boom when the activity level is higher than the estimated trend path, while a recession features an activity level that is below trend growth. As the underlying trend in the activity level cannot be observed directly, the delimitation of cyclical phases will to some extent be of a tentative nature.

The figure shows the percentage deviation from an estimated trend in seasonally adjusted, smoothed quarterly figures for mainland GDP. Rising series indicate an upturn and falling series a downturn. The series lies above the zero line during a boom, and below during a recession. The figure illustrates the wide cyclical fluctuations in the mainland economy over the past 20 years, with two pronounced recessions and two pronounced booms. Furthermore, the periods 1984-1986 and 1993-1998 can be characterized as upturns, while 1980-1983, 1988-1992 and 1999-2000 can be characterized as downturns.

The figure also shows developments in the Ministry of Finance's budget indicator. Changes in the fiscal stance are partly the result of explicit government measures (discretionary policy) and partly the result of built-in stabilizers. Built-in stabilizers ensure that fiscal policy to some extent dampens fluctuations without explicit government measures. The most important are unemployment benefits and tax revenues. During a downturn, unemployment benefits are higher and tax revenues lower than in an upturn, which has an automatic expansionary effect. The Ministry of Finance's budget indicator provides an estimate for the discretionary part of policy by showing the change in the non-oil, cyclically adjusted central government budget surplus net of interest payments as a percentage of mainland GDP. When the budget indicator is above the zero line, the fiscal stance is described as contractionary, and expansionary when it is below the zero line. However, the indicator does not capture all the economic effects of government measures in an appropriate way. One example of this is the primary school reform in 1997, where the central government covers the local government sector's extra investment costs. In principle, these investments are debt-financed so that the central government only makes annual transfers to the local government sector to cover interest and principal payments on these loans. According to the indicator, the expansionary impact of the primarily school reform is limited, but long-term, while the actual impact was substantial and short-term. Another case in point is the investments in the Gardemoen rail service in the latter half of the 1990s. Against this background, the fiscal stance was more expansionary during this period than implied by the indicator.

Cyclical fluctuations and fiscal policy. 1980-2001



Source: Statistics Norway and Ministry of Finance.

of vacation days and expenditure for the wage settlement for teachers have the opposite effect. According to the estimates for the accounts, real underlying spending growth in the central government budget was about 2 1/4 per cent from 1999 to 2000, 1/4 per cent lower than expected in NB2000.

Central government budget for 2001

The approved budget for 2001 shows a total surplus on the central government budget and the Government Petroleum Fund, including the return on the Petroleum Fund, of NOK 192.2 billion, 29.6 billion more than last year. The non-oil surplus is estimated at NOK 12.0 billion, i.e. an increase of NOK 2.5 billion on last year. The central government's net cash flow from petroleum activities is estimated at NOK 189.0 billion based on an average oil price of NOK 180 per barrel in 2001. Payment in arrears of some taxes accruing in 2000 and an assumed increase in production explain the expected increase in the cash flow between 2000 and 2001 in spite of expectations of lower oil prices. Petroleum revenues are estimated to increase by almost NOK 22 billion, while expenditure on petroleum activities is estimated to decline by close to NOK 6 billion as a result of lower investment.

Real underlying spending growth in the approved central government budget for 2001 is estimated at close to 2 1/2 per cent, or marginally higher than the previous year. Measured by the Ministry of Finance's non-oil, cyclically adjusted budget indicator net of interest payments the fiscal stance is neutral. The budget agreement between the Government and the centrist parties involved substantial changes to the revenue side of the budget, but no change in the tightness of the budget, as measured by the budget indicator. An elimination of the approved tax on new commercial buildings will only influence accrued, not book taxes and will thus have no effect on the indicator. About half of the real growth in central government spending in 2001 is linked to social security expenditure and other rule-based benefit schemes. Increases in spending on sick pay and disability pensions alone account for about 40 per cent. Among the policy prio-

rities, increased transfers to the local government sector, increased allocations to the health sector and development aid represented substantial budget items. On the revenue side, the general VAT rate was raised from 1 January, while VAT on services and halved VAT on food will be introduced as from 1 July. In addition, the tax on electricity was increased from 1 January, while petrol taxes are reduced in two steps, from 1 January and 1 July. A continuation of all the rules and rates from 2001 and 2002 will thus in isolation result in a more expansionary budget next year.

The Government Petroleum Fund

One of the purposes of the Government Petroleum Fund is to ensure transparency in the use of petroleum revenues over the central government budget. This is reflected in the accounting guidelines, which stipulate that the central government's net cash flow from petroleum activities shall be transferred to the Government Petroleum Fund after it is recorded as income in the central government budget. Interest and dividends on the Fund's capital are recorded as income directly in the Fund, and are thus not included in the central government budget. The Fund's expenditure consists of a transfer from the Fund to the central government budget, which is to cover the non-oil deficit. In addition, up to half of the increase in central government lending to the state banks can be covered by drawing on the Fund, but thus far the authorities have not exercised this right. The Fund's capital may also vary as a result of exchange and capital gains/losses, but this is recorded as income or expenses in the Fund. Norges Bank is responsible for the management of the Government Petroleum Fund. The Fund is managed using a benchmark portfolio where equities account for 40 per cent and bonds for 60 per cent of the portfolio. The entire Fund is invested in foreign securities, with Europe accounting for about 50 per cent, North America for 30 per cent and Asia/Oceania for 20 per cent.

Figures from Norges Bank show that the market value of the capital in the Government Petroleum Fund came to NOK 356.9 billion at the end of September. Of this amount, NOK 142.7 billion was invested in equities and NOK 208.0 billion was invested in bonds and other interest-bearing securities. In the third quarter of 2000, the Bank started tactical asset allocation, which amounted to NOK 6.2 billion at the end of the quarter. In NB2001, the capital in the Fund is estimated to reach about NOK 385.1 billion at the end of 2000, which implies an increase of more than 70 per cent compared with one year earlier.

The approved budget for 2001 implies a net transfer to the Government Petroleum Fund of NOK 177.0 billion, based on an average oil price of NOK 180 per barrel. When this sum, combined with the estimated interest income and exchange and capital gains, is added to the Fund, the market value of the total capital in the Government Petroleum Fund is estimated at around NOK 589.1 billion at the end of 2001. This is the equivalent of more than 40 per cent of expected GDP in 2001.

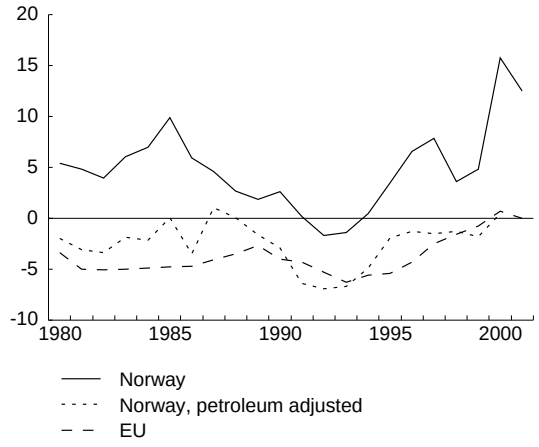
General government net lending in Norway and the EU

General government net lending is one of several indicators of the general government sector's financial position. Net lending reflects the transaction-based share of growth in general government net claims (including the value of capital deposits, see separate box on key concepts). If net lending is on average equal to zero over time and we disregard valuation changes, general government claims are stable. Positive net lending implies an increase in claims over time, while negative net lending implies a decrease in claims.

The figure shows developments in net lending for Norway and the EU over the past 22 years. It illustrates that while EU countries have consistently conducted a fiscal policy through the period that has increased general government net debt, Norway has pursued a policy that has increased general government net claims.

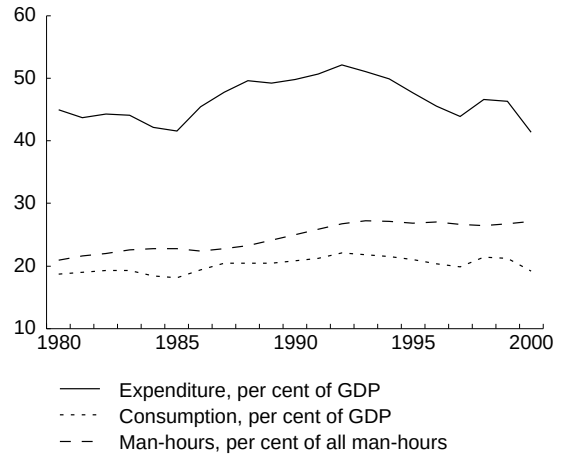
The high level of general government net lending in Norway must be seen in connection with the central government's net cash flow from petroleum activities. Excluding this cash flow, the central government's net capital deposits in petroleum activities, financial income in the Government Petroleum Fund and the difference between accrued and paid-in petroleum taxes from the estimate, we arrive at an indicator of the change in general government non-oil net claims (or net debt). This measure of non-oil net lending indicates the extent of the general government sector's current oil dependence, i.e. the share of general government net expenditure that is financed by petroleum revenues on a current basis. We see that non-oil net lending has been consistently negative through the past 22 years, but less so than the average for the EU.

General government net lending 1980 - 2001
Per cent of GDP. Forecasts for 2001



Sources: MoF, OECD and European Commission.

Expenditure, consumption and man-hours worked in general government sector. 1980-2000



Source: Statistics Norway.

General government

According to preliminary estimates, the general government sector recorded a surplus of about NOK 221 billion in 2000, measured as accrued net lending, while the surplus came to NOK 57.5 billion in 1999. Higher petroleum revenues made a substantial contribution to the general government surplus in 2000. Book net lending for the central government sector is estimated at NOK 164.4 billion in 2000, i.e. an improvement of NOK 109 billion on the previous year. The preliminary estimate for the local government sector's book net lending is –9.7 billion.

According to preliminary estimates, general government consumption rose by 1.4 per cent between 1999 and 2000, measured at constant prices. This is slightly higher than growth in the mainland economy last year, but below average GDP growth over the last 25 years. General government gross fixed investment was about the same as in the previous year, measured at constant prices. Central government investment declined by 2 per cent, while local government investment increased by about 1 per cent. Central government investment in the education sector and health and care sector fell sharply, while investment in other services (public administration, etc.) and defence pushed up the average for the sector. General government total spending, including capital spending, increased in nominal terms by 5.2 per cent in 2000. General government spending thus came to 41.4 per cent of GDP in 2000.

General government employment increased by 9 000 last year. In the period 1980-2000 as a whole, the number of employed increased by 252 000, representing 193 600 new man-years. Employment in the local government sector rose by about 232 800, while employment in the central government sector increased by 19 300. This has increased the share of general government employment from almost 24 per cent in 1980 to about 31 per cent in 2000. The bulk of the increase occurred in the 1980s. The general government sector's share of the number of man-hours worked has increased from 21 per cent in 1980 to 27 per cent in 2000. Part-time employment is also more widespread in the public sector than in other sectors, but the difference is small.

Central government

According to preliminary estimates, central government consumption rose by 1.0 per cent between 1999 and 2000, measured at constant prices. Military consumption fell by about 1.0 per cent, while civilian consumption rose by 1.6 per cent. Consumption of civilian, public services and health, social and care services showed the strongest increase with a volume growth of close to 2.0 per cent, while consumption of education services increase by about 1 per cent.

Product inputs (intermediate inputs) in the central government sector grew by slightly more than consumption between 1999 and 2000. Measured at constant prices, the increase was 1.4 per cent. In the civilian central government sector, product inputs increased by about 2.5 per cent, while product inputs in the military sector fell by about 2 per cent.

Key figures for general government. 1996-2000

	1996	1997	1998	1999*	2000*
Net lending					
General government, accrued values, NOK bn.	66.7	85.8	39.6	57.5	220.9
General government, book values, NOK bn.	51.5	83.1	53.9	55.6	164.4
Local government, book values, NOK bn.	-1.0	-1.8	-6.2	-9.8	-9.7
General government, accrued values, per cent of GDP	6.6	7.9	3.6	4.8	15.7
The size of general government					
General government expenditure, per cent of GDP	45.5	43.9	46.6	46.3	41.4
General government consumption, per cent of GDP	20.3	19.9	21.4	21.2	19.2
Man-hours worked, per cent of total employment	27.0	26.6	26.4	26.7	27.1
Taxes, recorded, per cent of GDP	41.5	42.3	43.4	41.8	40.8

* Preliminary figures.
Sources: Statistics Norway and Ministry of Finance.

Local government revenues and expenditure by type. Preliminary figures. NOK bn.

	1998*	1999*	2000*	Percentage change 98/99	Precentage change 99/2000
A. Current revenues	**178 163**	**188 748**	**201 035**	**5.9**	**6.5**
1. Property income, interest	4 291	6 124	6 300	4.,7	2.9
2. Tax revenues	88 640	89 968	93 259	1.5	3.7
3. Other current transfers	81 746	88 818	97 106	8.7	9.3
Transfers within general government	79 103	86 141	94 350	8.9	9.5
Other transfers	2 643	2 677	2 756	1.3	3.0
4. Operating surplus[1]	3 486	3 838	4 370	10.1	13.9
B. Current expenditure	**170 608**	**183 140**	**194 556**	**7.3**	**6,2**
1. Property expenditure, interest	4 829	6 053	6 250	25.3	3,3
2. Transfers to private sector	19 958	20 620	21 900	3.3	6.2
3. Other current transfers	1 261	1 863	1 456	47.7	-21.8
Transfers within general government	1 515	1 607	1 656	6.1	3.0
Transfers to municipal enterprises	-254	256	-200	.	-178.1
4. Local government consumption	144 560	154 604	164 950	6.9	6.7
Compensation of employees	116 331	125 060	133 200	7.5	6.5
Product inputs	40 459	43 345	45 009	7.1	3.8
Depreciation	8 907	9 660	10 600	8.5	9.7
Product purchases for households	3 448	3 624	3 780	5.1	4.3
Operating surplus[1]	3 486	3 838	4 370	10.1	13.9
-Fees	28 071	30 923	32 009	10.2	3.5
C. Saving (A-B)	**7 555**	**5 608**	**6 479**	**-25.8**	**15.5**
D. Capital expenditure	**13 752**	**15 373**	**16 200**	**11.8**	**5.4**
1. Net fixed investment	14 635	15 694	16 989	7.2	8.3
Gross fixed investment	23 542	25 354	27 589	7.7	8.8
-Depreciation	8 907	9 660	10 600	8.5	9.7
2. Net purchases of land	-966	-279	-739	.	.
3. Capital transfers to business activities	83	-42	-50	-150.6	.
E. Total expenditure (C+D)	**184 360**	**198 513**	**210 756**	**7.7**	**6.2**
F. Net lending (A-E)	**-6 197**	**-9 765**	**-9 721**	**.**	**.**

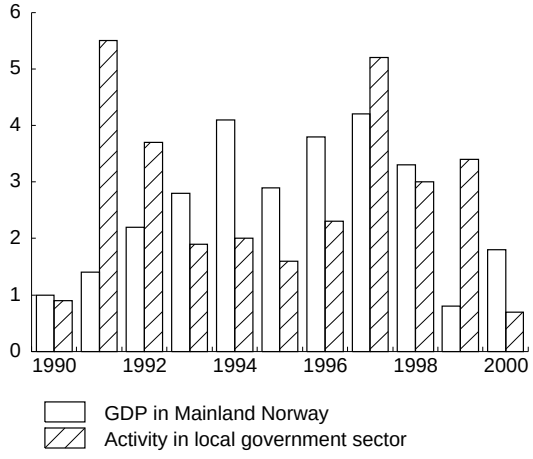
[1] Operating surplus in local government water supply, sewer system and refuse disposal services.
Source: Statistics Norway.

Gross fixed investment was reduced by about 2 per cent in volume terms between 1999 and 2000. Civilian investment declined by 3 per cent, while military investment increased by about 2 per cent. The decline in investment in the education sector and the health and care sector was the main factor that contributed to pushing down the figures for the civilian central government sector.

Local government

Preliminary estimates for the local government sector point to weak growth in economic activity in the local government sector last year. We use an indicator where changes in employment measured in man-hours, product inputs measured at constant prices and gross fixed investment at constant prices are weighted together. By this measure, local government activity increased by about 1.0 per cent between 1999 and 2000. This is considerably lower than the 1.8 per cent estimate for volume growth in mainland GDP. Product inputs, the number of man-hours worked and investment showed weak growth.

Activity in local government sector and GDP in Mainland-Norway. 1990-2000
Percentage volume change from previous year



Source: Statistics Norway.

The figure shows growth in local government activity over the past ten years compared with general cyclical developments in Norway, as indicated by mainland GDP growth. In 1991, 1992, 1997 and 1999, activity growth in the local government sector was higher than mainland GDP growth, while the opposite was the case in 1993-1996, 1998 and 2000. The particularly strong activity growth in the local government sector in 1997 primarily reflected strong volume growth in investment and product inputs, which must be seen in connection with the primary school reform.

At current prices, labour costs in the local government sector increased by close to 7 per cent between 1999 and 2000, primarily reflecting an increase in hourly wage costs of about 6 per cent. In addition, the number of man-hours worked rose by 0.7 per cent, corresponding to about 7 000 man-hours.

The number of employed in the local government sector increased by 1.4 per cent in 2000. The strongest growth in employment was in other local government services where the number of employed increased by 1.8 per cent. In the education sector and the health and care sector, the number of employed rose by 1.1 per cent and 1.4 per cent respectively. The number of man-hours worked showed a somewhat smaller increase than the number of employed, rising by 0.7 per cent. This must be seen in connection with the number of vacation days, which was two days lower in 2000 than in 1999 owing to the days on which official public holidays fell.

According to preliminary estimates for the local government sector, gross fixed investment rose by 1.3 per cent in 2000, measured at constant prices. Investment in the health and care sector showed a sharp increase, reflecting the implementation of the action plan for the elderly. Investment in the education sector declined.

Local government book net lending came to –9.7 billion in 2000. The deficit was thus the same as the level recorded in 1999. Local government expenditure increased by 6.2 per cent in nominal terms, while revenues rose by 6.5 per cent.

Monetary policy and financial developments

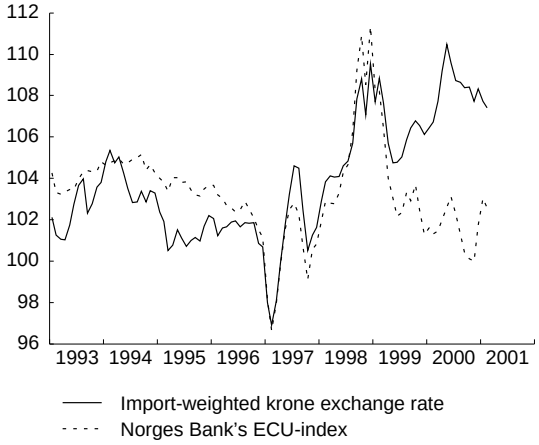
Monetary and exchange rate policy

The objective of Norway's monetary and exchange rate policy is set out in the Government's regulation on the exchange rate system for the Norwegian krone of 6 May 1994. This states that Norges Bank's "conduct of monetary policy shall be oriented towards maintaining a stable krone exchange rate against European currencies, based on the range of the exchange rate maintained since the krone was floated on 10 December 1992. In the event of significant changes in the exchange rate, monetary policy instruments shall be oriented with a view to returning the exchange rate over time to its initial range". The regulation does not specify an exact central rate or fluctuation margins for monetary management; nor does it specify the currencies against which the krone shall remain stable. Between October 1990 and December 1992 the Norwegian krone was pegged to the EU's currency unit, the ECU, and up to 31 December 1998 Norges Bank continued to use the exchange rate between the Norwegian krone and the ECU as an indicator of the krone's value against European currencies. Between 10 December 1992 and up to the beginning of May 1994, which can be considered the regulation's reference period, one ECU was generally worth between NOK 8.25 and 8.40, with an average of NOK 8.33 per

The import-weighted krone exchange rate

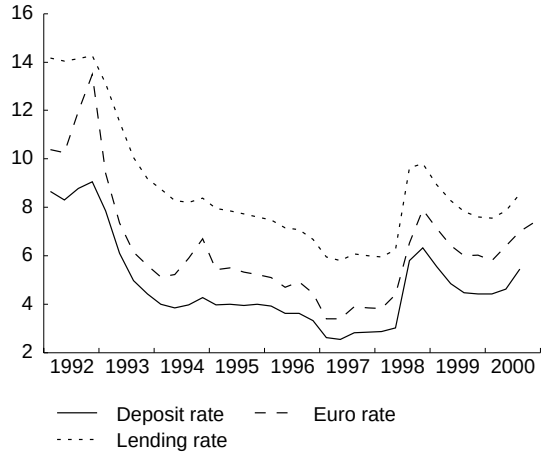
According to the Exchange Rate Regulation, Norges Bank shall stabilize the krone against "European currencies", operationalized as the euro. In 1998, countries that are now EMU countries accounted for 38 per cent of Norway's foreign trade in traditional goods (i.e. imports and exports, excluding oil and gas, shipping and platforms). By comparison, Norwegian imports from countries whose currencies were included in the basis of calculation for the ECU (EU12) accounted for 50 per cent of total imports of traditional goods, while the export share for the same countries was 54 per cent. The euro is thus even less representative than the ECU as regards the geographical composition of Norway's foreign trade. In order to illustrate the significance of exchange rate movements for the Norwegian economy, an ECU/euro exchange rate must be supplemented using an alternative exchange rate indicator that reflects the trade pattern to a further extent. Examples of such indices are an import-weighted krone exchange rate, export-weighted krone exchange rate, trade-weighted exchange rate and manufacturing industry's effective krone exchange rate. The figure shows developments in the ECU/euro exchange rate and the import-weighted krone exchange rate, where the latter's weights are calculated based on the composition of traditional goods imports.

Development in import-weighted krone exchange rate and Norges Bank's ECU-index. 1992 - 2001
Forecasts for 2001. Indices, October 1990 = 100



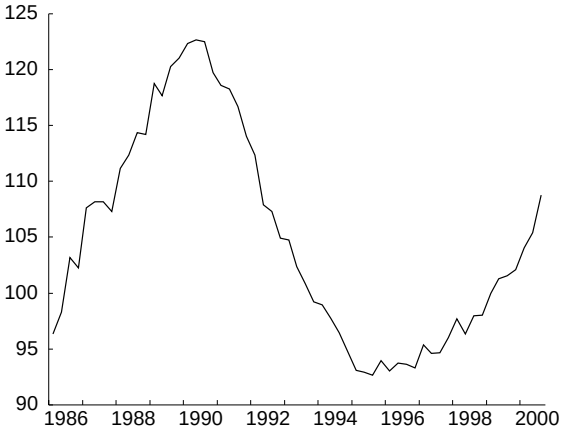
Sources: Norges Bank and Statistics Norway.

Average deposit and lending rate in private financial institutions and 3 month NOK euro rate. 1992 - 2000



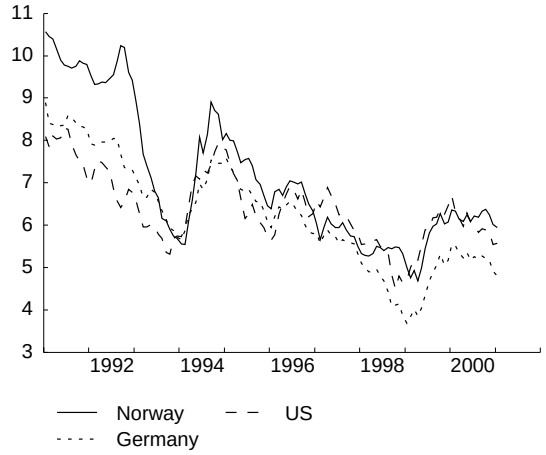
Source: Norges Bank.

Private debt. 1986-2000
Per cent of mainland GDP
Seasonally adjusted. Index 1986=100



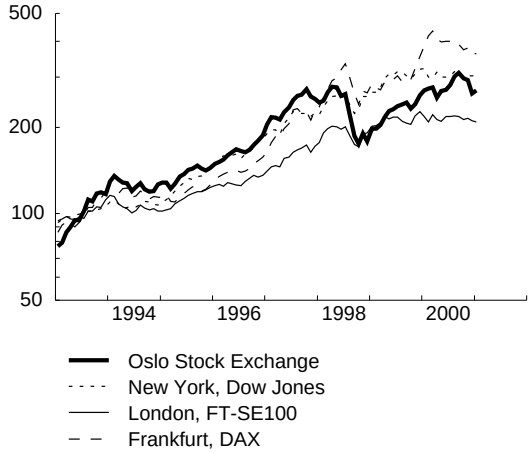
Sources: Statistics Norway and Norges Bank.

Yield on government bonds with a 10-year residual maturity



Source: Norges Bank.

Oslo Stock Exchange's all-share index and foreign stock exchange indices. 1993 - 2001
Log scale. 1993 = 100



Source: Norges Bank.

ECU. On 31 December 1998 the ECU was replaced by the euro with a conversion rate of 1:1 on the changeover date, and Norges Bank has now allowed the euro to replace the ECU as the reference currency for the conduct of monetary policy.

In 1999, the focus of the formulation of monetary policy shifted from current exchange rate movements to developments in variables of importance to exchange rate stability in the slightly longer run. In this context, Norges Bank emphasizes that there are two fundamental preconditions for exchange rate stability. First, price and cost inflation must be reduced to the level aimed at by the euro area. Second, interest rates must not be set at such a high level that this contributes to a downturn that undermines confidence in the krone.

Through most of 1999, the year-on-year rise in the consumer price index ranged between 2 and 2.5 per cent. Throughout the year, Norges Bank's projection for price inflation in 1999 was 2 1/4 per cent, with an expected decline in 2000 and 2001. Norges Bank also projected a growth pause in the Norwegian economy, with mainland GDP growth for 2000 estimated between –1/4 per cent and +3/4 per cent. Against this background, in conjunction with the high interest rate level at the beginning of the year, Norges Bank reduced its key rates on five occasions in 1999 by a total of 2.5 percentage points.

In November 1999, the year-on-year rise in the consumer price index rose to 2.8 per cent, and thereafter remained in the range 2.5-3.5 per cent through 2000. Norges Bank's inflation and growth forecasts for 2000 and 2001 were revised upwards early in 2000. With a view to easing pressures in the economy and thereby curbing inflation, Norges Bank increased its key rates in four steps in 2000 by a total of 1.5 percentage points. Since the increase in key rates in September, Norges Bank has kept the deposit rate and the over-

night lending rate constant at 7 and 9 per cent respectively. At its most recent monetary policy meetings, Norges Bank has announced that the probability that the next change in interest rates will be a reduction is the same as the probability of an increase.

The Norwegian money market rate has been about 0.5 percentage point higher than Norges Bank's deposit rate through 2000, and at the end of the year the rate was about 7.3 per cent. The interest rate differential between Norwegian rates and EU rates narrowed from 2.3 per cent in January to 2.1 per cent in May 2000 as EU money market rates rose by a greater margin than Norwegian rates. The interest rate differential widened as from June 2000, primarily as a result of the increase in Norwegian rates. In December, the Norwegian money market rate was 2.4 per cent higher than the EU rate.

Up to 1998, there were only marginal variations between the ECU and the import-weighted krone exchange rate. From December 1998 to December 1999, the krone appreciated by almost 6 percentage points more measured against the euro than against the import-weighted krone exchange rate. The difference between these two exchange rate measures continued to increase through 2000, as the krone depreciated by a further 2 per cent measured against the import-weighted exchange rate. Measured against the euro, the krone has been stronger than during the reference period of the Exchange Rate Regulation. At the same time, the krone as measured against the import-weighted exchange rate has never been weaker, reflecting the sharp appreciation of the US dollar, pound sterling and – for a period – Swedish krona against the euro over the past two years. Measured against the euro, the US dollar appreciated by as much as 23.5 per cent in the two years to December 2000, while pound sterling and the Swedish krona appreciated by 12.7 and 8.3 per cent, respectively, in the same period.

Financial developments

Norwegian government bond yields have by and large shadowed comparable German and US bonds. The yield on Norwegian government bonds with an average residual maturity of 10 years was about 6.2 per cent over 2000, which was 0.2 percentage point higher than the yield on comparable US bonds and 1.0 percentage point higher than the yield on German bonds. The yield differential widened through the year, reflecting the fall in US and German bond yields in 2000.

The yield in Norwegian government bonds with a residual maturity of 3 and 5 years edged up over 2000. At the same time, the yield on comparable US bonds fell, while the yield on German government bonds with a short maturity has remained more or less unchanged. The interest rate differential for bonds with a residual maturity of 5 years was 0.8 percentage point in December measured against US bonds, and 1.5 percentage point measured against German bonds, while the corresponding interest rate differentials for bonds with a residual maturity of 3 years were 1.2 and 1.8 percentage points respectively.

Financial institutions' average lending and deposit rates have generally followed developments in money market rates in recent years. In 1998, average deposit and lending rates fell by 1.9 and 2.2 percentage point respectively, while in the first three quarters of 2000, they rose by 1.0 and 0.9 percentage point respectively. At the end of the third quarter of 2000, the average lending rate was 8.6 per cent, while the deposit rate stood at 5.5 per cent. The interest margin is thus 3.1 percentage points, i.e. a reduction from 3.2 percentage points at the end of 1999 and from 3.5 percentage points at the end of 1998.

Twelve-month growth in domestic credit (C2) increased from 7.0 per cent in August 1999 to 12.7 per cent in November 2000. The expansion in credit in November was the highest rate recorded since the end of the 1980s. Measured as a share of mainland GDP, the private and municipal sector's gross debt is now about 10 per cent below the level prevailing at the beginning of the 1990s.

The all-share index on the Oslo Stock Exchange declined by 1.7 per cent through 2000, which is fairly marginal compared with 1998 when share prices declined by 26.7 per cent and 1999 when they advanced by 45.5 per cent. However, prices varied to some extent through 2000, reaching a new peak on 14 September when the all-share index hit 1608.67. On average, share investments in small and medium-sized enterprises generated a return of 21.3 per cent in 2000, and the financial index advanced by 27.3 per cent. On the other hand, investments in IT shares resulted in an average loss of 31.5 per cent in 2000, as a result of the sharp declines recorded in the last two months of the year.

Foreign stock markets also recorded declines in 2000. On the London Stock Exchange, share prices fell by about 10 per cent and in Frankfurt by 7.5 per cent. In the US, the Dow Jones Index was at about the same level at the end of the year as at the beginning of the year, while the NASDAQ index declined by almost 40 per cent.

Factors influencing municipal recycling rates of household waste in Norway*

Julie L. Hass

Waste reduction is one of the key components in Norwegian waste policy along with increased recycling rates. The government has set ambitious, mandated recycling levels but the policies for reaching these goals are still under development. Identifying factors that influence municipal recycling rates of household waste can be important in this process. A number of studies in other countries indicate that fee structures are important influencing factors, but in Norway marginal cost pricing is almost absent. In this study, it was found that the age of the curbside collection program and the closeness of the municipality to major cities (centrality) were important for municipal recycling rates. Moreover, municipalities that have particularly high recycling rates seem to have benefited from special support from the Norwegian government for development of infrastructure or from regional approaches to developing recycling systems.

The Norwegian Government's strategic objective regarding waste and recycling states that, "Waste problems shall be solved in a way that minimizes damage and nuisance to people and the environment and at the same time minimizes the resources used in waste management." (Report No. 8 to the Storting 1999-2000, Ministry of the Environment 1999-2000: 27). In addition to this strategic objective, specific national targets have also been made. One of the national goals is that the growth in the quantity of waste generated shall be considerably lower than the rate of economic growth. Inherent in this goal is the concept of source reduction, which encompasses the view that preventing the generation of waste is better than having to treat the waste once it has already been produced.

In Norway there is an increasing trend for amounts of household waste produced. From 1992 to 1998 the amount of household waste generated increased from 235 to 308 kilograms per capita (Statistics Norway 2000). In addition, the projections made by Statistics Norway (Bruvoll and Ibenholt 1999) indicate that there will be a 33 percent increase from 1996 to 2010 in the production of household waste. But at the same time as there has been an increase in the total amount of household solid waste produced, there has also been an increase in the amount of material collected from households for recycling (Statistics Norway 2000). There have been an increasing number of source separation and collection centers and curbside collection programs available to the Norwegian population with the result of increasing amounts of material being collected for recycling. This increase in availability in recycling programs will contribute to achieving the national target of having only 25 percent of the total quantity of waste generated to be delivered for final treatment in 2010 (Ministry of the Environment 1999-2000).

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Economic incentives and recycling rates

Most of the research concerning increasing recycling rates focuses on economic incentives (see for example, Chilton 1993, Scarlett 1993, Skumatz 1993, 1996). Often the focus has been on the results produced when different types of variable fee rate schemes are introduced in a community. Most of the analyses are based on data from North America, and specifically the United States, since there are such a variety of different programs and unit fee structures that can be studied.

Skumatz (1996) studied recycling and waste diversion in 500 communities across North America and concluded that variable fee rate programs lead to significantly more recycling. In another study, Skumatz (1993) reports that communities that implement variable fee rates in conjunction with recycling programs have experienced between 25 and 45 percent reduction in tonnage going to disposal facilities. Also reported are results from consumer surveys in the municipalities with variable rates that indicate that the variable rates do influence purchasing behavior and provides an incentive to reduce household

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garbage. The results of Repetto, et al. (1992) suggest that an additional charge of $1.50 per 32-gallon container (approximately 9.5 kilograms) induce households to cut their solid waste by 18 percent per capita. Chilton (1993) reports that the unit pricing system in Seattle, Washington led to a fall in landfill tonnage of 22 percent and recycling grew from 24 to 36 percent of the waste stream. Scarlett (1993) reports similar findings in a study of ten volume-based pricing programs in the United States. It was reported that there was an increase in recycled material of between 60 and 150 percent, while the amount of waste sent to landfill was reduced by 20 to 65 percent.

The most common approach to variable rate pricing is based on volume or on "per bag" fees. In some cases stickers for bags are used to implement the variable rate pricing. Each bag to be collected must have a sticker attached. In this way, the household pays only for the amount of waste collected and if the household has a sudden increase in waste one week, they can simply use additional stickers to apply to the extra bags. If there are no bags collected, then there is no fee charged. Another option is weight-based systems but there are not many of these since the increased expense of the weighing scales and record keeping (Ackerman, et al. 1992) can make the system too expensive. The advantage of variable rate pricing is that the households pay for the waste that they produce. With this type of system there is also an economic incentive to reduce the amount of waste with this type of "pay-as-you-throw" pricing since each unit of waste produced is more costly to have collected.

Not a simple relationship – other factors are important

Kinnaman and Fullerton (1994, 1997) and Fullerton and Kinnaman (1994, 1995) have analyzed recycling rates and unit fees under a number of different conditions including the option of illegal dumping. They conclude that variable unit fees do influence recycling rates but the relationship is not a simple one. Other factors influencing recycling rates included household preferences for recycling, income distribution in the community, the price of recyclable materials, the presence of curbside collection for recycled materials and the fixed costs associated with dumping. The studies of Kinnaman and Fullerton include the options of illegal dumping in their evaluations and conclude that there is a negligible change in the amount of illegal dumping when variable rate fees are used. Ackerman, et al. (1992) also claim that there is no simple or clear relationship between volume-based rates and recycling. They state that studies of volume-based unit fees provide a variety of conclusions. Their results range from variable volume unit fees having no recognizable impact on recycling rates to that these types of fees having sizable impacts on recycling rates. They claim that much of the registered volume drop is due to compressing of the waste (stompage) by households and not due to an actual reduction in the weight of waste.

The Norwegian situation

In the United States, twenty percent of states have legislation that promotes or even mandates variable rate pricing (Skumatz and Zach 1992). The increase in variable rate systems has been driven to a large degree by state legislative requirements (Skumatz 1993). In contrast, in Norway, the only legislation regarding waste fees is that the municipalities are required to charge fees which result in revenues which must be equal to expenditures for waste collection and treatment (SFT 1994), i.e. no marginal pricing. The current approach of the Norwegian government is to simply recommend that municipalities use variable rate pricing. So far legislation is not used although it is being considered (Ministry of the Environment 1999-2000).

In Norway, variable fee rates are still not yet widely used. Most municipalities have a single rate for a standard-sized container for household solid waste collection and treatment. Generally speaking, a household pays for one container to be picked up weekly or every other week. The fee structure in most municipalities is related to the number of containers, with each container having the same rate or a reduced rate for larger containers or two containers. Whether the container is full or empty does not influence the amount the household is charged, and sometimes, larger volumes of garbage actually are less expensive per container than smaller volumes. This rigid type of flat or decreasing volume-based fee system does not provide economic incentives for solid waste reduction. This pattern is, however, slowly changing since the Government is strongly encouraging municipalities to use differentiated fee structures.

Testing possible explanatory variables

Regression analyses were used to search for factors that may influence the municipal recycling rates of household waste (Hass 1997). Both policy-related and infrastructure-related variables were examined.

The two variables that were found to influence recycling rates at a statistically significant level were the closeness of the municipality to major cities (centrality) and the time when the municipality had implemented curbside collection of recyclable waste fractions. It was found that municipalities that are closer to major cities generally have higher recycling rates. In other words, there appears to be advantages for recycling in more densely populated areas.

The other factor that significantly influences recycling rates in municipalities is time. The longer the municipality has had a curbside collection system, the greater the amount of material collected for recycling. This factor can be understood from an innovation

Figure 1. Map of Norway showing the 24 municipalities with the highest recycling rates in 1995

Digital map data: Norwegian Mapping Authority
Sources: Statistics Norway

adoption perspective, which would predict that new behaviors and innovations require time to be accepted, understood and utilized (Rogers 1995).

These results indicate that extra encouragement to the municipalities to start curbside recycling programs as soon as possible may influence the possibilities to reach the recycling goals set by the Norwegian government (Ministry of the Environment 1999-2000). This would apply particularly to municipalities that are closer to major cities since these municipalities tend to have higher recycling rates than rural municipalities. Geographic location and age of the recycling program were also identified by Skumatz (1996) as key factors impacting waste diversion to recycling programs in North America.

Although municipalities with curbside collection systems have higher rates of recycling, this type of system can be very costly. For this reason, some municipalities have chosen to not establish curbside collection systems but have focused on the development of systems of drop-off centers for recycling. At these recycling centers, households deliver separated waste fractions to a central location. These types of systems are most often established in rural municipalities where it is not cost effective for a curbside collection type of system. These recycling centers encourage and increase the recycling rates in municipalities but they are often not as effective as curbside collection since it requires additional effort and cost to the households.

Investigating municipalities with very high recycling rates

It was interesting to note that some of the municipalities have recycling rates that are much higher than the average (Hass 1997). These high recycling rate municipalities were examined in more detail to try to determine additional factors that can be important for obtaining high levels of municipal recycling of household waste.

The municipalities which have markedly higher levels of household recycling rates, defined as rates greater than the mean plus two standard deviations, were identified on a map of Norway (Figure 1). These 24 municipalities (5.5 percent of the total) had recycling rates of more than 37 percent. It is interesting to note that there appears to be three main clusters of neighboring municipalities with high recycling rates. There is a cluster of municipalities in Oppland with Lillehammer, Gausdal and Øyer. Another cluster is located in Østfold including Eidsberg, Skiptvet, Trøgstand, Marker, Spydeberg, Askim and Hobøl. And a third cluster is found in Nord-Trøndelag with Mosvik, Frosta and Inderøy. There are also a number of isolated municipalities, such as the city of Kristiansand.

Special focus and inter-municipal solutions

Two main factors were identified in the municipalities with very high recycling rates. Either the municipalities have received special government support for establishing an infrastructure for recycling materials or they are part of a regional, inter-municipal cooperation with regards to recycling.

The cluster in Oppland includes the towns of Lillehammer and Gjøvik that were major sites for the 1994 Winter Olympics. In connection with the Olympics an extensive infrastructure for recycling was developed in that region. This can be one explanation for the high levels of recycling from this area.

The city of Kristiansand on the south coast has also received substantial support from the Ministry of the Environment to develop and promote recycling. This support has been provided not just for one year but over a number of years. This consistent development and promotion of recycling in the city of Kristiansand has led to these high levels of recycling.

The clusters of municipalities in Østfold and in Nord-Trøndelag have inter-municipal organization of solid waste treatment that includes recycling. These regional approaches to recycling appear to increase the amounts of materials collected and potentially increase the cost effectiveness of the systems. There appears to be efficiencies of scale in these cases.

Conclusion

According to the literature economic instruments may be important when dealing with waste handling and recycling. In the Norwegian economy, marginal cost pricing in waste treatment is almost absent.

Two general identifying factors that seem to be important when studying municipal recycling rates of household waste in Norway in the early and mid-1990s are the age of the curbside collection program and the closeness of the municipality to major cities (centrality). Higher recycling rates are observed in municipalities with older, established curbside collection programs that are close to (or located in) major cities.

Two additional factors that are particular to municipalities with very high recycling rates were also identified. These factors are special support from the Norwegian government for development of infrastructure, for example the municipalities hosting the 1994 Winter Olympics and the city of Kristiansand, and regional approaches to developing recycling systems. The regional approaches tend to indicate that efficiencies of scale appear to be possible in recycling programs.

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