

## International economy

Following last year's moderate growth in most of the global economy, excluding North America, economic activity appears to be increasing in 2000. Both international trade and GDP growth in all parts of the world are expected to pick up, and the projections have generally been revised upwards considerably since our last report in February. The most important exception is Japan where growth, despite some positive signs this year, appears to remain at about 1 per cent. According to the latest projections from Consensus Forecasts, the highest growth is still expected in the US, although Europe is catching up. In 2001, slower growth in the US will probably contribute to a further convergence of growth rates. As a weighted average for our main trading partners, the forecasts imply that GDP growth will increase from 2.6 per cent in 1999 to 3.3 per cent in 2000, edging down to 3.0 per cent in 2001. The euro has generally continued to depreciate against the US dollar this year, and by end-May it had lost about 20 per cent of its value since the introduction of the new currency on 1 January last year. Whereas the depreciation first contributed to long-awaited growth in Europe, there is now growing concern that the combination of stronger growth and a weaker currency will result in excessive inflationary pressures. As a result of higher economic growth, price inflation is now increasing on a global basis, although it is still moderate in a slightly longer perspective. A tighter labour market has translated into somewhat higher growth in wages in the US and the UK, while wage growth in the other major EU countries is still very moderate. An increase in primary commodity prices, continued high oil prices and rising domestic cost inflation point to slightly higher inflation among our trading partners. The forecasts indicate 1.8 per cent in

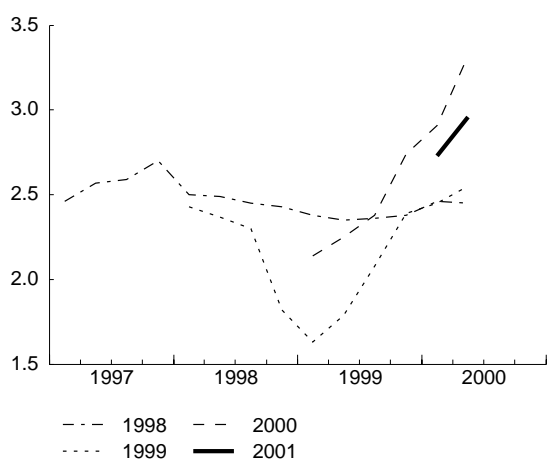
both 2000 and 2001, against 1.2 per cent in 1999. Growing inflationary pressures will result in a further rise in interest rates in the US, the euro area and in other EU countries.

### Increased international trade and rising commodity prices

Following the trouble years of 1997 and 1998, the world economy experienced a pronounced upswing through 1999. This did not immediately result in expanded trade, but towards the end of last year the upturn was also perceptible in world trade. The trend towards increased trade is expected to be amplified in both 2000 and 2001, and the OECD expects volume to expand by more than 10 per cent this year and just over 8 per cent next year. This entails a sharp increase from the just under 6 per cent recorded last year and an upward revision of growth projections since the end of 1999 by two-three percentage points a year. A key feature of the ongoing upswing is that all main areas appear to be recording growth in trade. In the last few years, trade has largely been sustained by US imports. Expectations of continued high growth in the level of activity in the US are still an important factor behind the forecasts, but an important contribution is now also being made by substantial import growth in the EU, in Central and East European countries and in many developing countries.

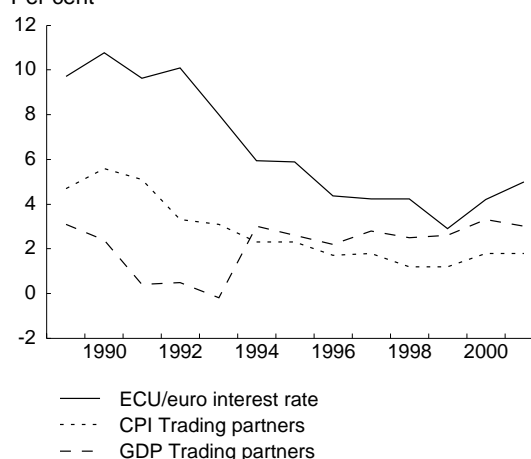
Higher international demand reversed the fall in primary commodity prices to an increase in the course of 1999. Developments varied widely across commodity groups. Crude oil prices have risen the fastest, but in the second half of the year prices for a number of other commodities also increased. Whereas industrial

**GDP growth forecasts for Norway's main trading partners for 1998 - 2001 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: OECD and Statistics Norway.

raw material prices rose markedly through most of 1999, according to the price indices from Institut für Wirtschaftsforschung (HWWA), food and agricultural prices lagged behind until the end of the year. The rise in prices continued in the first quarter of 2000, but in recent months the situation has been somewhat more mixed. However, prices for industrial raw materials are still noticeably higher than the level recorded in 1999, while so far this year agricultural and food prices are at about the same level as the average for last year. On an annual basis, the commodity price group in the AIECE (Association of European Conjunction Institutes) expects an average rise in prices for primary commodities, excluding crude oil, of a little more than 5 per cent in 2000 and next year. However, it is worth noting that prices for primary commodities, excluding crude oil, will in nominal terms remain relatively low compared with the average level for the 1990s.

Changes in raw material prices spread to finished goods with a certain lag. In combination with the prospect of higher global demand, this will contribute to a stronger rise in prices, which contrasts sharply with the situation in 1997-1998 and parts of 1999. The effects of changes in the oil price come in addition.

### Continued high oil prices

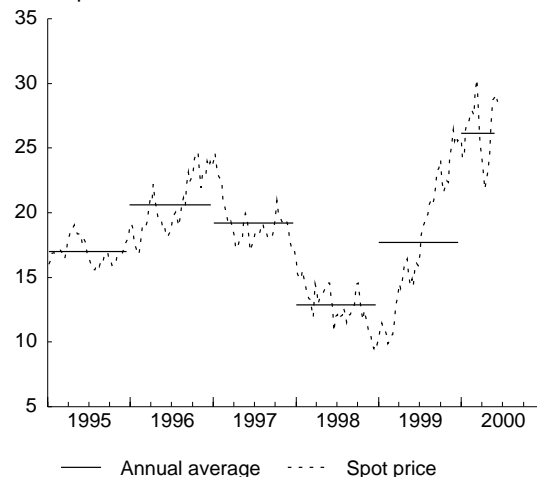
The spot price of Brent Blend rose from about USD 10 a barrel in March 1999 to USD 30 in March 2000. The oil price then fell to USD 22 a barrel in April this year, but stood at about USD 29 at end-May. As an average for the first five months of the year, the price has been about USD 26 a barrel.

The most important reason for the rise in prices last year was OPEC's decision to reduce production by 1.7 million b/d in March 1999, with some non-OPEC countries following suit by reducing production by altogether 0.4 million b/d. Moreover, economic growth in North America remained brisk and the demand for oil gradually picked up in Asia as a result of continued positive economic developments in the region following the crisis in 1997-1998. Prices edged down in March in response to OPEC's decision at its ordinary ministerial meeting to increase production to the level prevailing prior to the last production cuts.

As a result of the high oil price, the International Energy Agency (IEA) has lowered its projection for global oil demand this year, while the projection for non-OPEC production has been revised upwards. The IEA projects that Iraq will to some extent succeed in increasing its oil production as the country has now received permission from the UN to use more of its export earnings for necessary spare parts and maintenance of production equipment. It thus appears that the already limited oil stocks will not be further reduced in the first half of the year as a whole. According to forecasts from the IEA, stocks will be reduced

### Spot price, Brent Blend. 1995-2000

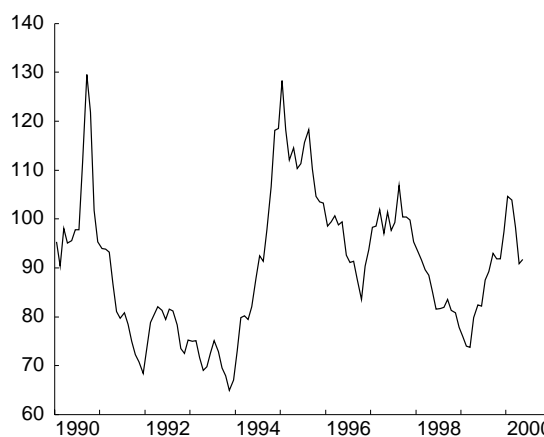
Dollar per barrel



Source: Norges Bank.

### Aluminium price. 1990 - 2000

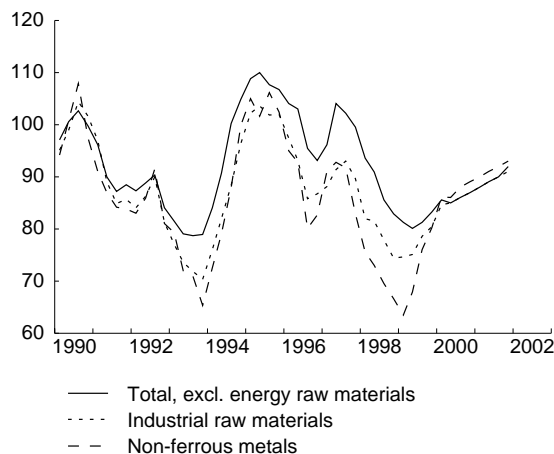
Dollar based index. 1979=100



Source: Norges Bank.

### Commodity prices on the world market 1990 - 2002

Dollar based indices. 1990 = 100



Source: HWWA-Institut für Wirtschaftsforschung.

marginally in the third quarter, a period when stocks are normally built up. In the fourth quarter, the use of stocks is expected to be greater, which is normal as the demand for heating oil picks up in the winter. Many analysts are of the view that the current high oil price partly reflects expectations of stock reductions in the third and fourth quarter.

OPEC has indicated that if the oil price remains outside the range USD 22-28 a barrel for twenty days, the cartel will adjust production to the level required to bring prices back to that range. It is thus conceivable that OPEC will decide to increase production already before its next ordinary ministerial meeting on 21 June in Vienna, resulting in a decline in oil prices from the current high level. Similarly, output adjustments may also occur at a later time if oil prices should remain below USD 22. OPEC's experience during the last two years indicates that in the period ahead the organization will place considerable emphasis on following up its price signals with active responses.

Even if oil prices remain at approximately the current level, the situation is of far less concern now than was the case following the oil price shocks of the 1970s. First, measured in constant dollar terms, there is still some way to go before oil prices reach the level after 1973, and the current price is well below half the price in 1980. Moreover, western economies are far less dependent on oil today than they were at that time. This is because less energy per unit produced is required today, there are more energy sources that can be used and services account for a considerably higher share of the economy. The high taxation of many petroleum products represents a third factor. For example, excise duties on petrol are so high in many parts of Europe that this substantially reduces the importance of changes in the crude oil price. This last factor is not of the same importance in the US as excise duties are considerably lower. Obviously the above factors do not prevent high oil prices from generating a positive impetus to inflation internationally, both directly for consumer prices for petroleum products and through production costs for other goods and services.

### **Increased pressure in the US**

The vigorous expansion of the US economy continued through 1999 and the first quarter of 2000. As a result of the high growth figures so far this year, many forecasters have revised upwards their annual projection for 2000, and in its latest analyses Consensus Forecasts projects GDP growth at 4.8 per cent in 2000 and 3.2 per cent next year. The lower projection for 2001 is a repetition of an earlier pattern of expectations of slower growth ahead. So far, this has not materialized, and it is possible that the projection for 2001 will also gradually be revised upwards later in the year. At the same time, there are signs that very

high growth may encounter more serious problems in the period ahead.

So far, it is primarily inflation that has deviated considerably from earlier periods of expansion. Growth has been robust and sustained, but of the same magnitude as, for example, during the upturn in the 1960s. It is therefore not surprising that analysts particularly focus on figures for inflation and wages. The figures so far in 2000 indicate that inflation is edging up. The average for the first four months of the year was 3.2 per cent, against 1.8 per cent in the same period last year. However, oil prices are an important underlying factor, and when energy and food prices are excluded, core inflation is still just a little higher than 2 per cent. Nevertheless, it is worth noting that the US can no longer count on deflationary impulses from import prices. Oil prices are expected to remain high, and a number of other raw material prices will probably increase further through this year and next. Moreover, if the appreciation of the dollar comes to a halt and is possibly reversed to some extent, external price impulses will be quite different than was the case in the wake of the Asian crisis. Without external help, the need to keep domestic prices in check will be even greater. A tight labour market with less than 4 per cent unemployment may make this a very difficult task. Wages have risen substantially this year even though the latest figures indicate slower growth. This was one of the reasons the Federal Reserve raised interest rates by 0.5 percentage point in mid-May. Along with earlier increases, this brought interest rates to the highest level in more than nine years. It is still likely, however, that interest rates will be further increased through the year, which the OECD also recommends. In addition to higher interest rates, stronger international competition and continued high productivity gains will contribute to restraining inflation. Consensus Forecasts projects inflation at 3 per cent this year, edging down to 2.5 per cent next year.

Following many years with a continuous rise in equity prices in the US, the fall in some share prices has received considerable attention the last few months. If we disregard the most short-term fluctuations, however, the decline in prices is generally confined to technology shares. Even following the sharp fall in the Nasdaq index between March and end-May, share prices had only been reduced to the level prevailing in early December 1999, which is nearly 40 per cent above the level one year ago. The broader Dow Jones index, which to a greater extent focuses on traditional industries, has declined far less, but also increased to a lesser extent through 1999. In general, the index has fluctuated around the same level over the last twelve months. It may thus appear that the change in equity prices in the first months of the year is a correction of the sharp rise recorded last year. This is a correction anticipated by many through 1999, and the

drop in prices may thus be a good sign for the US economy. Moreover, the decline does not appear to have had a noticeably negative impact on the real economy in the US. The risk of a hard landing, with fears that a steep decline in share prices would put a severe damper on private consumption and thereby GDP growth, therefore appears to have been somewhat reduced.

The fear of a hard landing in the US economy is largely associated with the effects of changes in interest rates and share prices on the real economy. Private consumption has been an important driving force behind GDP growth in recent years. Equities account for a relatively high portion of US household wealth, and rising share prices have been considered an important factor behind the increase in household consumption. Falling unemployment and rising real wages also constitute an important stimulus to growth in private consumption. So far, the changes in share prices do not seem to have had any negative effect on this demand component, which actually expanded by more than 8 per cent in the first quarter of 2000. Moreover, the increase in interest rates did not prevent an increase in consumer optimism in May, as measured by the Consumer Confidence Index. This may be an indication that the Federal Reserve is having difficulties in cooling off the economy. Increases in interest rates have a negative impact on investment demand. However, the shortage of labour and high energy prices point in the opposite direction. These factors shift production towards a greater use of capital instead of labour and energy. Export demand, on the other hand, has made a negative contribution to GDP growth in recent years as a result of an appreciating dollar and sluggish activity in the global economy, outside North America. The outlook for higher growth in Europe, Asia and Latin America may mitigate this effect, particularly if the dollar also depreciates when differences in levels of activity across continents diminish. In that case, the sizeable trade balance deficits may also improve to some extent.

Overall, the prospects for the US economy are favourable, albeit uncertain. Growth remains high and inflation and unemployment are low. However, the tight labour market and signs of higher inflation indicate that there is little leeway, and very few analysts consider the growth rate of recent years sustainable in the long run. A slowdown may take place gradually, and then an important factor will most likely be a gradual reduction in consumer demand as the wealth effect from the stock market wanes. With continued high optimism among US households, however, it is conceivable that the moderate increase in interest rates expected by a number of analysts will not be sufficient to reverse the economy. If the Federal Reserve then raises interest rates considerably, a dramatic fall in equity prices is still a definite possibility. A substantially harder landing may then be the result.

### Economic forecasts for Norway's main trading partners

Annual percentage change

Country (Share of Norwegian exports <sup>1</sup> )	1998	1999	2000	2001
<b>USA (8.0)</b>				
GDP	4.3	4.1	4.8	3.2
Consumer prices	1.6	2.2	3.0	2.5
Unemployment rate <sup>2</sup> (level)	4.5	4.2	4.0	4.2
<b>Japan (4.5)</b>				
GDP	-2.5	0.3	1.1	1.9
Consumer prices	0.6	-0.3	-0.2	0.1
Unemployment rate <sup>2</sup> (level)	4.1	4.7	4.8	4.7
<b>Germany (11.3)</b>				
GDP	2.2	1.5	2.9	2.9
Consumer prices	1.0	0.6	1.6	1.5
Unemployment rate <sup>2</sup> (level)	11.1	10.5	9.8	9.0
<b>France (6.0)</b>				
GDP	3.2	2.9	3.7	3.3
Consumer prices	0.6	0.5	1.2	1.2
Unemployment rate <sup>2</sup> (level)	11.8	11.2	9.9	9.0
<b>United Kingdom (11.7)</b>				
GDP	2.2	2.1	3.1	2.6
Consumer prices <sup>3</sup>	2.6	2.3	2.1	2.3
Unemployment rate <sup>2</sup> (level)	4.7	4.3	3.9	3.7
<b>Italy (3.1)</b>				
GDP	1.5	1.4	2.7	2.8
Consumer prices	1.8	1.6	2.2	1.7
Unemployment rate <sup>2</sup> (level)	11.8	11.4	10.9	10.4
<b>Sweden (12.9)</b>				
GDP	3.0	3.8	4.1	3.5
Consumer prices	-0.1	0.4	1.5	2.0
Unemployment rate <sup>2</sup> (level)	6.5	5.6	4.8	4.3
<b>Denmark (7.6)</b>				
GDP	2.7	1.6	2.1	2.3
Consumer prices	1.8	2.4	2.7	2.3
Unemployment rate <sup>2</sup> (level)	6.4	5.5	5.4	5.4
<b>The Netherlands (5.5)</b>				
GDP	3.7	3.6	3.8	3.4
Consumer prices	2.0	2.2	2.1	2.8
Unemployment rate <sup>2</sup> (level)	4.2	3.2	2.5	2.1
<b>Memorandum items:</b>				
GDP EU	2.7	2.4	3.3	3.0
GDP trading partners	2.5	2.6	3.3	3.0
Consumer prices trading partners	1.2	1.2	1.8	1.8
ECU/Euro interest rate	4.2	2.9	4.2	5.0

<sup>1</sup> Export traditional goods. Figures for 1999 in per cent, according to Monthly Bulletin of External Trade, Statistics Norway.

<sup>2</sup> Per cent of labour force.

<sup>3</sup> Exclusive interest rates.

Sources: Consensus Forecast. Unemployment rates for Sweden, Denmark and the Netherlands from OECD.

### Upturn in Asia

The crisis economies in Asia recovered more quickly than most analysts had expected and expanded sharply in 1999. Korea grew the fastest, with GDP rising by more than 10 per cent, but a number of other countries also recorded a noticeable improvement in their

economic situation. According to the OECD, this appears to be continuing, and a number of the former crisis economies are projected to show annual GDP growth of 5 per cent or more both this year and next. The Chinese economy may become increasingly important in the period ahead. China managed to hold out against the Asian crisis and even though the country did not devalue its currency as was the case for many of its neighbours, GDP grew by more than 7 per cent in both 1998 and 1999. The latest OECD forecasts point to more or less the same growth in 2000 and 2001, and following recent substantial progress in negotiations on membership in the WTO, the large Chinese economy is likely to be considerably more integrated into the world economy in the period ahead.

Japan is the exception in Asia. Following ten years of very sluggish growth, there are still few signs of any particular momentum in economic activity. Consensus Forecasts' projection of 1.1 per cent GDP growth this year will nevertheless represent an improvement from last year's 0.3 per cent, and GDP growth is projected to rise further in 2001. Despite large fiscal stimulus packages and interest rates close to 0 per cent, national accounts figures showed a contraction in GDP in the third and fourth quarters of 1999, after exhibiting a positive trend in the first half of the year. Other data, however, have shown quite a different picture. The OECD therefore questions the quality of the national accounts figures and maintains that the economy was not contracting in the second half of the year. Nevertheless, it is clear that falling wages and rising unemployment made a negative contribution to private consumption and that public consumption did not succeed in boosting private consumption or private investment. Furthermore, the appreciation of the yen through the last half of 1999 hampered exports. This appears to have continued in 2000. Interest rates will probably still be kept at a low level, and the authorities have adopted a clearly expansionary fiscal policy again in 2000. This policy seems to be having a positive impact on activity, although the strength and duration of this effect are highly uncertain. With general government gross debt at nearly 120 per cent of GDP, the possible duration of this policy it is also limited. The OECD nevertheless advises against hasty consolidation, while at the same time indicating that the Japanese economy may manage without additional crisis packages. Major structural reforms still appear to be necessary in order to achieve a sustained improvement in the Japanese economy. The IMF points to the need for a reduction in capacity, among other things in the banking and insurance sector, a decline in the business sector's debt burden and an increase in labour mobility. According to Consensus Forecasts' latest projections, price developments will be negative in 2000, as was the case last year, while next year prices are expected to move in a positive direction, albeit with very low inflation.

1997 and 1998 were also turbulent years for parts of Latin America and Russia. The situation, however, was never quite as dramatic as in Asia, and 1999 brought stability or growth to these economies as well. In Latin America, both domestic demand and exports are making a positive contribution, the latter reinforced by a number of devaluations. According to the OECD's forecasts, GDP growth in Brazil will rise from 0.8 per cent in 1999 to 3.2 and 4.1 per cent in 2000 and 2001 respectively. Russia recorded GDP growth of a little more than 3 per cent as early as last year, a level that may be sustained or increase slightly this year and next.

### **Higher growth in Europe**

For our closest neighbours and main trading partners, 1999 was a year with a pronounced turnaround in economic activity. GDP growth was noticeably lower in 1999 than in 1998, but developments through the year were very positive, and this trend has continued into 2000. The latest projections from Consensus Forecasts imply growth of 3 per cent both for the EU and the euro area. The projections have been revised upwards in recent months. Continued robust growth in the US and stabilization in Asia and Central and Eastern Europe will provide an export stimulus to the entire EU. For the euro area, this is being amplified by the considerable depreciation of the euro since its introduction, whereas UK exports have been hampered by a strong pound sterling. However, domestic factors have also been important in many countries. Increased activity, higher employment, higher disposable income and an increase in investment are forming a virtuous circle in large parts of the EU.

In addition to higher growth, it appears that growth will be more evenly distributed in 2000 compared with last year. Germany has expanded at a considerably slower rate than the rest of the EU in recent years, but this year the country appears to be approaching the average. The German economy was severely affected by the crises in Russia and Asia, and an important reason for the projected increase in GDP growth is that the repercussions of these problems are over. German exports have benefited from the depreciation of the euro, but moderate pay increases have also contributed to enhancing the country's competitiveness, thereby reinforcing the export impetus. Figures published so far this year indicate that industrial production is moving up. Moreover, household consumption will generate a very important growth stimulus, partly because lower unemployment, tax relief and very subdued inflation will result in higher real disposable income.

Italy has also lagged behind most other EU countries in recent years. GDP growth has for a period been hampered by a tight fiscal policy aimed at satisfying the convergence criteria in the Maastricht treaty, but this phase has now been completed. Low euro interest

rates are now making a positive contribution to investment, and thus economic activity. Moreover, the country, like Germany, was severely hit by international turbulence in 1997-1998, and the stabilization in 1999 and this year will make a correspondingly positive contribution. Industrial production in Italy is also expanding at a brisk pace, and a slight reduction in unemployment is generating a positive impetus to household demand. However, the projected decline in unemployment is less than in both Germany and France, and GDP growth in Italy is likely to be among the lowest in the EU also in 2000 and 2001.

On the other hand, France is likely to continue to record the highest economic growth among the major countries the next two years. France was only mildly affected by the international problems in 1997-1998, and over the past few years the country has recorded a domestic-led recovery that is set to continue and gather momentum both this year and next. GDP growth in France is primarily being fuelled by household consumption. Strong employment growth is resulting in a sharp rise in household disposable income. The main reason is the high level of activity in the economy, but the introduction of the 35-hour week is also expected to make a positive contribution to employment. For example, the French institute *Observatoire Francais des Conjonctures Economiques* estimates that the reform will create about 250 000 new jobs in the course of 2000 and 2001. The increase in household real disposable income is also being underpinned by generally low inflation and a reduction in the general VAT rate. With a high level of activity, the outlook for business investment is also bright, whereas housing investment is expected to slow after expanding sharply last year. Net exports will also make a positive contribution in France as a result of the depreciation of the euro and high GDP growth internationally.

Following several years of fairly solid growth, the UK managed to avoid the hard landing in 1999 that many had feared. GDP growth appears to pick up markedly as early as this year even though activity in the first quarter was slightly lower than expected. The upturn is being fuelled by domestic factors, and a particularly important one is higher household demand as a result of a sharp rise in real wages. Foreign trade is making a negative contribution, partly due to the strengthening of pound sterling against the euro. There are signs of two divergent trends in the economy, with markedly stronger growth in service industries than in internationally exposed manufacturing sectors. In 2001, this dichotomy may be reduced somewhat as lower real wages and a slightly weaker pound sterling are projected compared with this year. The overall effect appears to be slightly lower GDP growth than in 2000.

Most of the small EU countries have recently expanded at a faster pace than the largest countries, and it appears that this trend will continue. Ireland has for several years recorded GDP growth of about 9 per cent and higher, and in spite of the prospect of a mild slowdown, the country is again in a class by itself in 2000, with growth projected at 7.8 per cent. Strong competition and high productivity gains have kept inflation under control, but production bottlenecks and a shortage of labour are now beginning to threaten both price stability and continued growth possibilities. Growth in Denmark is fairly low, but following a period of a considerable overheating of the economy, this is now considered a benefit rather than a problem. For Norway, it is worth noting that GDP growth in Sweden, our most important trading partner, is likely to boost the EU average in 2000 and 2001. Growth is broadly based, with household consumption, business and housing investment and exports making a positive contribution to demand. Brisk growth in household real disposable income, solid asset positions, favourable market possibilities domestically and abroad and moderate interest rates are important underlying factors. Public sector demand will also increase, but at a noticeably slower pace than GDP.

The pronounced improvement in the European economy will also contribute to some upward pressure on prices. Consensus Forecasts projects that inflation in the EU will rise from 1.3 per cent in 1999 to 1.9 per cent this year. The European Central Bank (ECB) steers its policy on the basis of the harmonized index of consumer prices for the 11 euro countries with the objective of keeping the rate of increase below 2 per cent. In February this year, inflation approached this target, and in March the index stood at 2.1 per cent. However, factors that were assumed to be temporary, such as the sharp rise in oil prices and a depreciating exchange rate, were emphasized as important reasons for this, and the ECB defused the situation. In April, the index remained within the target level. All the same, inflationary pressures have resulted in repeated increases in interest rates in the euro area. A continued economic upturn and rising commodity prices internationally imply continued upward pressures on prices in the remainder of 2000 and in 2001, and further interest rate increases are therefore likely. A fall in oil prices and/or a stronger euro are possible counteracting factors. Consensus Forecasts projects that price inflation in the euro area will be 1.8 per cent this year and 1.7 per cent next year. This inflation measure is usually slightly higher than the harmonized index of consumer prices used by the ECB, and the central bank thus seems to be succeeding in reaching its inflation target both this year and next. It nevertheless seems unlikely that the ECB's ambitious inflation target will provide scope for an upturn of approximately the same scale and strength that was recorded by the US in the 1990s. This is illustrated by the inflation rate in

the US, which is higher than the ECB's target rate in spite of very strong productivity gains.

The upturn in Europe also appears to be resulting in a long-awaited decline in unemployment figures. The OECD projects that average unemployment in the EU will be below 8 per cent next year, compared with a little more than 9 per cent in 1999. At the same time, wage growth in the major countries in the euro area is moderate. German trade unions initially had high pay demands but ended up accepting a very moderate agreement. Wage growth is also moderate in Italy despite an inflation rate that is slightly higher than the EU average. In France, the 35-hour week is being introduced, but with subsidies and increased flexibility it does not appear to be creating major problems for the business sector. The effects of the reform on labour costs is nevertheless an element of uncertainty which at worst may point to higher price inflation. The combination of high demand and low unemployment is leading to slightly higher wage growth in the UK. However, as a result of expectations of higher productivity growth and a strong pound sterling, there is little concern that this will result in a sharp rise in inflation.

Countries in Central and Eastern Europe are also experiencing an upturn. Most countries recorded sluggish growth last year, partly as a result of the crisis in Russia, the war in the Balkans and, not least, the relatively weak trends in the EU. A number of countries also tightened fiscal and monetary policy to counter growing deficits on the balance of trade and government budgets. In addition, growth was hampered by structural problems, particularly in the Czech Republic, Romania and Slovakia. The outlook for 2000 is considerably better, and growth is expected to be primarily export-led. According to the UN Project LINK, GDP growth will rise from an average of 1.2 per cent in 1999 to 3.2 and 3.6 per cent in 2000 and 2001, but with substantial variations across countries. Norway's trade with these countries has so far been limited, but they are of greater importance to some EU countries, and Norwegian exports may thus indirectly benefit from this upturn.

## Norwegian economy

### Developments so far this year

According to preliminary figures from the quarterly national accounts, mainland GDP expanded by 0.5 per cent from the fourth quarter of 1999 to the first quarter of 2000. If we look at the last three quarters as a whole, the figures indicate that activity growth picked up following a pause from the second quarter of 1998 to the second quarter of 1999. On the demand side, both consumption and mainland investment provided a growth impetus, whereas traditional merchandise exports and petroleum investment fell compared with the level in the fourth quarter of 1999.

According to Statistics Norway's Labour Force Survey (LFS), the number employed showed little change from the fourth quarter of 1999 to the first quarter of this year, adjusted for normal seasonal variations. Employment thus remains approximately on a par with the level recorded at the end of 1998, while unemployment has risen by about half a percentage point since then. As an average for the first four months of the year, the consumer price index was 2.8 per cent higher than the level in the same period one year earlier. However, year-on-year price inflation in March and April was noticeably lower than in January

### Macroeconomic indicators. 1998-2000

Growth from previous period unless otherwise noted. Per cent

	1998	1999	Seasonally adjusted			
			99.2	99.3	99.4	00.1
<b>Demand and output</b>						
Consumption in households and non-profit organizations	3.3	2.4	0.7	1.3	0.3	1.2
General government consumption	3.8	2.7	2.6	0.6	0.1	1.4
Gross fixed investment	5.8	-5.6	-3.9	16.4	-13.1	3.3
Mainland Norway	1.6	-2.1	0.4	5.8	-0.2	2.7
Petroleum activities <sup>1</sup>	20.4	-12.6	-7.9	9.1	-34.6	-5.5
Final domestic demand from Mainland Norway <sup>2</sup>	3.1	1.6	1.1	1.9	0.1	1.5
Exports	0.3	1.7	1.5	1.3	3.4	-2.1
Crude oil and natural gas	-3.6	-0.1	2.2	-0.1	7.0	1.9
Traditional goods	3.3	2.6	0.2	2.7	3.8	-1.9
Imports	9.3	-3.1	-2.7	4.3	-2.5	-1.3
Traditional goods	8.6	-2.0	-6.1	1.3	3.6	-2.7
Gross domestic product	2.0	0.9	-0.5	2.1	0.4	1.0
Mainland Norway	3.3	0.8	-0.2	1.5	0.0	0.5
<b>Labour market<sup>3</sup></b>						
Man-hours worked	2.2	0.2	0.3	-0.4	0.1	0.6
Employed persons	2.4	0.7	0.0	-0.5	0.7	0.0
Labour force	1.4	0.7	0.1	-0.2	1.0	0.2
Unemployment rate, level <sup>4</sup>	3.2	3.2	3.0	3.3	3.6	3.7
<b>Prices</b>						
Consumer price index <sup>5</sup>	2.3	2.3	2.4	2.0	2.7	2.9
Export prices, traditional goods	1.2	0.1	1.6	1.8	2.5	3.3
Import prices, traditional goods	1.6	-2.3	2.3	-1.9	1.1	3.9
<b>Balance of payment</b>						
Current balance, bill. NOK	-14.3	46.9	5.6	14.3	27.2	39.9
<b>Memorandum items (Unadjusted, level)</b>						
Money market rate (3 month NIBOR)	5.7	6.4	6.4	6.0	6.0	5.8
Average borrowing rate <sup>6</sup>	7.4	8.4	8.5	8.0	7.7	7.6
Crude oil price NOK <sup>7</sup>	96.3	141.2	120.5	162.9	191.4	221.3
Importweighted krone exchange rate. 44 countries. 1997=100	102.2	101.0	100.0	100.6	101.0	101.9
NOK per ECU/euro	8.46	8.31	8.24	8.22	8.19	8.11

<sup>1</sup> Figures for petroleum activities now cover the sectors oil and gas extraction proper, transport via pipelines and service activities incidental to oil and gas extraction.

<sup>2</sup> Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.

<sup>3</sup> Figures for 1998 and 1999 are from the national accounts. The quarterly figures are from Statistics Norway's Labour force survey (LFS), since the new quarterly national accounts series for employment are too short for seasonal adjustment.

<sup>4</sup> According to Statistics Norway's labour force survey (LFS).

<sup>5</sup> Percentage change from same period previous year.

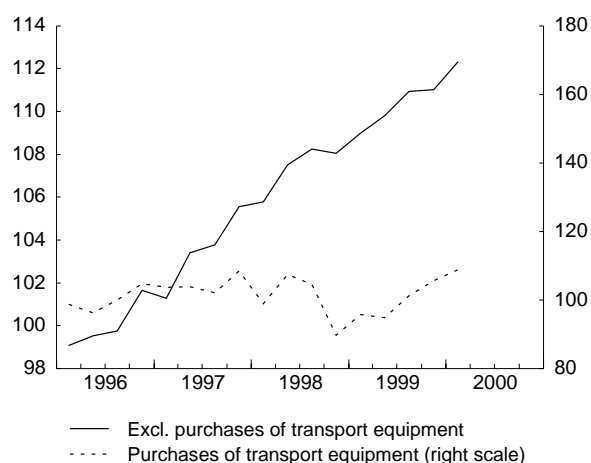
<sup>6</sup> Households' borrowing rate in private financial institutions.

<sup>7</sup> Average spot price, Brent Blend.

Sources: Statistics Norway and Norges Bank.

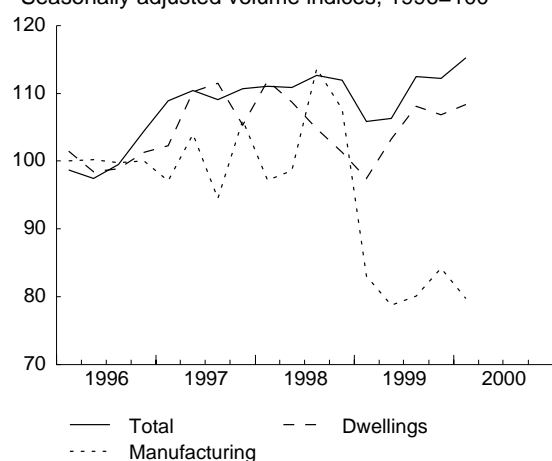


**Consumption in households. 1996 - 2000**  
Seasonally adjusted volume indices, 1996=100



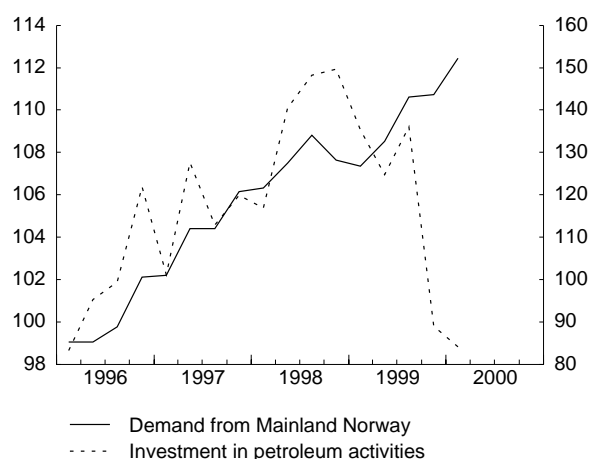
Source: Statistics Norway.

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



Source: Statistics Norway.

**Demand from Mainland Norway. 1996 - 2000**  
Seasonally adjusted volume indices, 1996=100



Source: Statistics Norway.

and February. As a result of very high oil prices, the current account surplus reached nearly NOK 40 billion in the first quarter of 2000, only moderately lower than the result for 1999 as a whole.

Following five interest rate reductions through 1999, the central bank raised its key rates by 0.25 percentage point with effect from 13 April this year and then with half a percentage point from 15 June. The Norwegian money market rate edged up in the period surrounding the first key rate increase and is now about 6.6 per cent, 0.8 percentage point higher than in the first quarter. The yield on Norwegian government bonds with residual maturities of 3 and 5 years has risen since the beginning of the year. Credit institutions' deposit and lending rates stood at 4.3 and 7.6 per cent respectively at the end of the first quarter, approximately the same level as at the beginning of the year.

Up to mid-May, the euro exchange rate fluctuated between NOK 8 and 8.25. In the latter part of May, however, the krone depreciated, with the euro costing NOK 8.30. Measured by the import-weighted krone exchange rate, the Norwegian krone has so far this year depreciated by 4.5 per cent, partly because the US dollar and Swedish krona have appreciated against the euro.

Following moderate trends through the second half of 1998 and first half of 1999, growth in household consumption (including consumption in non-profit organizations) over the last three quarters as a whole has been approximately on a par with the average for the period 1993-1999. In these seven years, consumption expanded by 3.5 per cent annually, or at about the same rate as income. The saving ratio fell slightly in the first part of the period but, according to preliminary figures, picked up in 1998. The pronounced rise in the saving ratio in 1998 may be related to unusually sharp growth in income that year as experience indicates that it takes some time before changes in income fully feed through to changes in consumption. Against this background, the saving ratio might be expected to fall again from 1998 to 1999. Preliminary figures indicate, however, that this was not the case. This may be due to the sharp rise in interest rates at the end of 1998, which was only partly reversed through 1999. In relation to income, households' net financial assets rose substantially in 1999 to an historically record-high level.

As was the case in the previous two quarters, household spending on goods increased faster than spending on services in the first quarter of 2000. The relatively strong seasonally adjusted growth in household purchases of cars between the fourth quarter of 1999 and first quarter of this year, despite the decline in new car registrations in the same period, must be seen in connection with the national accounting con-

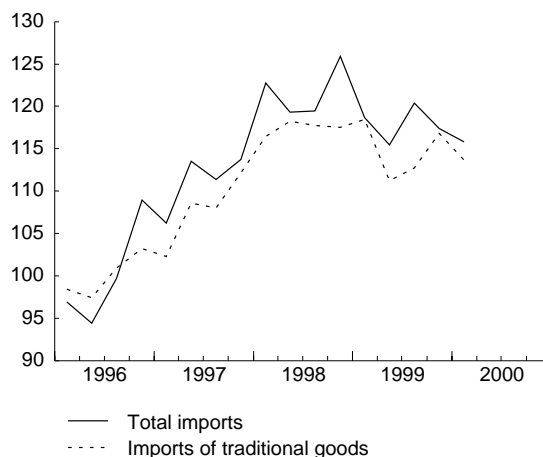
vention which assumes that passenger cars registered for the business sector are sold to households after three years. The counterpart to the rise in this component of household demand is thus an equivalent decline in a component of gross investment in the business sector. Figures on new car registrations in the period to end-May and in the retail sales index to end-April point to a relatively moderate rise in household purchases of goods from the first to second quarter of this year.

Developments in house prices indicate that the demand for dwellings is still rising sharply. In the year to the first quarter of 2000, house prices rose by nearly 18 per cent on a national basis, to a level approximately 10 per cent above the average for last year. As a result of problems with the compilation of building statistics, satisfactory and up-to-date information on housing starts is still lacking. It is likely, however, that the historically low growth in the housing stock relative to the population over a period of several years, combined with sharp growth in household income, are important factors behind the persistently sharp rise in house prices.

Preliminary QNA figures show a further rise in mainland investment between the fourth quarter of 1999 and first quarter of this year after developments through the second half of last year had already brought this demand component up to the high level prevailing in mid-1998. Investment in private service industries, excluding dwellings, was the main driving force that contributed to boosting mainland investment in the first quarter. Manufacturing investment fell to the level recorded in the third quarter last year, while other main components showed a relatively modest change. Petroleum investment fell further in the first quarter after exhibiting a steep decline at the end of last year. The level in the first quarter was about 30 per cent lower than the quarterly average for 1999. For mainland Norway and petroleum activities as a whole, however, investment showed a moderate increase from the fourth quarter to the first quarter. Investment statistics for the second quarter also point to an increase in petroleum investment through the year, while no major changes in manufacturing investment are expected through the remainder of the year.

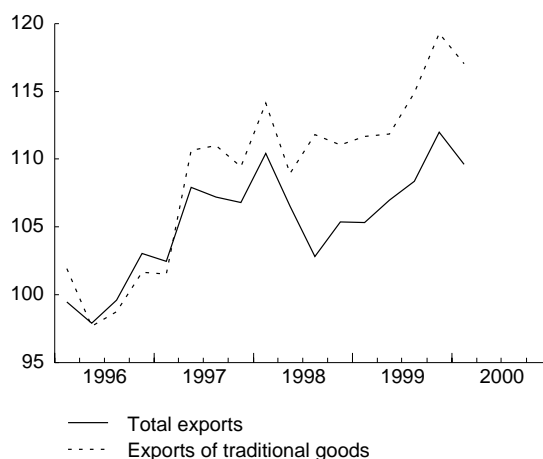
Preliminary QNA figures indicate, on an uncertain basis, a rise in general government demand from the fourth quarter of 1999 to first quarter of 2000 that was approximately on a par with growth in household consumption. If this is combined with developments in mainland investment, the figures show relatively strong growth in mainland demand, to a level nearly 3 per cent above the quarterly average for last year. By way of comparison, mainland demand rose by an average 3.9 per cent a year during the cyclical upturn from 1993 to 1998.

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



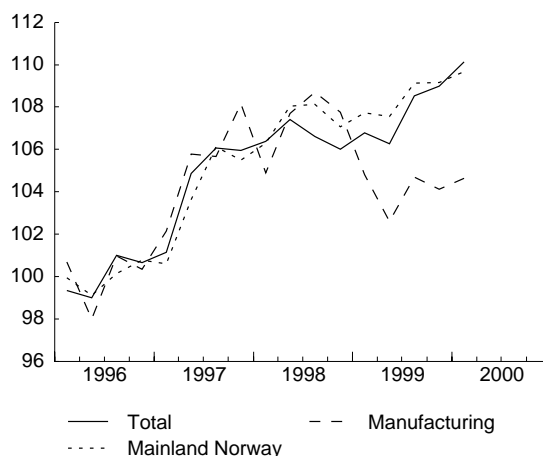
Source: Statistics Norway.

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



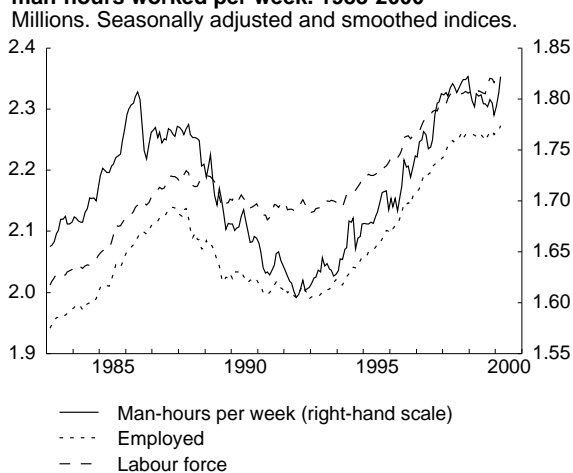
Source: Statistics Norway.

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



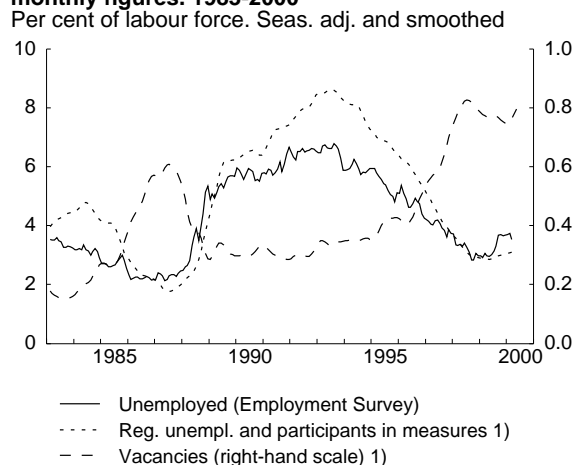
Source: Statistics Norway.

### Labour force, employment and number of man-hours worked per week. 1983-2000



Source: Statistics Norway.

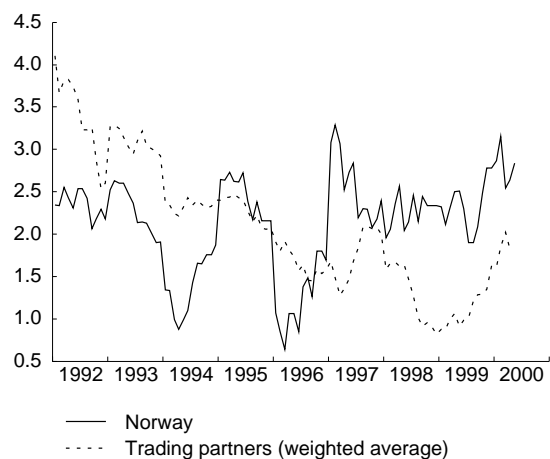
### Unemployed and number of vacancies, monthly figures. 1983-2000



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

### Consumer price indices. 1992-2000

Pct. change from the same month the previous year



Source: Statistics Norway.

On a seasonally adjusted basis, the volume of traditional merchandise exports fell slightly in the first quarter after rising fairly sharply through the second half of last year. Exports of manufactured goods and fish contributed to the weak result for the first quarter of 2000, while electricity exports had the opposite effect. Figures on value from External Trade Statistics show a shift in exports from Japan to the US in the year to the first quarter of 2000, whereas the pattern otherwise is relatively stable. Export prices in krone terms have risen sharply the last two quarters, to a level that is a good 6 per cent above the average for 1999. The rise in prices has been particularly strong for refined petroleum products, but metal prices have also increased considerably. This may largely be ascribed to a rise in a number of commodity prices measured in dollar terms as well as the considerable appreciation of the dollar against the krone (and most other currencies) during the last six months.

On the supply side, imports measured at constant prices showed a seasonally adjusted decline (both total and traditional goods), whereas as noted earlier, activity in the mainland economy picked up. For general government and goods-producing industries, excluding manufacturing, preliminary national accounts figures show relatively buoyant growth in the level of activity in the first quarter. Production in private service industries pushed down the average for the mainland economy to some extent, whereas value added in manufacturing rose at about the same rate as this average. Both the production index for April and developments in new orders and order backlogs point to a fairly sluggish trend for manufacturing industry in the second quarter.

In the QNA, the figures for changes in inventories and statistical deviations are calculated as the difference between total supply and total use. A comparison of the figures for the first quarter of 2000 with the first quarter of 1999 indicates that use was increasing slightly faster than supply. This is consistent with a reduction in inventories through the period, which is in accord with the movements suggested by Statistics Norway's inventory statistics. For 1999, the QNA now show a sharp decline in the item changes in inventories and statistical deviations. However, this should possibly be seen in connection with a steep rise of about the same magnitude in 1998.

Following sharp growth from 1993 and up to the beginning of 1998, employment has remained fairly stable the last 18 months. Seasonally adjusted figures from Statistics Norway's Labour Force Survey (LFS) indicate, however, a moderate increase during the last 6-7 months. The labour force has also shown a rising tendency during this period and, according to the LFS, unemployment has edged up from the relatively low level recorded in 1998 and first half of 1999. The sum of registered unemployed at employment offices

and persons participating in ordinary labour market programmes has also increased over the last three quarters, and the number of people laid off (entirely and in part) has almost reached the level recorded in 1996. However, the number of vacancies at employment offices, which exhibited a slightly falling trend from the summer of 1998, has edged up this year. Viewed in relation to developments in unemployment, this may be an indication of a greater mismatch between the composition on the supply and demand side in the labour market.

As an average for the first four months of the year, the consumer price index was 2.8 per cent higher than in the same period last year. Prices showed a year-on-year rise of 2.6 per cent in April. So far this year, movements in prices for petrol, electricity, beverages and tobacco as well as a number of services have contributed to pushing up price inflation, whereas the development of telecommunication rates and prices for food, clothing and footwear have had the opposite effect. The harmonized index of consumer prices rose by 2.7 per cent from the first quarter of 1999 to the first quarter of 2000, 0.8 percentage point more than in the EU and 0.7 percentage point more than in the same period one year earlier.

The results of the wage settlement so far this year point to growth in (disbursed) wages per normal man-year of about 4 per cent. Furthermore, employers will incur additional costs in connection with two extra vacation days next year.

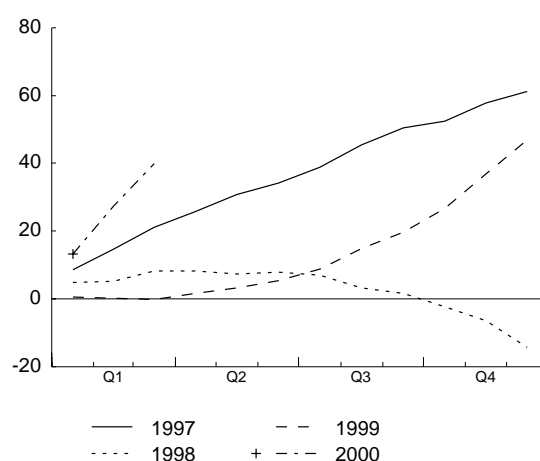
The current account of the balance of payments showed a surplus of NOK 39.9 billion in the first quarter, compared with a small deficit in the same period in 1999. The higher value of oil and natural gas exports accounted for most of the increase in the current account surplus in this period. Of the NOK 36.6 billion increase in this export component, about 90 per cent can be ascribed to the sharp rise in prices. Despite a considerable increase in Norway's net foreign assets over the past year, the deficit on the interest and transfers balance increased by NOK 1.5 billion between the first quarter of 1999 and first quarter of 2000. This may be related to a shift in the composition of Norwegian foreign assets from interest-bearing paper to other securities.

## Outlook for the remainder of 2000 and 2001

### Cyclical upturn among trading partners

As in our February report, market growth for Norway's traditional exports is expected to be considerably higher this year and next than in 1999. Prices for important Norwegian export goods have also picked up from the low levels seen a few years ago. Mainland enterprises' ability to benefit from this growth depends on their competitiveness. As a result of the fairly high rise in costs in Norway in recent years, market

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



Source: Statistics Norway.

shares both abroad and in the domestic market must be expected to decline. It is therefore assumed that growth in traditional merchandise exports will be lower than implied by market growth abroad.

In the spring of 2000, oil prices reached a very high level, both measured in dollar terms and, not least, in krone terms. The very high oil prices recently observed are not in OPEC's long-term interest since it probably will result in a noticeably lower market share for OPEC after a few years, if it should be continued. It must therefore be assumed that OPEC will increase its production in order to reduce the oil price. We assume that oil prices will gradually fall to USD 22 a barrel at the beginning of 2001. Along with a projected weaker dollar exchange rate (see below), this implies a substantial decline in the oil price measured in krone terms from 2000 to 2001.

### Monetary policy and estimates for exchange rates

The Norwegian krone has depreciated considerably this year. Measured against the import-weighted krone exchange rate (44 countries), the krone depreciated by almost 5 per cent from the end of 1999 to end-May this year. The krone has depreciated little against the euro, and is now in the middle of what was previously perceived as the normal range against the euro. We expect this to be the case also in the period ahead. The krone has depreciated against the dollar for several years, but this is now in the process of being reversed. A common projection is that the exchange rate between the dollar and the euro will change substantially over the next year or so. We assume a euro-dollar exchange rate of 1.10 early next year. Today, the exchange rate is approximately the reverse.

The sizeable depreciation of the krone has contributed to a pronounced rise in import prices. Compared with the first quarter of 1999, import prices for

**Main economic indicators 1999-2001. Accounts and forecasts**

Percentage change from previous year unless otherwise noted

	Accounts 1999	Forecasts					
		2000			2001		
		SN	MoF	NB	SN	MoF	NB
<b>Demand and output</b>							
Consumption in households and non-profit organizations	2.4	2.7	2.9	2 3/4	2.1	3.0	2 1/2
General government consumption	2.7	2.0	1.9	2 1/4	2.1	1.7	2
Gross fixed investment	-5.6	-3.4	-6.3	-5 3/4	-0.6	-2.5	3/4
Petroleum activities	-12.6	-21.8	-23.5	-20	-3.5	-17.6	-5
Mainland Norway	-2.1	2.8	1.5	-1	1.0	1.3	2 3/4
Firms	-3.3	0.9	0.3	-3	0.5	1.1	2
Housing	-2.2	11.2	5.4	7 3/4	8.9	8.9	6
General government	1.3	1.5	1.8	-1 1/2	-4.0	-3.9	2
Demand from Mainland Norway <sup>1</sup>	1.6	2.5	..	1 3/4	1.9	..	2 1/2
Stockbuilding <sup>2</sup>	-1.3	-0.1	0	..	0.0	-0.1	..
Exports	1.7	4.5	7.2	6 3/4	5.8	6.1	5
Crude oil and natural gas	-0.1	11.1	13.1	10	7.4	7.5	6 3/4
Traditional goods	2.6	4.5	5.4	6	4.6	4.8	4 1/2
Imports	-3.1	-1.1	0.7	1	3.7	2.9	3 1/2
Traditional goods	-2.0	0.1	2.6	1 1/4	4.0	3.8	3 3/4
Gross domestic product	0.9	3.1	3.1	2 3/4	2.5	2.8	2 3/4
Mainland Norway	0.8	1.7	1.8	1 1/2	1.7	1.9	2
<b>Labour market</b>							
Employed persons	0.7	0.6	0.3	0	0.4	0.6	1/4
Unemployment rate (level)	3.2	3.6	3.6	3 1/2	3.9	3.6	3 3/4
<b>Prices and wages</b>							
Wages per standard man-year	5.2	4.1	3 3/4	3 3/4	4.0	..	4
Consumer price index	2.3	2.8	2.6	2 3/4	1.9	2.3 <sup>3</sup>	2
Export prices, traditional goods	0.1	8.8	4.1	3 1/2	-0.7	1.8	1 3/4
Import prices, traditional goods	-2.3	4.3	1.8	1 3/4	-0.6	1.0	1 1/4
Real prices, dwellings	7.5	9.7	..	9 1/2	4.4	..	5
<b>Balance of payment</b>							
Current balance (bill. NOK)	46.9	158.1	152.7	148	151.4	119.5	129
Current balance (per cent of GDP)	3.9	11.7	11.4	11	11.0	8.9	9 3/4
<b>Memorandum items:</b>							
Household saving ratio (level)	6.8	6.1	6.9	6	6.7	6.3	6
Money market rate (level)	6.4	6.3	6.4	6.2	6.6	6.2	6.2
Average borrowing rate (level) <sup>4</sup>	8.4	8.1	..	..	8.4	..	..
Crude oil price NOK (level) <sup>5</sup>	142	207	190	203	165	145	158
International market growth	5.4	6.9	..	..	6.6	..	..
Importweighted krone exchange rate (44 countries) <sup>6</sup>	-1.2	2.0	..	0.4	-1.9	..	0.0

<sup>1</sup> Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway<sup>2</sup> Change in stockbuilding. Per cent of GDP.<sup>3</sup> The consumption deflator.<sup>4</sup> Households' borrowing rate in private financial institutions.<sup>5</sup> Average spot price Brent Blend.<sup>6</sup> Increasing index implies depreciation.

Sources: Statistics Norway (SN), Ministry of Finance, Revidert nasjonalbudsjett 2000 (MoF), Norges Bank, Penger og kreditt 2000/1 (NB).

traditional goods have risen by about 5 per cent. Following a sharp fall from the fourth quarter of 1998 to the first quarter of 1999, there were clear signs of an increase through the remainder of 1999, and particularly in the first quarter of 2000. We assume that the exchange rate for the euro, Swedish krona and yen will remain at approximately the current level, while the exchange rates for a number of other currencies will depreciate approximately in step with the dollar. In that case, the import-weighted krone exchange rate will appreciate slightly in the period ahead, and return to the level in 1999 at the begin-

ning of 2001. This will contribute to a slightly higher rise in import prices in 2000 than we assumed earlier, but a lower rise in import prices in 2001. According to our model-based calculations (KVARTS), the effect of this will be somewhat higher domestic price inflation in 2000 and lower price inflation in 2001.

The Norwegian money market rate has edged up through 2000 and has been slightly higher than envisaged in our previous quarterly report. Many expect a further rise in Norges Bank's key rates during the year because the central bank has revised upwards its

projections for economic growth in Norway this year. For the remainder of 2000, KVARTS predicts money market interest rates at about the current level given the forecasts that have otherwise been presented (see table). In this survey, we have therefore assumed a money market rate slightly above 6.5 per cent from the third quarter to the end of the projection period. Given the rise in interest rates projected for the euro area, the interest rate differential between Norway and the euro will be 1.5 per cent at the end of this year.

This assumption implies an interest rate that is a little more than half a percentage point higher this year and a good one percentage point higher in 2001 than the level projected in our previous quarterly report. According to our calculations, an increase in interest rates will contribute to curbing the level of activity somewhat the first year, but considerably more the following year (see separate box). The difference in interest rate movements therefore explains much of the reduction in growth in mainland activity compared with our projections in February.

### Cyclically neutral fiscal policy

According to the Revised National Budget for 2000, fiscal policy this year can be characterized as cyclically neutral. Growth in general government consumption and gross investment is estimated by the Government to be about 2 per cent in 2000. Our calculations are based on approximately the same assumptions. For 2001, we assume that growth in general government consumption will be about the same as in 2000 whereas, in line with the Revised National Budget, we project a decline in general government investment of about 4 per cent.

Our calculations do not incorporate any major changes in direct and indirect taxes. In the Revised National Budget, a number of minor changes in direct and indirect taxes have been proposed for this year, which altogether are revenue-neutral. It is still somewhat uncertain how the changes in agricultural support will be implemented, and at this point in time we have not taken account of these changes in our calculations. The changes probably point to slightly lower price inflation than indicated by our projections.

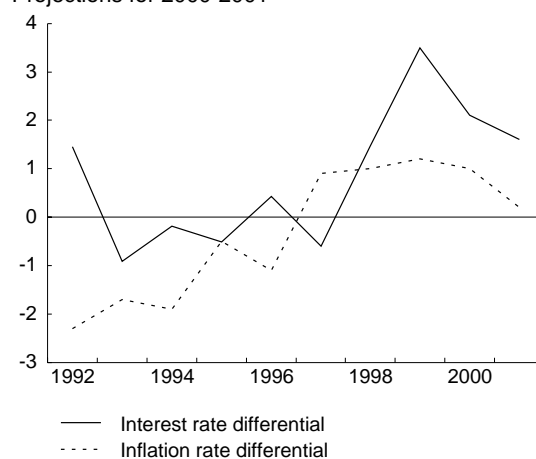
For 2001, the Government has announced fairly extensive changes in indirect tax policy. First, changes will be proposed in the VAT system by introducing VAT on a number of services which today are exempt from VAT. Part of the higher revenues that will accrue to the Treasury will be used for reducing special excise duties for goods that influence the scale of cross-border shopping, including excise duties on alcoholic beverages. In addition, the Government has announced that it wants changes in tax rules that can have an equalizing effect on the distribution of income. How-

### Exports Percentage growth



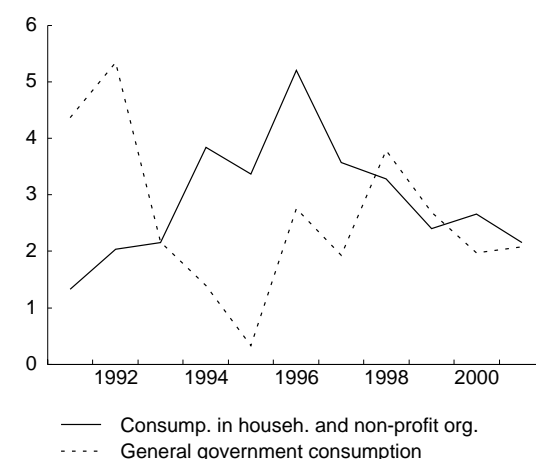
Source: Statistics Norway

### Interest rate and inflation differential between NOK, and the ECU/euro. 1992-2001 Projections for 2000-2001



Sources: Norges Bank and Statistics Norway.

### Consumption Percentage growth



Source: Statistics Norway

### The effect of higher interest rates

Effects of a 1 percentage point increase in interest rates with a given nominal exchange rate  
Deviation from the level in the baseling scenario per cent

	First year	Second year
Consumption in households	-0.5	-1.4
Gross fixed capital formation	-0.3	-1.6
Exports	-0.0	0.0
Imports	-0.3	-1.1
Mainland GDP	-0.2	-0.7
Employed persons	-0.1	-0.3
Wages	-0.0	-0.2
Consumer price index (CPI)	0.1	0.2

Source: Statistics Norway.

The table shows some effects of higher money market rates based on calculations using the macroeconomic model KVARTS. Initially, higher interest rates have the greatest effect on household consumption and housing investment.

- Households have higher debt than financial assets that are influenced by changes in short-term interest rates<sup>1</sup>. Higher interest rates therefore contribute to lower household income.
- Higher interest rates mean that consumption "now" in relation to consumption "later" is relatively more expensive, which in the short and medium term contributes to lower demand and higher saving.
- Housing costs increase, with a decline in the demand for housing stock. Prices for existing dwellings are thereby reduced. Household wealth is reduced and it is relatively more expensive to build new dwellings. Both elements point to lower demand.
- House rents increase so that real disposable income is reduced in relation to what it otherwise would have been.

Household demand is reduced through lower real disposable income, but the saving ratio also increases. Lower demand results in lower imports and Norwegian production, lower employment and slightly higher unemployment. This results in a slightly lower wage level, but here the effect largely depends on the extent of pressures in the labour market at the start. The calculations have been made on the basis of our baseline scenario (see main table) where pressures in the labour market are receding to some extent over the next few years, and this has a dampening effect on wages. It is worth noting that consumer prices increase as a result of higher interest rates because house rents rise. Enterprises also experience higher costs as a result of higher interest rates, but in KVARTS there is no direct cost effect of this on prices. The effect of the increase in house rents would have been slightly reduced if we had looked at the harmonized index of consumer prices (HICP). Lower wages will generally reduce prices for goods and services other than house rents, and towards the end of the second year traditional merchandise exports begin to rise slightly.

The projection of higher interest rates in this report compared with the previous report explains to a large extent why we now assume that household consumption will be lower in 2001 than in 2000.

<sup>1</sup> Households have a net financial asset position. However, a considerable portion of the financial wealth relates to pension insurance for which the return is influenced only to a relatively limited extent by changes in short-term money market rates. In the calculations, only interest rates on bank deposits and loans in private and public credit institutions are influenced by the money market rate.

ever, such changes in the indirect tax programme have not been incorporated in the current calculations.

### New impetus from petroleum activities?

Revised national accounts figures for 1999 show a decline in petroleum investment of 12.6 per cent from the previous year. So far, we have assumed that the decline will be more than 20 per cent this year. The trebling of oil prices measured in krone terms compared with two years ago, along with increased confidence that OPEC can adjust its production with a view to achieving an oil price of between USD 22 and 28 a barrel, are boosting profitability and current and expected earnings in oil companies to the extent that it must be assumed they will revise upwards their investment plans in the period ahead. Even though the oil companies' own estimates still imply a considerable decline in investment next year, we assume that investment will only fall marginally. Again, there is reason to emphasize the uncertainty of the estimates for future investment plans reported by oil companies.

Oil and gas production is expected to expand considerable this year. Along with higher prices in NOK, this will contribute to sizeable current account surpluses. Higher production will also result in an increase in the demand for labour and intermediate goods in petroleum activities, which in turn will have effects on the mainland economy. Compared with our earlier projections, growth has been revised upwards in 2001.

### Household income and demand

Although the spring wage settlement has not been fully completed, the results indicate that wage growth for a normal man-year will be about 4 per cent in 2000. This is marginally higher than was assumed in our previous report. Along with slightly higher price inflation, this means that real wage growth in 2000 will be approximately the same as we projected earlier. Somewhat higher growth in production and employment in 2000 than projected earlier (see below) will, in isolation, make a positive contribution to growth in household income. All in all, growth in households' real income is therefore projected at 2.1 per cent in 2000, while consumption growth is estimated at 2.7 per cent, the same as earlier. Real interest rates for households will be reduced somewhat from 1999 to 2000, which helps to explain the reduction in the household saving ratio (see separate box). These estimates entail a decline in the household saving ratio of a good half a percentage point from 1999 to 2000. In line with earlier projections, housing investment is expected to show a substantial rise in 2000.

The spring wage settlement has to a greater extent than usual also established a framework for next year's wage growth. In addition to an increase in vacation days for most groups, wage growth next year will be approximately the same as in 2000. Along with noticeably lower price inflation next year than in

**The effect of additional vacation days in the national accounts**

In the national accounts, normal man-years worked is defined as the number of full-time employed plus part-time employed converted to full-time equivalents. Man-hours worked is defined as actual man-hours worked including overtime but excluding absences for vacation, illness, etc. The increase in vacation days in 2001 and 2002 (two additional vacation days each year) will therefore in isolation contribute to lower growth in man-hours worked these two years. Normal man-years worked, however, will not be directly affected by additional vacation days.

In the national accounts, wages are generally defined on the basis of the disbursement principle. This means that holiday pay is registered in the year of payment and not the year it is earned. The increase in accrued holiday pay in 2000 and 2001 that is necessary to cover the additional vacation days the following years will therefore not influence growth in wages per normal man-year as this is calculated in the national accounts. In isolation, however, wages per man-hour worked will rise more than wages per normal man-year in 2001 and 2002 due to additional vacation days.

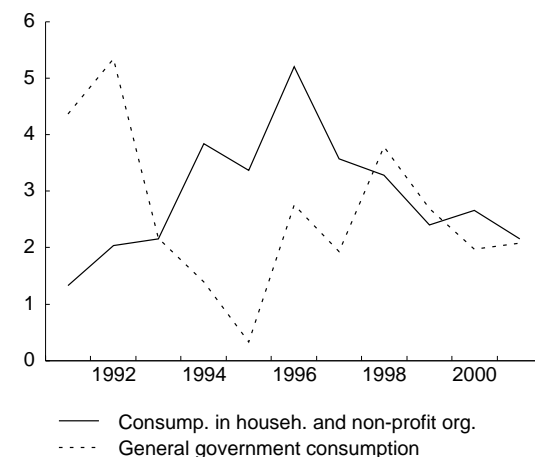
Compensation of employees comprises in the national accounts wages and salaries plus employers' social security and pension premiums. Employers' social security and pension premiums include employers' contributions to the National Insurance Scheme and other social security and pension premiums. Earned, but not yet disbursed holiday pay is not included as part of compensation of employees in the national accounts. This means that the increase in vacation days will not result in higher growth in compensation of employees per man-hour until 2001.

2000 (see below), this will result in higher income growth for households. This will push up household demand, although higher interest rates will have the opposite effect. Longer holidays also mean that people have replaced work and income with leisure, which seen in isolation will result in lower production and consumption in an economy with near full employment. All in all, growth in household demand is expected to be lower next year, although this will not reduce pressures in the economy to the same extent inasmuch as an increase in the number of vacation days will reduce the productive potential somewhat.

**Small changes in mainland investment**

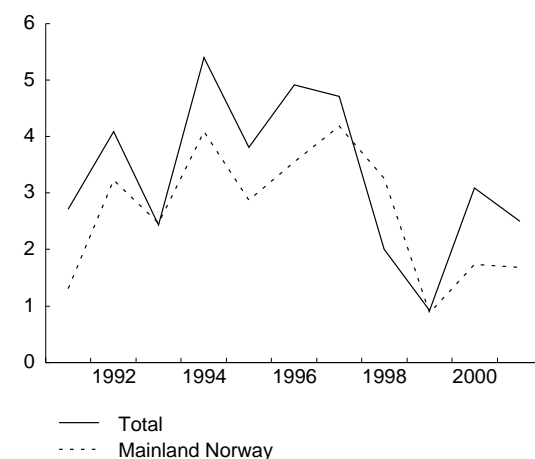
After levelling off in 1998, investment fell in 1999. For 2000, the figures for the first quarter show some increase compared with the low level at the beginning of 1999, but it is assumed that this does not actually foreshadow renewed growth. No major changes in fixed investment are expected in manufacturing and the power supply sector in the period ahead. Even though general government investment may edge up this year, it will probably fall in 2001. Service industries may record some increase, but this is expected to be very moderate. Moderate growth in the economy and the sizeable level of investment through the previous upturn imply only minor changes in mainland enterprises' investment as a whole in the period ahead. Housing investment, on the other hand, may increase to some extent, cf. above.

**Consumption**  
Percentage growth



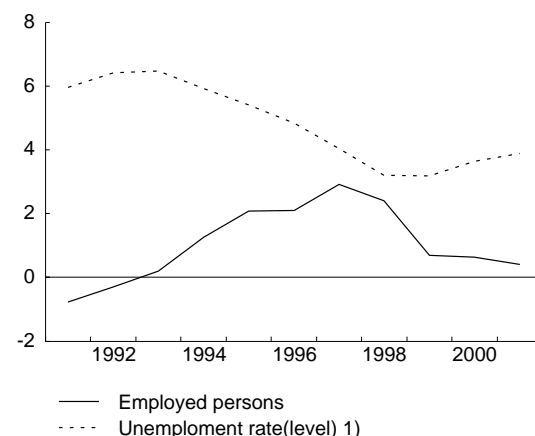
Source: Statistics Norway

**Gross domestic product**  
Percentage growth



Source: Statistics Norway

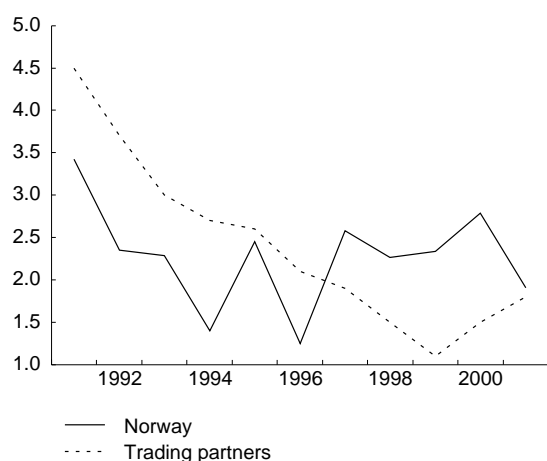
**Labour market**  
Percentage change



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



**Consumer price indices**  
Percentage growth



Source: Statistics Norway

### Moderate growth in the mainland economy

Mainland GDP rose by about 1 per cent from 1998 to 1999. Through 1999, however, there were signs of a slightly higher growth rate, which has continued into 2000. An increase in investment has contributed to this along with weaker-than-expected imports. Despite a strong cyclical expansion abroad, traditional exports have exhibited a relatively weak trend, and growth has been noticeably lower than market growth abroad. A loss of market shares must partly be seen against the background of deteriorating cost competitiveness.

Growth in general government purchases of goods and services will be about 2 per cent this year, whereas the decline in investment may contribute to lower growth next year. Growth in imports in the period ahead, which is partly related to higher import shares, will also contribute to reducing growth in the mainland economy next year. Slightly lower petroleum investment next year will also depress growth. Growth in household demand will help to maintain growth in the Norwegian economy both this year and next, but the growth impetus from this demand component is now expected to taper off in the period ahead due to higher interest rates. All in all, we therefore assume that the growth rate will not increase from 2000 to 2001, as was envisaged earlier.

### Slight rise in unemployment

Figures from Statistics Norway's Labour Force Survey (LFS) show a clear increase in unemployment through the second half of 1999 and into 2000. In our calculations, unemployment on a seasonally adjusted basis remains at approximately the same level as in the first quarter until the end of the year, but edges up next year. Employment is assumed to rise by 0.6 per cent this year and 0.4 per cent next year, which is slightly weaker than in 1999 but far weaker than in the previous five years.

### Lower wage growth, higher price inflation

According to preliminary national accounts figures, wages per normal man-year rose by 5.2 per cent in 1999 after having increased as much as 6.5 per cent the previous year. The spring wage settlement suggests that wages, measured in this way, will increase appreciably less this year, estimated at 4.1 per cent. The contractual increase in vacation days will already increase enterprises' accrued expenses this year, while the effect for employees will not be felt until next year, as ordinary wages in the expanded holiday period. A separate box describes how the increase in number of vacation days will be accounted for in the national accounts. An additional element is that as there are two fewer working days this year compared with 1999, wage growth measured per man-hour worked will therefore probably be considerably higher than when measured per normal man-year.

In connection with this year's wage settlement, contractual pay increases for next year were also agreed to large extent. For most groups, the contribution to annual wage growth appears to be slightly less than last year. Teacher groups will not increase their number of vacation days, and will be compensated for this by a separate pay increase with effect from 1 January 2001, equivalent to 1.6 per cent on an annual basis. The collective agreement in the retail trade sector stipulates that part-time employees can choose higher wages as a substitute for an increase in vacation days. All in all, growth in wages per normal man-year in 2001 is set to be about the same as in 2000. In 2001, there is one working day less than in 2000 in addition to the two extra vacation days. This implies that wages per man-hour also in 2001 will increase at a faster pace than wages per normal man-year.

The consumer price index is projected to rise by 2.8 per cent this year, against 2.3 per cent in the previous two years. The higher rate of inflation may largely be ascribed to higher oil prices and the depreciation of the Norwegian krone in 2000. Next year, price inflation is expected to slow, largely fuelled by the same factors: Instead of pointing to higher prices as is the case this year, the projected movements in oil prices and the exchange rate will point to lower prices next year. The consumer price index is projected to rise by 1.9 per cent from 2000 to 2001.

### Large current account surpluses

It appears that the current account surplus will be very high this year. Even with a pronounced reduction in oil prices later in the year, the current account surplus may reach NOK 158 billion. On an annual basis, the oil price in NOK is reduced by 20 per cent from 2000 to 2001. However, as a result of an appreciable rise in oil and gas production and a lower deficit on the interest and transfers balance, the current account surplus will only be reduced to NOK 151 billion.

# Supply and demand for different kinds of labour\*

Nils Martin Stølen

*The labour force is composed of persons with different kinds of education and different qualifications. If supply and demand do not grow at the same path, shortages or surpluses of different labour categories may arise. On the basis of demographic and economic models developed in Statistics Norway, it is possible to project possible future imbalances in the labour market. Given the assumptions applied, these projections show that there may continue to be a shortage of physicians, nurses and auxiliary nurses the next few years. Low recruitment to engineering studies may also result in a shortage of this category. The increased number of students the last decade may, on the other hand, imply an excess supply of social scientists. This may to some extent also be the case for lawyers and humanists.*

## Introduction

According to figures from the national accounts, employment in Norway rose by as much as 226 000 persons from 1993 to 1998. Even though the sharp growth in employment has resulted in an increase in the labour force, unemployment has also declined. Measured as an annual average, and applying the definition used by The Labour Force Surveys (LFS), unemployment decreased to 3.2 per cent of the labour force in 1998, against more than 6 per cent in 1993. A shortage of several kinds of labour has been registered the last few years. Wage developments in 1998 and 1999 also indicate pressures in some labour market segments.

The labour force is composed of people with different kinds of education and qualifications. If supply and demand for different types of labour do not grow at the same path, the shortage of labour in some sectors may be so great that wage growth accelerates even if there are still several people unemployed in other parts of the economy. A shortage of some kinds of skilled labour may also restrict the possibilities of implementing high-priority tasks in society. It is therefore important to have an overview of potential imbalances in the labour market and how these imbalances can develop in the years ahead. Such knowledge may assist the authorities in the adaptation of capacity in various educational institutions.

In order to obtain greater insight into these issues, Statistics Norway has developed a model for project-

ing supply and demand for various kinds of labour by education. The model is based on Statistics Norway's macroeconomic and demographic models, and therefore provides a picture that is consistent with projections from these models. However, due to the uncertainty concerning macroeconomic developments, political priorities, changes in various sectors' demand for different kinds of labour, as well as changes in propensities to study, the results must be interpreted with caution. The composition of employment in various industries may, for example, be influenced by the supply of persons with different educational backgrounds, and expected imbalances in the labour market can influence the choice and level of education. The projections must therefore be interpreted as estimates of developments in the labour market given certain assumptions, and not as forecasts for trends in unemployment for different kinds of labour. In important public sectors, such as the health and social sector and the education sector, political priorities will be of considerable importance both in terms of supply and demand for different kinds of labour. A more detailed planning tool has therefore been developed for these areas for use in the ministries concerned.

Statistics Norway's general model for projections of supply and demand for different kinds of labour is documented in Drzwi et al. (1994). An updated application was published in Cappelen and Stølen (1994). Later, results based on updated assumptions have been published as part of Statistics Norway's Economic Survey of the previous year, most recently in Statistics Norway (1998).

Since the publication in 1998, the underlying material in the model has been extensively updated. This applies to:

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\* Thanks to the Division for Population and Education Statistics for quality assurance by preparing updated information on education. I would also like to thank Ådne Cappelen, Knut Moum and Dennis Fredriksen for useful comments on earlier versions.

- New supply projections based on updated and improved assumptions concerning choice of education
- New macroeconomic calculations of importance for the demand for labour in various sectors
- Transition to new industry classifications in accordance with international recommendations (NACE) and subsequent adjustments of the industry classification in Statistics Norway's macroeconomic models
- The main revision of the national accounts, which has resulted in an upward adjustment of the estimates for employment in various service industries
- Updated information on the composition of employment by different categories of education in each sector
- Reconciliation of the supply and demand side according to the composition of unemployment by education in 1997 (compared to 1995 in Statistics Norway (1998))

Among these factors, the updated supply projections have been of greatest importance to the results for various categories of education.

### Supply of labour by education

The projection of supply of various categories of labour by education is based on the demographic microsimulation model MOSART (see Fredriksen, 1998). In the calculations, the number of economically active persons with a given education is increased by the supply of recent graduates, while further education, transition to social security or withdrawal from labour force activity for other reasons result in a reduction. The projection of the number of students is based on propensities to study from 1993, and it is assumed that the educational propensities remain unchanged at this level throughout the projection period. Even though the changes in propensities to study have not been as great as in the period from 1987 to 1993, the time that has elapsed since the last updating increases the uncertainty of the results. However, work has been in progress to update the propensities to study so that they correspond to the situation in 1997. Revised projections for developments in the labour market will probably be published in half a year.

One limitation of supply projections in MOSART is that they are exclusively based on demographic characteristics. Economic factors that might influence labour force participation for various groups are not included. However, these factors are included in the macroeconomic model MODAG (see Cappelen 1992) where labour force participation for a rough classification of the population by gender and age (but not education) is influenced, among other factors, by unemployment and wage conditions. Total labour supply is therefore projected using MODAG,

**Table 1. Supply of labour by education 1997-2010.**  
1 000 persons

	1997	2000	2005	2010
Primary school/first year upper secondary school	821	754	646	558
Secondary school, 2-3 years	789	846	919	999
University/college level (four year programme)	470	520	583	650
University/college level over four years	114	127	148	165
Unspecified	70	79	92	106
Total*	2 263	2 325	2 388	2 478

\* Excluding conscripts and foreigners in ocean transport  
Source: Statistics Norway

while the results from MOSART are used to distribute the total supply on different categories of education.

Labour supply projections for the main categories of education are shown in table 1. When conscripts and foreigners in ocean transport are disregarded, labour supply is estimated to grow by 215 000 persons, or 9.5 per cent, from 1997 to 2010. Of this, 97 000 persons can be ascribed to demographic factors related to growth in the working-age population. The remainder may be ascribed to an assumption of a further rise in the labour force participation rates for women and youths, but at a slower pace than through the period of economic growth from 1993 to 1998. After the increase of more than 30 000 persons in the labour force in 1998, a slower rate of growth in the Norwegian economy indicates that labour supply only may expand by about 10 000 persons a year in the period 1999-2004. This is slightly higher than the growth implied by demographic factors. Experience shows that a possible growing shortage of labour from around 2005 may have a positive effect on labour force participation for women and youths, so that the growth in the labour force may reach between 15-20 000 a year from 2005 to 2010.

The sharp rise in capacity at universities and colleges the past decade is the main reason why labour supply for the group with education at the university/college level (lower degree) is projected to increase by 180 000 persons, or 38 per cent, from 1997 to 2010. The labour force for the group with the highest university/college education may increase by nearly 45 per cent in the same period. Persons with a university degree in social sciences are expected to record the sharpest increase. A considerable growth is also expected for the humanities, law and among health personnel at college level. The labour supply from engineers, on the other hand, is only expected to show a slight increase.

For persons with an upper level secondary school education, labour supply may increase by about 210 000 from 1997 to 2010, and approach 1 million. The number of persons with only primary school/lower level

secondary school education shows a clear downward trend as the oldest segments of the population with a relatively high share of only primary education reach retirement age. An increase in the number with unspecified education in the projections of the labour supply contributes to some uncertainty concerning the distribution of labour supply by education.

### Outlook for employment trends in various sectors

The projections of demand for labour are based on calculations using Statistics Norway's macroeconomic model MODAG from the summer of 1999. Even though 1996 was the base year for the projections, they were reconciled with preliminary national account figures for actual developments in 1997 and 1998. The relatively sharp growth in employment that took place in these years has thus been incorporated. The calculations for 1999 and 2000 are based on the assumption that the demand stimulus from both Norway and abroad will be weaker than in previous years. This will result in modest employment growth. Information concerning employment changes in 1999 based on Statistics Norway's Labour Force Surveys (LFS) also indicate a noticeably slower growth in employment compared to the recent years.

The turnaround in the Norwegian economy is partly due to more sluggish growth in traditional merchandise exports and a weaker development in mainland investments in 1998 and the beginning of 1999. Petroleum investments have also fallen sharply in 1999 after the peak level recorded in 1998. Along with increasing costs in 1998 and 1999, the weaker development in investments and slower growth in merchandise exports will contribute to a slow trend in Norwegian manufacturing industry, with a fall in employment. The turnaround will also gradually affect construction, and probably contribute to lower employment in this industry. Developments in household consumption also slowed down during 1999. This will contribute to lower employment growth in wholesale and retail trade and other private services. Employment in the public sector is also assumed to show only a moderate increase as a result of a relatively tight fiscal policy. However, employment may grow in e.g. the health and social sector as a consequence of reforms that have already been approved. As a result of this and the possibility of decisions on further reforms, public sector employment is assumed to show a slightly stronger growth than in the baseline projection in the previous Government's Long Term Programme (Ministry of Finance 1997).

Regarding total employment the projections show only a modest growth in the period to 2002. Inasmuch as the labour force is expected to increase slightly due to demographic factors, unemployment may increase. In the calculations, unemployment is estimated to reach about 4.4 per cent in 2002,

**Table 2. Projection of the labour force, unemployment and employment. 1997-2010. 1 000 persons**

	1997	2000	2005	2010
Labour force*	2 306	2 365	2 424	2 509
Unemployment	93	90	109	104
Employed*	2 213	2 274	2 314	2 405
- Primary industries	101	103	97	91
- Manufacturing	319	308	283	263
- Oil and ocean transport	64	66	58	50
- Construction, power supply	135	138	140	148
- Wholesale and retail trade	315	319	322	328
- Domestic transport	151	151	142	156
- Other private services	448	479	504	537
- Public sector	680	710	769	832

\* Including conscripts and foreigners in ocean transport.

Source: Statistics Norway

measured by the LFS definition. However, this is considerably lower than the previous unemployment peak recorded in 1993. The development after 2002 is estimated more uncertain, but the Norwegian economy may exhibit a more positive trend, with a moderate growth in employment. As this may stimulate labour force participation, growth in the labour force also may pick up, and unemployment is expected to decline only moderately up to 2010.

Estimates for changes in the labour force, unemployment and employment by industry from 1997 to 2010 are shown in table 2. As a result of the cyclical downturn and technical progress, manufacturing employment is expected to fall considerably. A negative employment trend will probably also be seen in the primary industries and ocean transport. Over a longer period a greater number of people may be employed in construction, domestic transport, wholesale and retail trade and other private services. However, the sharpest growth in employment in the period to 2010 is expected to take place in the public sector, which is less affected by a sluggish economic development in 2000 and 2001 than other sectors. On the assumption of a moderate improvement in standards and coverage, the health and social sector, and to some extent the education sector, are expected to account for most of the increase in public sector employment. Employment growth is assumed to be very modest in public administration, and in the defence sector the number employed may decline.

### Demand by different categories of education

Employment in various sectors of the economy consists of persons with different kinds of education, and the composition differs across industries. As noted earlier, a shift in the composition of industries will therefore in itself contribute to changes in the need for different kinds of labour. In addition, shifts in the composition within each sector may occur.

The projections are based on the educational distribution of the employed from 1997. During the last 20

**Table 3. Demand for different kinds of education 1997-2010. 1 000 persons**

	1997	2000	2005	2010
Primary school/first year upper secondary school	774	714	621	581
Secondary school, 2-3 years	761	825	880	922
University/college level (four year programme)	461	508	575	646
University/college level over four years	112	123	138	155
Unspecified	62	64	66	69
Total*	2 170	2 234	2 279	2 374

\*Excluding conscripts and foreigners in ocean transport  
Source: Statistics Norway

years the shares of persons employed with secondary school and higher education have been rising considerably in most industries. It is assumed that the growth in these shares will continue, but there is considerable uncertainty associated with the magnitude of this growth. In several sectors many of the tasks can be performed by educational categories that are closely related, and there is thus a tendency for the composition of employment to be influenced by the composition of supply.

On the basis of the assumptions above, the demand for most kinds of labour with secondary or higher education is likely to increase in the period to 2010. Table 3 shows that the increase, both relatively and absolutely, will be greatest for those with college education and university level of lower degree (up to four years). This particularly applies to different types of health personnel due to the assumption of continued growth in the health and social sector, and the likelihood that trained personnel will perform an increasing number of tasks at the expense of the unskilled. Among other labour groups with university or college education, growth in demand is also expected to be considerable for those who have studied economics and administration, social sciences, humanities and for teachers. There will also be a substantial need for more engineers and graduate engineers, although the projected sluggish development in some manufacturing sectors and construction the next few years imply that demand will not increase to the same extent as for the groups mentioned above. A modest growth in public administration is one of the reasons for a more sluggish increase in the need for lawyers, but the share of this educational category will expand in most sectors.

Even though the need for persons with different types of secondary education also may increase, the clear shift towards university and college education implies slower growth for this group. The projected weak developments in manufacturing and construction the next few years may naturally contribute to limiting the growth in demand for persons with secondary vocational education in these sectors. The need to

replace unskilled labour nevertheless indicates an appreciable increase in demand. For similar reasons the need for persons with only primary school will fall. Growth in some service sectors with a high proportion of tasks that do not strictly require a formal education nevertheless may weaken the decreasing demand for this educational group.

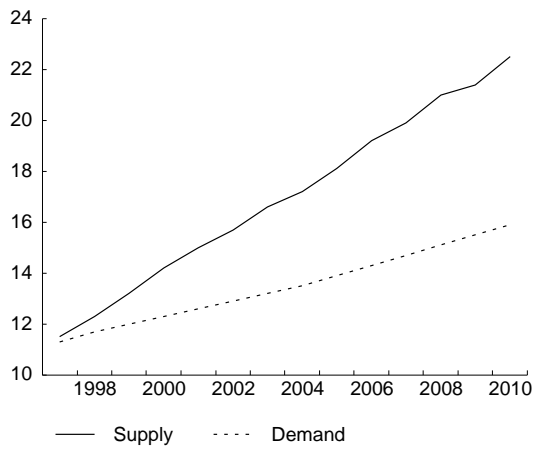
### **Possible imbalances in the labour market in the years ahead**

By comparing the projections for supply and demand for various kinds of labour it is possible to obtain an indication of possible imbalances that may arise in the future. However, the results must be interpreted in the light of the underlying assumptions, and a considerable uncertainty may exist. If imbalances arise in the labour market for an educational category, counteracting mechanisms will in practice take effect. With a shortage of one category of labour, persons with a closely related education will often be hired. Conversely, if there is an excess supply of one category of trained labour, such persons may enter related areas or areas that do not necessarily require such a lengthy education. Young people's choice of education may be influenced by the prospect of possible imbalances and, as noted earlier, one of the purposes of the projections is to assist the authorities in determining educational capacity in various areas. As the mechanisms mentioned above are not incorporated in the model, the calculations may provide an exaggerated picture of the imbalances.

A comparison of tables 1 and 3 shows that there may be an excess supply of some groups with higher education. As shown in figure 1, this primarily relates to persons who have studied social sciences, both with a lower and higher degree. Even though it is likely that the demand for this group may show a clear increase, the high number of students choosing this area at the beginning of the 1990s means that supply may increase faster than demand. The propensity to study social sciences at a higher level also appears to have continued to increase from 1993 to 1997. Even though there may be too many social scientists in relation to requirements, it is unlikely that many persons in this category will be unemployed since most of them may find employment in areas where lower educational attainment levels would probably have been sufficient. The same applies to those who have studied the humanities, but not to the same extent as for social scientists. The projected weak increase in the number employed in public administration also contributes to limiting the growth in demand for lawyers. Despite lower propensities to study in the last years, there may thus be an excess supply for this category of education. As with social scientists, it is however unlikely that many persons with this education will be unemployed.

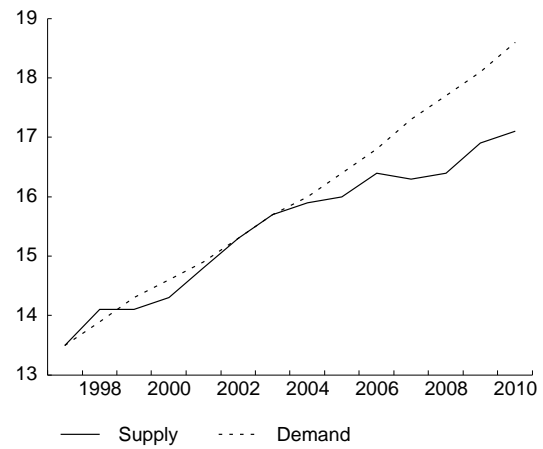
Figure 1. Developments in supply and demand for different kinds of labour 1997-2010. 1 000 persons

**Social sciences (higher degree)**  
Supply and demand. 1 000 persons



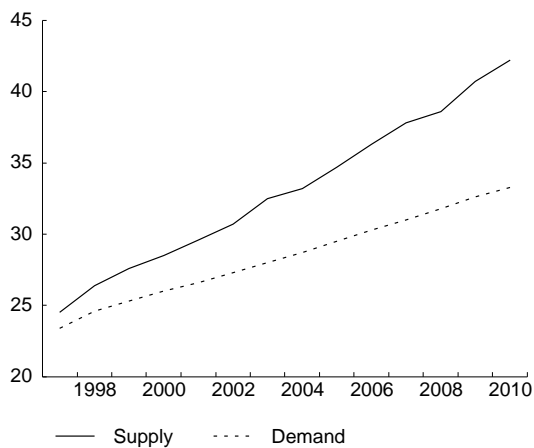
Source: Statistics Norway.

**Physicians**  
Supply and demand. 1 000 persons



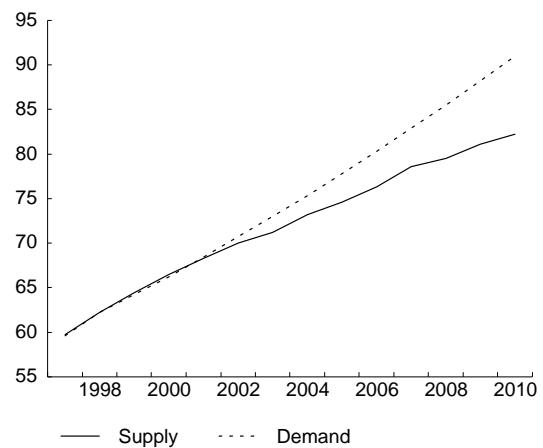
Source: Statistics Norway.

**Social sciences (lower degree)**  
Supply and demand. 1 000 persons



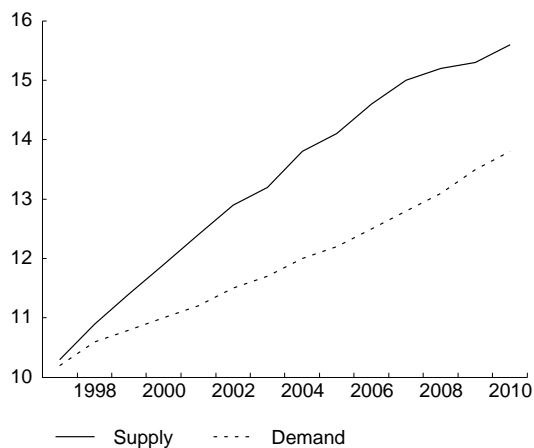
Source: Statistics Norway.

**Nurses**  
Supply and demand. 1 000 persons



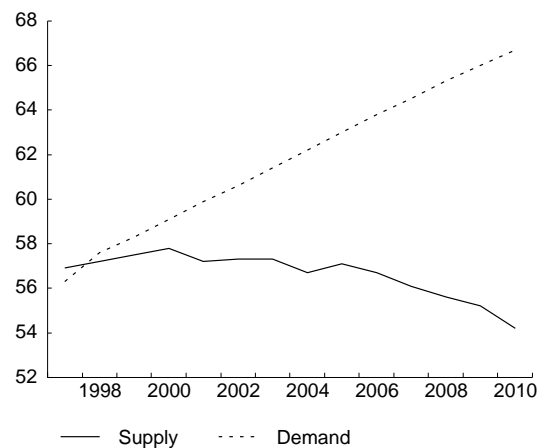
Source: Statistics Norway.

**Lawyers (higher degree)**  
Supply and demand. 1 000 persons



Source: Statistics Norway.

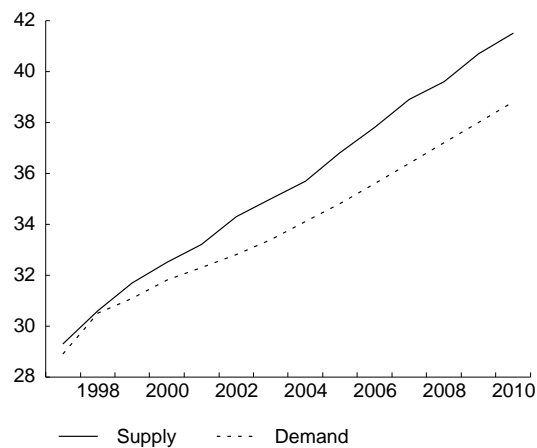
**Auxiliary nurses**  
Supply and demand. 1 000 persons



Source: Statistics Norway.

**Graduate engineers**

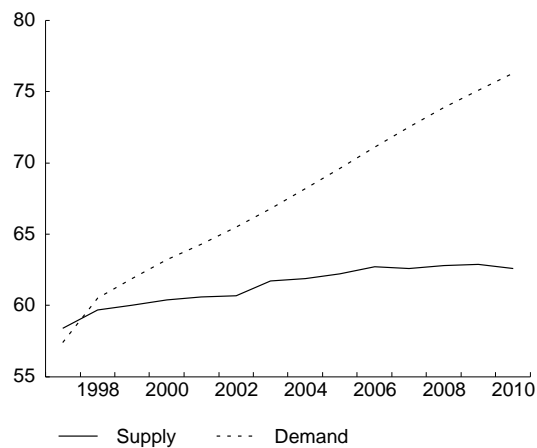
Supply and demand. 1 000 persons



Source: Statistics Norway.

**Engineers**

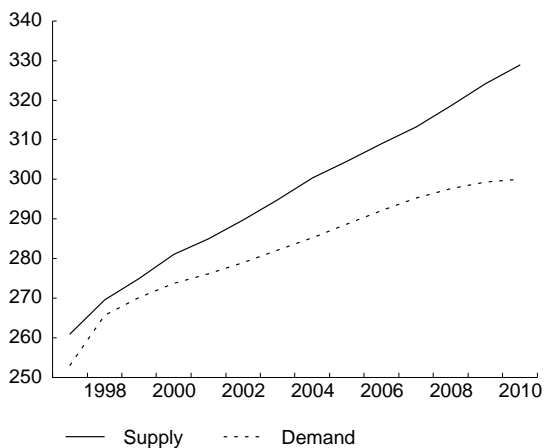
Supply and demand. 1 000 persons



Source: Statistics Norway.

**Manufacturing and crafts (secondary school)**

Supply and demand. 1 000 persons



Source: Statistics Norway.

As a result of an appreciable growth in the health sector and the replacement of unskilled personnel by labour with higher education, the results presented in figure 1 indicate a persistent shortage of physicians, nurses and auxiliary nurses. A decline in the number of persons applying for education as auxiliary nurses in recent years along with a fairly high percentage of older auxiliary nurses also imply that supply of this kind of personnel will remain virtually unchanged in the years ahead. On the other hand the results from a more detailed projection drawn up for this sector, published in Rogdaberg and Stølen (1999), indicate excess supply for physiotherapists, child welfare workers and social workers. The projected excess supply for these groups is caused by a sharp rise in educational capacity in the last years.

The projections of the supply of engineers only show a modest increase in the years ahead. This is related to fewer numbers graduating each year compared with a few years ago. At the same time, the number of engineers reaching retirement age is fairly high. A trend towards a further decline in the number of students after 1993 may imply that the current supply projections are somewhat overoptimistic if the number of students does not pick up again. The economic downturn for manufacturing industries and construction in 1999 and 2000 contributes to slow down the increase in demand for engineers. Based on the assumption of a steadily higher share of engineers in most sectors, a noticeable growth in demand is still expected. With the modest rise in supply, this may imply a persistent shortage of this kind of labour. The need for graduate engineers is also influenced by the projected decline in petroleum investments and the general economic downturn. With the propensities to study from 1993, the calculations show an excess supply for this category. It has been claimed that the decline in the number of pupils from secondary school specialising in science may gradually reduce the number who want to become graduate engineers, but up to 1998 it does not appear that this has been of great importance.

The cyclical upturn in the Norwegian economy from 1993 to 1998 contributed to an appreciable increase in the demand for labour with secondary vocational training for manufacturing and construction, and a shortage of some kinds of this education was registered. In view of the downturn affecting these industries, this situation is somewhat reversed. On the supply side the propensity to educate in this area has been somewhat adjusted upwards compared with earlier presentations. The total effect of these factors shown in the projections in figure 1 is an excess supply for this category of education the next few years. The calculations for persons with secondary vocational training (as well as for engineers and graduate engineers) imply that there is greater uncertainty associated with attempts to estimate future imbalances for

groups where demand is clearly dependent on the cyclical situation. Inasmuch as the timing and amplitude of cyclical movements are not known in advance, the calculations will have a tendency to underestimate demand in periods of expansion and overestimate demand in periods of contraction. In addition, there is considerable uncertainty on the supply side for groups with fairly sizeable variations in propensities to study.

A comparison of table 3 with table 1 may misleadingly give the impression that there will be a shortage of people with primary school education. This must, however, be seen in connection with excess supply for groups with a general education from secondary school, which most certainly can perform the same tasks. The sharp rise in the number of persons with unspecified education in the supply projections must also be taken into account.

### Conclusion

On the basis of the assumptions underlying the projections, there may be a persistent shortage of physicians, nurses and auxiliary nurses. Low recruitment to engineering studies in relation to higher demand and a substantial withdrawal when many reach retirement age also entail a possible shortage for this group. The increased number of students who choose social sciences may imply excess supply for social scientists, even with an assumption that demand will show a considerable rise. The same may to some extent also be the case for lawyers and those who have studied humanities. The projected decline in petroleum investments and the general cyclical downturn will in particular curb the growth in demand for persons with secondary vocational education, engineers and graduate engineers. For persons with secondary vocational education and graduate engineers this may result in excess supply the next few years. Lower propensity to study may cause a shortage of engineers.

The results might have been different if other assumptions had been applied. In addition to the clear impact on the need for various kinds of labour as a result of the cyclical downturn, the greatest uncertainty is associated with the assumptions concerning unchanged propensities to study in various fields and changes in the composition of demand. The projections can therefore not be interpreted as forecasts of imbalances in the labour market. When imbalances arise, this may also lead to political measures and the activation of mechanisms that contribute to restoring balance. Indeed, one of the aims of presenting projections is to contribute to this. At the same time, a critical evaluation of the assumptions underlying the calculations is important.

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# Population trends in Norway

Helge Brunborg

Norway's population was 4 479 000 at the beginning of 2000 and will probably exceed 4.5 million in the course of the year. The most striking feature of developments in 1999 was a sharp growth in net immigration, to 19 300, the highest level ever recorded. The number of births and deaths was at the same level as the previous year. The population grew by 0.76 per cent; without net immigration it would have increased by 0.31 per cent. In the autumn of 1999 Statistics Norway published new population projections, three years since the previous, for the country as a whole to 2050 and for municipalities to 2020. As many as 11 scenarios for the country and 6 for the municipalities have been published this time in order to demonstrate the uncertainty more clearly. They show continued growth for the country as a whole to about 2025, but a decline in population in many municipalities.

## Fertility

In the 1990s, the number of births has been relatively stable, at about 60 000 per year (figure 1), which implies a virtually constant number of nursery school children, pupils, students and persons entering the labour force in the years ahead. The fertility rate has also been fairly stable at 1.8-1.9 children per woman (figure 2). This level is among the highest in Western Europe, where the total fertility rate averages 1.45 children per woman. In Europe, only Iceland, Ireland and probably Albania are those countries which at the moment have a higher fertility rate than Norway. The relatively high, by international standards, fertility rate in Norway may be related to the family policy conducted, with an emphasis on providing an opportunity to combine children and labour force activity for women, partly through long care leaves of absence and relatively good day-care coverage, in addition to child allowance.

Several interesting features are behind the stability in Norwegian birth figures:<sup>1</sup>

- The average age of women at the time they give birth is rising. This is reflected in increasing birth rates for "older" women (i.e. over the age of 30) and declining birth rates for "younger" women.
- The age at the time of the first birth shows a particularly sharp rise. The median age at the time of the first birth rose from 22.7 years for the 1950 cohort to about 27 years for the 1971 cohort (figure 3).

- Childlessness is rising slightly, from 9.7 per cent for the 1950 cohort to 12.3 per cent for the 1958 cohort (figure 4).
- More women are having a third child. The share of mothers with two children who have had a third child at the age of 35 has risen from 40.8 per cent of the 1950 cohort to 45.3 per cent of the 1958 cohort (figure 5). In other words, those who have children have a few more, at the same time that a greater proportion is not having children at all.
- Following a prolonged decline, the cohort fertility rate<sup>2</sup> began to increase slightly, from 2.02 children for the 1950 cohort to 2.09 children for the 1960 cohort because "older" women have the children they postponed earlier. Thus, the cohort fertility level is about the same as the reproduction level of 2.08 children per woman, but it is doubtful whether this trend will continue for very long as the period fertility rate has been relatively stable at about 1.8 children per woman since the mid-1970s.

In Statistics Norway's projections for the period 1999-2050 we maintain a total fertility rate of 1.8 children per woman in the medium variant, but in order to illustrate the uncertainty we have also made calculations where the fertility rate after some years stabilises at 1.5 and 2.1 children per woman, respectively.

## Mortality

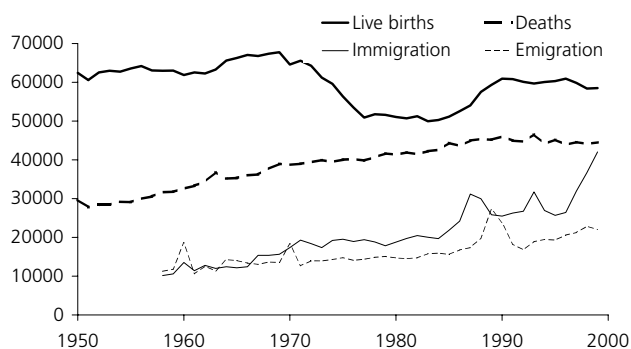
The number of deaths has also been stable in the 1990s, at around 45 000 per year. This entails, however, a considerable decline in mortality, as the population has both increased in size and aged (by about 1/2 year). In the period 1988-1999 life expectancy at birth increased by 2.5 years for men and 1.7 years for

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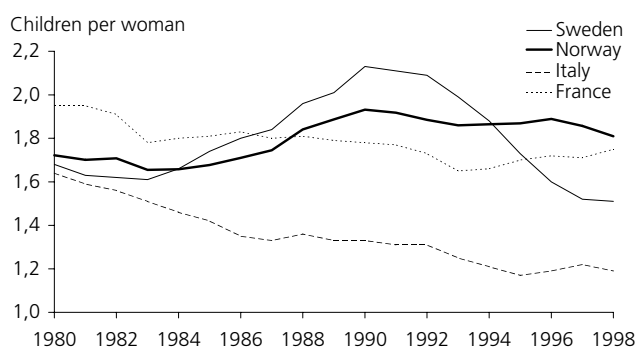
1 Most of the points below as well as figures 3-5 are based on Lappegård (1998).

2 The cohort fertility rate is the average actual lifetime number of children given birth by women born in the same year.

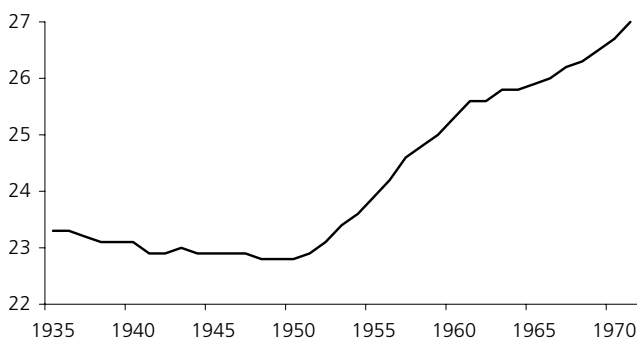
**Figure 1. Births, deaths, immigration and emigration, 1950-1999**



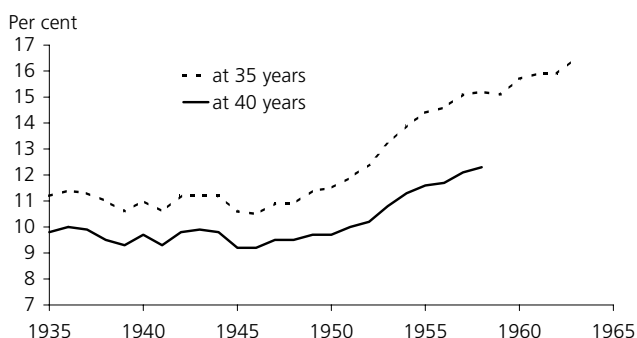
**Figure 2. Total fertility rate in Norway and selected European countries, 1980-1998**



**Figure 3. Median age at time of first birth for birth cohorts 1935-1971**



**Figure 4. Childlessness for birth cohorts 1935-1963. Per cent**



women (figure 6). Internationally, Norway ranks among the top, with a life expectancy of 75.5 years for men and 81.3 years for women. Only a few countries have a higher life expectancy than Norway, including Icelandic, Swiss and Swedish men; and Swiss, French, Swedish, Icelandic and Spanish women, in addition to the Japanese who live longer than in any other country.

The improvement in mortality that we have experienced the last decade, and actually almost on an uninterrupted basis since the beginning of the 1800s, must be expected to continue in the period ahead, partly due to advances in medical technology. A reduction in life-style illnesses due to smoking, unhealthy diets and lack of exercise may perhaps contribute to the same, but unfortunately not all of these trends point in the right direction. HIV/AIDS and other epidemics are not particularly widespread in Norway and this will probably continue to be the case in the future. With regard to developments in the mortality pattern in the period ahead, there are nevertheless some uncertain factors:

- How low can the mortality be, i.e. how high can the life expectancy at birth be? It is likely that the mortality rate will continue to fall, but we do not know how long this will continue. In the latest projections (for the period 1999-2050), we have assumed that life expectancy at birth rises to between 77 and 83 years for men and to between 81.5 and 87.5 years for women (figure 6). This is on a par with the UN's assumptions for Norway and other industrial countries for the next 50 years. In its long-term projections, the UN assumes that life expectancy rises significantly more, however, to fully 85.2 for men and 91.3 for women in Europe in 2150.
- The pace of the mortality decline is also uncertain. Will mortality fall at approximately the same pace as hitherto, will it decline somewhat slower, or will technological advance mean that mortality will fall even faster than so far? In the projections, we have in the high growth scenario assumed that life expectancy increases at about the same pace the next fifty years as in the previous fifty. In the other two scenarios we have assumed that the increase in life expectancy will occur most swiftly in the beginning and gradually taper off.
- Will the difference between life expectancy for women and men remain the same or narrow further? This difference increased from 3 1/2 years in 1950 to nearly 7 years in 1980 but has since been reduced to 5 1/2 years. In the projections, the difference is assumed to narrow to 4 1/2 years in all three scenarios (figure 6).
- Can we expect different developments for various ages? The mortality decline since 1970 has in relative terms been greatest for small children and

for the middle-aged and least for the oldest segment of the population, a pattern we have taken into account in the projections. As a result, in the long term the number of the very old (90+) will show a slightly lower growth than if we had assumed the same percentage decline for all ages, as in earlier projections.

- There are pronounced regional differences in mortality rates in Norway. In the county of Sogn and Fjordane men can expect to live about one year longer and women 1 1/2 years longer than the national average, while people living in Finnmark can expect to live 3 and 1 1/2 years, respectively, less than the national average. So far there are no clear indications that the regional differences are declining.

**Internal migration**

In 1998, 191 000 persons migrated between municipalities in Norway. This is a rise from about 170 000 at the beginning of the 1990s. This decade was marked by a net flow of migration from peripheral to central areas. Although there was some net out-migration from particularly Oslo to the rest of the country in 1998 these persons moved to nearby municipalities and not to remote areas. In 1998 medium-centralised regions recorded record-high net in-migration, with approximately the same number coming from large towns and from outlying areas.

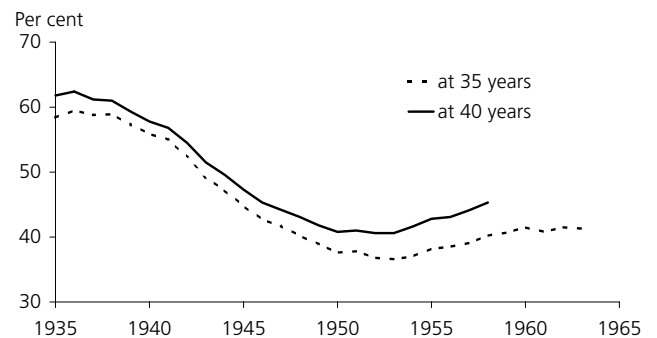
There is a close relationship between economic development and internal migration, as more people migrate when the economy is expanding than when it is contracting. Figure 7 shows that the propensity to migrate varies inversely with the business cycle, here measured by unemployment (Carling 1999).

**Immigration and emigration**

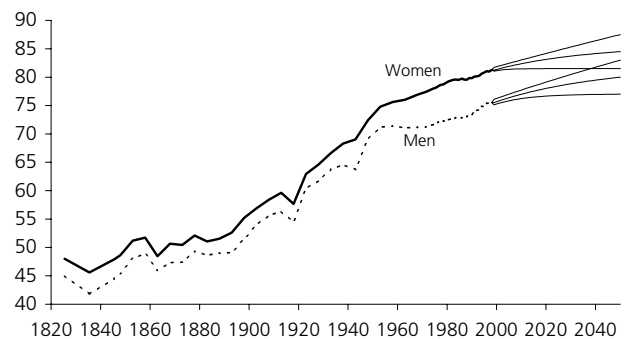
Immigration and emigration flows have been reversed in the post-war period, with a shift from net emigration in the 1950s and 1960s to substantial net immigration since 1967, with the exception of the registered figures for 1970 due to corrections following the population census the same year and 1989 when there was some cyclically determined net emigration (figure 1). Since 1993, net immigration has risen sharply as a result of asylum-seekers and job-related immigration. In 1999, net immigration was higher than ever before, 19 300 persons, which is 5 500 more than the previous peak in 1998. The largest immigration groups in 1999 were Kosovar Albanians who came as a result of the war and Swedes who came for employment. However, some of the Kosovar Albanians have already returned but not all of these have been recorded for 1999.

Net immigration in 1999 accounted for 58 per cent of the total growth in population. Only once earlier in Norwegian history (60 per cent in 1987) has immigra-

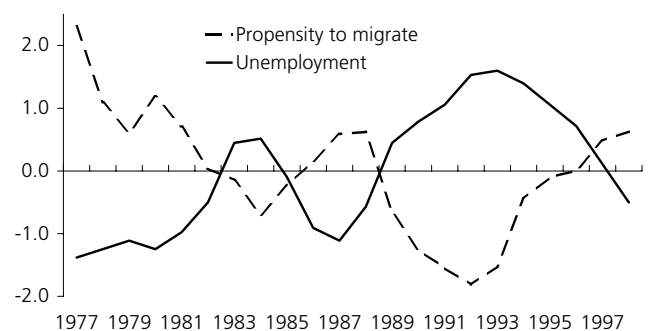
**Figure 5. Share of mothers with two children who have had their third child. Birth cohorts 1935-1963. Per cent**



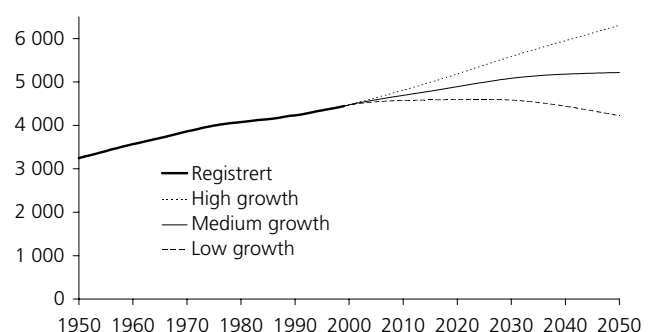
**Figure 6. Life expectancy at birth for women and men, registered 1825-1998 and projected 1999-2050**



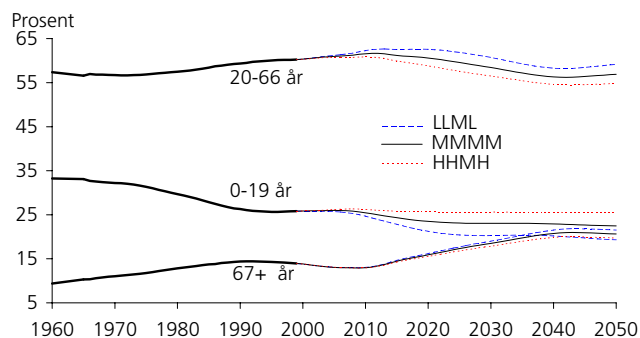
**Figure 7. Unemployment and propensity to migrate. Standardised values. 1977-1998**



**Figure 8. Population size, registered 1950-1999 and projected 2000-2050. In thousands**



**Figure 9. Population by age group, registered 1960-1999 and projected 2000-2050. Per cent of the entire population**



tion made such a high contribution to population growth. In 1999, 6.1 per cent of the population had been born in another country.

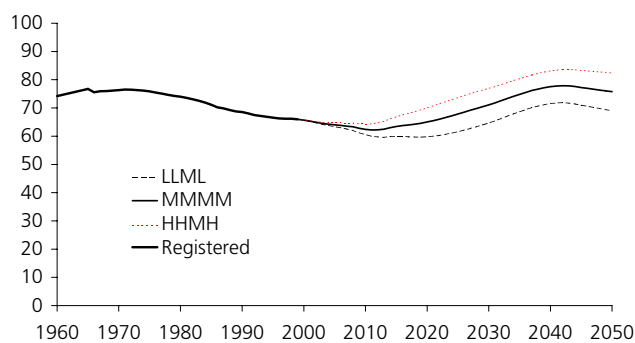
### New population projections

There is a considerable need for population projections, for central and local government authorities, in the business sector and as a basis for the political debate. In order to ensure high professional standards and consistency in the figures, i.e. that the sum of the various municipalities' population growth is the same as the growth for the country as a whole, Statistics Norway makes population projections, usually every third year. These are made both for the country as a whole and for each municipality, but for municipalities the population projections apply to a shorter period (most recently 1999-2020) than for the entire country (1999-2050). There is considerable uncertainty concerning future population trends, particularly for small municipalities.

For the country as a whole, fertility represents the greatest element of uncertainty concerning population trends in the long term, but in the short term there may be considerable and unpredictable variations in net immigration. Mortality does not involve any great uncertainty concerning the future population, since, as noted earlier, there has been a steady improvement on an almost uninterrupted basis the last two hundred years, but for some age groups, particularly the oldest segments of the population, the uncertainty is greater.

In the three main scenarios we have chosen combinations of assumptions that have the greatest effect on national population growth. In the medium growth scenario (MMMM) we have assumed that the total fertility rate is the same as in the last 5-10 years (1.8 children per woman), a medium increase in life expectancy (3.8 years for both sexes), a medium degree of centralization<sup>3</sup> and a medium net immigration

**Figure 10. Dependency ratio, registered 1960-1999 and projected 2000-2050. Per cent**



(10 000 per year). In the high growth scenario (HHMH) we have assumed high fertility (2.1 children per woman), a high increase in life expectancy (6.8 years), a medium degree of centralisation and a high net immigration (15 000 per year). In the low growth scenario (LLML) we have assumed low fertility (1.5 children per woman), a small increase in life expectancy (0.8 years), a medium degree of centralisation and a low net immigration (5 000 per year). The degree of centralisation only affects internal migration and is, therefore, the same in all three main scenarios since it has little impact on the total population.

According to the new projections, Norway's population is expected to continue to rise the next 25 years, from 4.4 million in 1999 to between 4.6 and 5.4 million in 2025 (figure 8). The increase will probably also continue after 2025, but a decline cannot be ruled out. In 2050, Statistics Norway expects Norway's population to be between 4.2 and 6.3 million. The medium growth scenario will gradually result in nearly zero growth, while the low growth scenario (LLML) will result in a decline and the high growth scenario a rise in population for a long period ahead.

For the time being the number of elderly in the Norwegian population is *declining* since it is the small cohorts from the 1930s that are becoming pensioners. After 2010, however, the share of elderly will increase sharply, irrespective of the assumptions underlying the projections (figure 9). The share of persons 67 years and older will increase from the current 14 per cent to between 19 and 22 per cent in 2050, which is approximately double the level of the 1960s. The share of children and young people will decline, irrespective of scenario, but least in the high growth scenario. In 1960, there were more than three times as many young people as elderly in the population; in 50 years the number in these two groups will be approximately the same.

<sup>3</sup> All Norwegian municipalities are assigned a level of centralisation ranging from 0 to 3, where level 0 consists of outlying municipalities and level 3 consists of large towns and the nearest neighbouring municipalities. The degree of centralisation is the average difference between the in-migration regions' and out-migration regions' level of centralisation for all moves (Carling 1995).

The share of persons of working age, 20-66 years, will in the period to 2050 account for slightly more than half of the population (between 55 and 63 per cent). The dependency ratio, which indicates the ratio of the number of persons below 20 and above 66 to the age group 20-66 years, will increase considerably from 2010 to 2040, from 64 per cent to between 72 and 83 per cent, and will thereafter decline slightly when the small cohorts from the 1980s become pensioners (figure 10). In the long term, the economically active population will have more people to support and care for. The increase in the share of elderly will to some extent be offset by a decline in the share of children and young people.

Projection results and more information concerning the assumptions may be found on Statistics Norway's web site, <http://www.ssb.no/folkfram/>.

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