

# Economic Survey

Statistics Norway



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# 4/97

## Economic trends

- National accounts for 3 quarter 1997
- Overview of international and Norwegian economic developments
- Forecasts for the Norwegian economy for 1997 and 1998

## Articles

- Labour productivity growth in Norway
- Capital stock and capital consumption

# Economic Survey

Volume 7

# 4/97

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## Economic Survey

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## Economic Survey

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# Economic trends\*

Preliminary national accounts figures show a slight slowing of growth in production and demand from the second to third quarter of 1997. On an annual basis, total GDP is set to expand by 3 per cent, which is considerably weaker than last year. This is primarily ascribable to petroleum production, as mainland GDP growth will probably be only moderately lower in 1997 than in 1996. It appears that in 1997 both traditional merchandise exports and mainland demand will increase at a somewhat slower pace than last year.

Whereas household consumption was the driving force behind domestic demand last year, it appears that mainland investment will make approximately the same contribution this year. This is partly ascribable to the sharp rise in local government investment related to the implementation of the school reform (school start for six-year-olds). The growth in total general government demand has also risen substantially the last two years, and the contractionary impetus from fiscal policy has gradually been reduced through the ongoing cyclical upturn. For the first time since 1993 petroleum investment will generate a considerable positive impetus to demand this year.

Both employment and the labour force are set to grow at an even faster pace in 1997 than in 1996. Unemployment will then probably decline by a good half a percentage point on an annual basis, approximately on a par with deve-

lopments over the previous three years. Wage growth in 1997 appears to be slightly lower than last year, and with consumer price inflation at 2.6 per cent real wages will increase by a little less than 2 per cent, approximately the same as the average for the period 1990-1996. Relatively high oil prices, measured in Norwegian kroner, will contribute to a continuation of the sizeable surpluses on the current account and in the general government sector.

While Sweden and continental EU countries may record somewhat stronger growth in 1998 than in 1997, growth in the US and UK is expected to be weaker. This would indicate that the growth impetus generated by traditional merchandise exports next year may be approximately the same as in 1997. The contribution to growth from mainland investment is also expected to be reduced from 1997 to 1998, and the estimates so far do not indicate any major growth impulses from petroleum investment. Higher transfers, however, will help to maintain the growth in household income at a high level, and it appears that the strongest growth impetus to the Norwegian economy in 1998 will come from household consumption. On balance, however, the expansion in activity in the mainland economy in 1998 is likely to be more restrained than this year. A further increase in petroleum production implies that total GDP will nevertheless grow at a faster pace in 1998 than in 1997.

## Main indicators for the Norwegian economy

Growth from previous year. Per cent

	1993	1994	1995	1996	1997	1998
GDP	2.7	5.5	3.6	5.3	3.0	4.0
- Mainland Norway	2.8	4.1	3.1	3.7	3.4	2.5
Consumption in households and non-profit organizations	2.2	4.0	2.7	4.7	3.5	3.1
Unemployment rate <sup>1</sup>	6.5	5.9	5.4	4.9	4.2	3.9
Consumer price index	2.3	1.4	2.4	1.3	2.6	2.7

<sup>1</sup> Level in per cent. Adjusted backwards for the statistical revision in January 1996.

\* Translated from Økonomiske analyser no. 9/97 by Janet Aagenæs.

The high level of mainland investment the last few years may result in somewhat stronger productivity gains in the period ahead, and employment is likely to expand at a slower pace in 1998 than in 1997. With a slight increase in the labour supply in excess of that resulting from demographic changes, unemployment may decline by about half a percentage point again next year. If wage formation follows the historical pattern in 1998, wage growth next year may be of about the same magnitude as in 1997. However, in view of the clear signs of regional and occupational imbalances now being seen in the labour market, there is considerable uncertainty associated with the impact of lower unemployment on wages. With excise duty increases contributing about half a percentage point to price inflation in 1998, consumer price inflation may be about the same as in 1997. Further increases in the production of oil and natural gas entail that the surpluses on the current account of the balance of payments and in the general government sector will remain very high in spite of a projected modest fall in oil prices measured in Norwegian kroner.

There is considerable uncertainty attached to economic developments the next few years. Major EU countries will probably participate in EMU, which may contribute to new patterns for Europe's interest and exchange rate policy. Both the requirements for participation in EMU and the budgetary problems linked to the ageing of the population indicate that many of Norway's most important trading partners will pursue a tight fiscal policy in the period

ahead. This may contribute to relatively moderate growth impulses from abroad the next few years. Nor can it be ruled out that developments in Asia in the second half of 1997 will contribute to curbing activity in the world economy for some time.

It now appears that petroleum investment may make a small or even negative contribution to growth in the Norwegian economy over the next few years. In view of the current high level of mainland investment, there is little reason to expect a substantial growth impetus from this demand component. In the absence of new fiscal stimulus, it is likely that the growth in GDP and employment in the mainland economy will slow somewhat, with unemployment stabilising, the first few years after 1998. New demand impulses, however, may quickly change this picture.

So far during the current upturn the growth in the labour force has been markedly stronger than the growth in working age population. This has brought participation rates up to a very high level both in an historical and international context. Even with slower growth in the Norwegian economy in the period ahead, the number of persons employed will probably increase at a faster pace than the demographically determined component of the labour supply. In this case, a stabilization of participation rates at the current high level may result in a swift decline in unemployment and considerably stronger wage and price inflation than the levels recorded in recent years.

# International economy

Norway's main trading partners are currently expanding at very different rates. In Japan and Italy, GDP growth this year will be weak compared with last year, about 1 per cent, and the outlook for 1998 is not particularly bright. In Germany and France, high exports will contribute to GDP growth of more than 2 per cent this year, although it is uncertain to what extent domestic demand will contribute to a higher growth rate next year. For the Netherlands and Denmark, GDP growth is estimated at about 3 per cent in 1997, and the positive trend is expected to continue. The cyclical situation is even more favourable for Anglo-Saxon industrial countries. Both the US and UK are expected to record a rise in GDP of about 3.5 per cent in 1997, with growth projected to slow next year. For Norway's trading partners as a whole, GDP is likely to expand by 2 per cent both in 1997 and 1998, while price inflation is expected to remain subdued in the same period.

## Economic developments

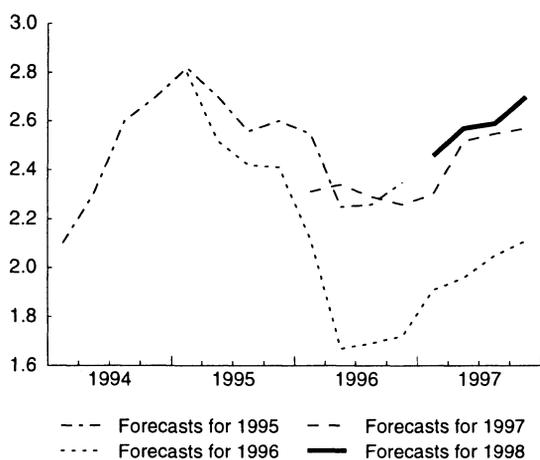
The US economy has now been expanding for six years, and it appears that growth in 1997 will be the strongest level recorded in the 1990s. National accounts figures for the first three quarters indicate that GDP will rise by more than 3.5 per cent in 1997. Higher growth in private consumption has been the main driving force behind the strong expansion this year. Consumption growth has probably been stimulated by both higher real wages and a positive trend in wealth, the latter a result of the strong advances in share prices. Business fixed investment has risen sharply throughout the upturn, and is again making a considerable contribution to GDP growth this year. Unemployment has stabilized at a low level, and stood at 4.7 per cent in October, the lowest level of registered unemployment since the early 1970s. The strong appreciation of the dollar over the past year and high capacity utilization in

the economy imply more moderate economic growth in the period ahead, with GDP growth projected at 2.7 per cent next year.

Following sluggish economic trends through the first half of the 1990s, GDP in Japan expanded by 3.7 per cent last year. Rather than being an indication of a new high-growth period in the Japanese economy, it appears that growth last year was a temporary effect of fiscal stimulus. Higher taxes from 1 April 1997 contributed to an aborted recovery, and GDP fell by 2.9 per cent in the second quarter. A substantial decline in public investment has also contributed to reducing growth this year. This autumn the problems in a number of Southeast Asian economies have amplified the sluggish trend in the Japanese economy, partly because Japanese banks have considerable financial investments in these countries and these markets account for a large share of Japanese exports (see separate box). Against this background, the strong depreciation of the yen, which started at the beginning of 1995, is expected to continue. The forecasts indicate that GDP will only expand by about 1 per cent in 1997, and growth is projected to be even lower next year.

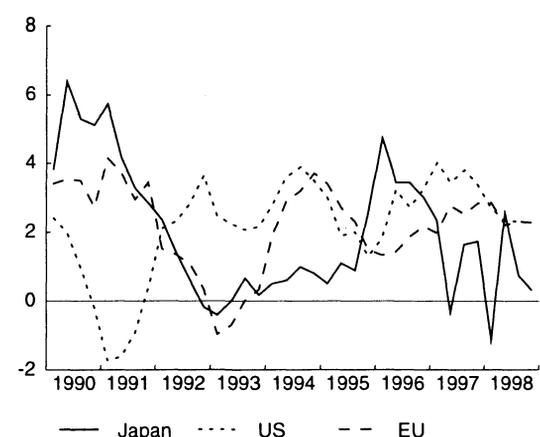
GDP in Germany expanded by 2.3 per cent in the first half of 1997 after rising by only 1.4 per cent last year. The upturn in the German economy is primarily being fuelled by the favourable export performance, stimulated by the fall of the Deutschemark against the dollar, whereas domestic demand is exhibiting a sluggish trend. This is reflected in the substantial rise in industrial production, which grew by 5.7 per cent (annual rate) from the second to third quarter of 1997, and new orders, which also rose sharply in the same period, particularly foreign orders. Capacity utilization in manufacturing industry (in western Germany) reached 86.8 per cent in September, which is higher than

**GDP-growth forecasts for Norway's main trading partners for 1995 - 1998 given on different dates**



Source: Consensus Forecasts.

**GDP-growth in US, Japan and EU (per cent)**  
Measured from the same quarter the previous year



Sources: NIESR and Statistics Norway.

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

Annual per cent change

	1996	1997	1998
<b>USA</b>			
GDP	2.8	3.7	2.4
Private consumption deflator	2.4	2.0	1.9
Short term interest rate (level)	5.4	5.6	5.9
General government budget deficit <sup>1</sup>	-1.4	-0.3	0.0
<b>Japan</b>			
GDP	3.7	1.2	0.6
Private consumption deflator	0.2	1.7	1.5
Short term interest rate (level)	0.6	0.5	0.6
General government budget deficit <sup>1</sup>	-4.4	-2.7	-2.1
<b>Germany</b>			
GDP	1.4	2.4	2.5
Private consumption deflator	1.9	1.9	1.9
Short term interest rate (level)	3.3	3.2	3.9
General government budget deficit <sup>1</sup>	-3.8	-3.1	-2.6
<b>France</b>			
GDP	1.5	2.1	2.5
Private consumption deflator	1.8	1.5	1.6
Short term interest rate (level)	3.9	3.4	3.9
General government budget deficit <sup>1</sup>	-4.2	-3.2	-3.0
<b>United Kingdom</b>			
GDP	2.5	3.5	2.0
Private consumption deflator	2.8	2.4	2.5
Short term interest rate (level)	6.0	6.6	7.4
General government budget deficit <sup>1</sup>	-3.3	-1.8	0.5
<b>Italy</b>			
GDP	0.7	1.0	1.8
Private consumption deflator	4.5	2.2	2.5
Short term interest rate (level)	8.8	6.9	5.7
General government budget deficit <sup>1</sup>	-6.7	-3.4	-3.2
<b>Sweden</b>			
GDP	1.3	1.8	2.6
Private consumption deflator	1.2	0.9	1.9
Short term interest rate (level)	5.8	4.1	4.5
General government budget deficit <sup>1</sup>	-2.2	-1.2	1.0
<b>Denmark</b>			
GDP	2.7	3.1	3.0
Private consumption deflator	2.1	2.1	2.8
Short term interest rate (level)	3.9	3.5	4.0
General government budget deficit <sup>1</sup>	-1.4	0.5	0.8
<b>The Netherlands</b>			
GDP	3.3	3.1	3.6
Private consumption deflator	2.1	2.3	2.5
Short term interest rate (level)	3.0	3.2	3.9
General government budget deficit <sup>1</sup>	-2.3	-2.0	-1.8
<b>Memorandum items:</b>			
GDP trading partners	2.1	2.6	2.4
CPI trading partners	1.9	1.9	2.0
ECU interest rate	4.5	4.2	4.6

<sup>1</sup> Per cent of GDP.

Sources: NIESR and calculations by Statistics Norway.

the historical average. So far the increase in production has not been able to prevent a continued rise in unemployment, and the unemployment rate in October stood at 11.8 per cent. The weak trend in the labour market will probably continue to curb consumer demand, and the financial crisis in Asia will gradually translate into lower export growth. On the other hand, high capacity utilization will probably result in higher private fixed investment in the period ahead. GDP is therefore expected to expand in 1998 at about the same rate as in 1997.

In *France*, domestic demand is weaker than last year, particularly as a result of fiscal tightening. Private consumption, which in 1996 rose by 2.1 per cent, has only increased at a modest pace this year. Tax increases have restrained income growth and government measures to stimulate car sales have been phased out. A depreciation of the French franc, however, has stimulated exports, which in the second quarter of 1997 were 13 per cent higher than the level one year earlier. Against this background, GDP growth is likely to be slightly higher in 1997 than in 1996: GDP rose by 1.7 per cent in the first half of this year compared with the same period last year, while growth was 1.5 per cent for 1996 as a whole. Growth may be slightly higher next year, but this is contingent on an upswing in domestic demand. Unemployment has been stable at about 12.5 per cent throughout 1997. The Jospin Government has launched a number of measures aimed at reducing unemployment, including a reduction in working hours to 35 hours a week from 2000.

In *Italy*, preliminary national accounts figures show that GDP grew by 0.7 per cent in the first half of 1997, which is the same growth as last year. As a result of the appreciation of the lira of about 15 per cent since mid-1995, external trade has generated a negative growth impetus. A substantial increase in taxes and other public austerity measures are also having a strong dampening effect on domestic demand. Private fixed investment has declined in 1997. Private consumption expanded by 1.7 per cent in the first half of 1997, but this is largely due to the special measures introduced by the authorities to stimulate private car purchases. Developments next year will partly depend on whether Italy can participate in EMU from the start in 1999. If it does participate, lower interest rates and greater optimism in the business sector may translate into higher investment. This would then contribute to boosting the GDP growth rate next year.

In the *UK*, economic growth has picked up through 1997, and GDP is expected to increase by about 3.5 per cent this year. Growth is primarily being underpinned by private domestic demand. Even though real income growth in 1997 appears to be slightly lower than in 1996, household consumption grew by 4 per cent in the first half of the year, and short-term data indicate a continued brisk rise. Consumption is being stimulated by a substantial improvement in household wealth, partly as a result of higher house and share prices. Private investment has also picked up considerably this year, probably as a result of high earnings in

the business sector and the need to expand capacity following several years of economic expansion. Unemployment, which began to decline at an early stage of the recovery, continues to fall. Measured as a per cent of the labour force, unemployment stood at 5.2 per cent in October this year. The strong appreciation of pound sterling and the tight monetary policy indicate that GDP may slow considerably during 1998.

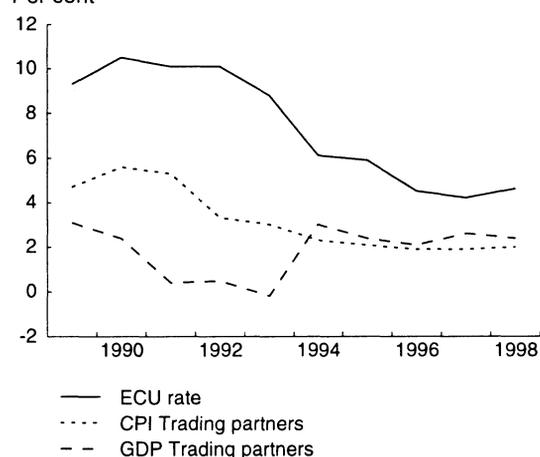
Preliminary national accounts figures show that GDP in Sweden rose by 1.4 per cent from the first half of 1996 to the first half of 1997, primarily fuelled by household consumption. Car purchases, stimulated by tax reductions, surged by 23 per cent in the first half of 1997, but purchases of other consumer durables also increased. Retail sales figures indicate, however, that the growth in consumption has slowed somewhat this autumn. General government consumption declined by 3 per cent in the first half of 1997 and an even stronger decline was registered for public fixed investment. Business fixed investment also fell somewhat in the same period and housing investment declined as much as 22 per cent. Net exports, which have been an important growth factor in the Swedish economy the last few years, made little contribution to GDP growth in the first half of 1997. Unemployment has drifted down over the past year and stood at 7.2 per cent in October. Based on sluggish trends so far this year, GDP is projected to expand by about 1.5 per cent in 1997, with growth edging up next year.

In Denmark, the strong economic upturn, which has been under way for five years, appears to continue. According to preliminary national accounts figures, GDP expanded by 3 per cent from the first half of 1996 to the first half of 1997. Economic growth is primarily being fuelled by domestic demand, particularly private consumption and investment. Consumption rose by 4 per cent in the first half of 1997, bolstered by strong real wage growth and a substantial rise in house prices. Fixed investment increased by 8.3 per cent in the same period. General government consumption also contributed to the expansion to some extent, whereas net exports made a negative contribution. Economic growth is expected to be sustained in the period ahead and GDP is projected to expand by about 3 per cent both in 1997 and in 1998. Unemployment has fallen considerably since 1994 and stood at 7.8 per cent of the labour force in October this year. With continued brisk output growth, unemployment is expected to fall further.

## Price inflation

The forecasts indicate that price inflation among Norway's main trading partners will be about 2 per cent both in 1997 and 1998. In most European countries consumer price inflation is now between 1 and 2 per cent. In Germany, the year-on-year inflation rate in October was 1.7 per cent, and at the moment it does not appear that the depreciation of the Deutschemark has had a significant effect on domestic prices. Inflation in France is even more subdued, showing a year-on-year rise of only 1.1 per cent in October, even

**GDP and consumer price growth for Norway's main trading partners, and 3 month ECU rate**  
Per cent



Source: Statistics Norway.

though the French franc has also depreciated this year. Inflation is expected to edge up in France in the period ahead. Inflation in Italy has fallen sharply the past two years, helped in part by an appreciation of the lira. In October, the year-on-year inflation rate was down to 1.7 per cent. Inflation is expected to remain subdued next year. In Sweden, higher prices for food and tobacco as well as higher rents have resulted in slightly higher inflation this year, but the rise in prices was still only 1.4 per cent in October. In the UK, it appears that robust economic growth has fed through to prices to some extent. Year-on-year consumer price inflation was 3.7 per cent in October, but excluding the contribution from interest and indirect taxes the rise in prices was still only about 2.5 per cent.

Inflation in the US has been stable for a long time, and in October this year consumer prices showed a year-on-year rise of 2.1 per cent, the lowest for ten years. Unemployment has also been reduced to a very low level. Stronger-than-estimated productivity gains through this period of expansion may be one possible explanation for the subdued level of inflation. In addition, the appreciation of the dollar is helping to curb inflation. Japan has recorded a period of falling prices, and consumer prices showed no rise last year. The 2 percentage point increase in the consumption tax in April was the main reason for the higher year-on-year increase in the consumer price index, moving up from 1.2 per cent in April to 2.4 per cent in September.

## Monetary policy

Following a protracted period of stable, low interest rates in Germany, the repo rate (a key rate for money market rates) was raised from 3 to 3.3 per cent in early October. The interest-rate increase was probably triggered by the sharp rise in import prices (5.4 per cent in August) and the greater growth impetus to the German economy. In order to maintain stable exchange rates between the currencies of the two countries, the French central bank immediately raised its key rate to the same level as in Germany. Further increases in German interest rates before decisions on

## Asia's economic crisis

The economic crisis which emerged in Thailand in July this year has during the autumn months spread to an increasing number of countries in Southeast Asia. While it was previously thought that the problems in the region would have negligible effects on the world economy, the gravity of the situation increased when the economic superpowers in the area, South Korea and Japan, also experienced problems. Developments must be viewed against the background of a number of factors.

In the wake of a protracted period of robust economic growth, the population of Southeast Asia has had a growing appetite for imported consumer goods. This resulted in substantial current-account deficits for Asian countries throughout the 1990s, particularly after the expansion in exports slowed. A 50 per cent devaluation of the Chinese yuan in 1993 lowered the competitiveness of the countries in Southeast Asia. Most of these countries had a fixed exchange rate against the US dollar before the currency crisis. The appreciation of the dollar since the end of 1995 resulted in additional losses of competitiveness for these countries, both in relation to European countries and particularly Japan. In the same period the market for important Asian export products, including semi-conductors, exhibited a sluggish trend and further contributed to curbing export growth. Substantial current-account deficits were previously looked upon as unproblematic because the investment rate was very high. Some of the investments, however, have related to prestigious projects with little or even negative returns.

The current crisis has demonstrated that their financial systems constitute a significant weakness in these Asian countries. Capital markets have largely been liberalized, but financial institutions have not adapted at the same pace. Annual GDP growth rates of about 7 per cent over the past 15 years resulted in very strong lending growth and encouraged the financing of many risky projects, particularly in a property market characterized by considerable excess capacity accompanied by poor earnings. A fixed exchange rate against the dollar entailed that many financial institutions found it to their advantage to raise foreign-currency loans, while lending was denominated in local currency. Hedging against exchange rate losses for these borrowed funds was very limited as the risk of exchange rate fluctuations was considered minimal. This practice gave rise to serious distortions between short-term foreign-currency debt and illiquid domestic assets, for example in the form of mortgages on commercial buildings. The problems were further exacerbated by the authorities' interference in the form of demands for loans for politically motivated projects.

As long as the economies flourished, everything appeared to be unproblematic. However, when investors concluded in July that the Thai baht was heavily overvalued, they began to withdraw from the market. The central bank's decision to defend the currency by increasing interest rates had a negative effect on interest-sensitive sectors. And with limited foreign exchange reserves, it was impossible to maintain a fixed exchange rate. The subsequent depreciation of the currency was enormous, nearly 40 per cent over a period of a few weeks. The result was a vicious circle where banks received interest and instalments in the local currency, but

had to service their own costly dollar loans. The large number of high-risk projects in their lending portfolios also resulted in a very high percentage of bad loans that would probably never be repaid. Many banks were in reality insolvent even when the wave of speculation against the currency began. The authorities attempted to supply liquidity, but did not have sufficient funds. The stock exchange plummeted and activity slowed, thereby resulting in even poorer earnings for companies which to an even lesser extent were capable of meeting their debt obligations. The crisis was a fact, and Thailand had to turn to the IMF for assistance.

The Asian countries are largely dependent on each other's economic developments since more than 40 per cent of trade takes place within the region. Moreover, it became obvious that financial institutions throughout the region were grappling with similar problems. After Thailand abandoned its attempt to defend the exchange rate, other countries followed suit like dominoes, with a sharp depreciation in the Philippines, Indonesia, Singapore and Malaysia in July, while Taiwan and South Korea had to abandon their fixed exchange rates in October. Both Indonesia and South Korea have applied for support from the IMF.

The fact that the crisis has now reached South Korea, the eleventh largest economy in the world, means that the potential implications for the world economy have increased considerably. Whereas it is primarily financial institutions that are experiencing the greatest problems in Southeast Asian countries, many of South Korea's large industrial conglomerates also have deep-rooted financial problems and the crisis is therefore more extensive. Moreover, the country is important to developments in Asia's real economic superpower, Japan, both as a trading partner and as a competitor in a broad range of export products.

Japan has struggled with economic problems since the beginning of the 1990s. The modest GDP growth recorded over the past six years has primarily been spurred by general government demand and exports. As a result of the many economic stimulus packages introduced by the authorities, the budget deficit reached about 4.5 per cent of GDP last year. In spite of the authorities' attempts to stimulate the economy, they were still not willing to tackle the root of the problem, i.e. write off non-performing loans and allow insolvent financial institutions to go bankrupt. However, developments this autumn, with a number of major bankruptcies in banks and securities firms, point to a new policy, and the authorities have signalled a willingness to clean up the financial sector. Until this happens, Japan's economy will have to contend with both lower export market growth in Southeast Asia and stronger competition from producers in depreciation countries.

In order to estimate some potential effects of the exchange rate collapse in Asia for the US and Europe, calculations have been made using the macroeconomic model NIGEM<sup>1</sup>. Two main effects of the currency crisis are incorporated. First, we assume that the considerable depreciation

<sup>1</sup> NIGEM (National Institute Global Econometric Model) was developed by the research institute NIESR in London.

of the currencies will be maintained and over time result in lower export prices for countries in the region. Lower export prices will to a varying extent result in lower import prices for OECD countries, depending on the volume imported from the respective Asian countries. Japan has the highest import share of about 30 per cent, the US a little less than 20 per cent, while for the large European countries between 5 and 10 per cent of imports comes from Southeast Asia and South Korea.

We have assumed that export prices in 1998 are reduced by about half of the average currency depreciation recorded so far. In 1999, it is assumed that prices are reduced by the same margin, entailing that the currency depreciation feeds fully through to prices in the course of two years. This must be considered a hypothetical assumption as there is considerable uncertainty both in terms of how much of the currency depreciation will be reflected in export prices and how swiftly prices will fall. Based on our assumptions, the direct effect on import prices in Japan is a decline of 3.8 per cent both in 1998 and in 1999, whereas for the US the fall in prices is 2.2 per cent in both years. For the other countries (i.e. Norway and Norway's other main trading partners), the direct effect on import prices ranges between -0.5 and -1 per cent.

In addition to the effects on prices, we have assumed that domestic demand is also gradually curbed in Southeast Asia as well as in South Korea and Japan. In the model-based calculations, we have reduced Japanese consumption and investment by 2 and 4 per cent, respectively, in 1998 and 1999. Merchandise imports in Southeast Asia (excluding China) and South Korea are reduced by 6 per cent each year. In addition, South Korea's imports of services have been adjusted downwards considerably in the same period. The effects for industrial countries depend on how much they export to the region. Japan is the most vulnerable, with an export share of over 30 per cent, whereas the export share for the US is about 15 per cent. Exports to Asia from European countries are relatively modest.

The table below shows the results of the calculations for 1998 and 1999. In Japan, the crisis has a considerable impact on GDP, primarily because we have reduced private consumption and investment but also due to the decline in trade with other Asian countries. The effects on GDP in the US are modest. Even though trade with Asian countries is relatively substantial, total trade is small in relation to GDP in the US. Consumer prices in the US are reduced by a greater margin in 1999 than in 1998, indicating that it takes time before changes in import price feed through to the domestic economy. For Germany, the effects on GDP are slightly greater as Germany has a considerably more open economy. Consumer prices in Germany are also reduced slightly in 1999, and combined with the decline in activity this contributes to a reduction in interest rates. In Norway, import prices decline in both years, primarily as a direct consequence of our imports from Asian depreciation countries. Norway's market growth is also reduced as a result of lower activity in trading partner countries.

#### Effects of the currency crisis in Asia

Change in growth measured in percentage points unless otherwise specified

	1998	1999
<b>Japan</b>		
GDP	-1.8	-1.9
<b>USA</b>		
GDP	-0.2	-0.1
Consumer prices	-0.1	-0.4
<b>Germany</b>		
GDP	-0.2	-0.3
Consumer prices	0.0	-0.2
Short-term interest rates <sup>1</sup>	-0.2	-0.2
<b>Norway</b>		
Import prices	-0.5	-0.6
Export market growth	-0.7	-0.9

<sup>1</sup> Deviation in level.

EMU are taken in May next year cannot be ruled out. The rise in import prices has slowed later this autumn and money supply growth remains within the central bank's target range, implying that interest rates will remain at a low level. In Italy, favourable inflation figures have helped to reduce interest rates substantially. The discount rate was lowered to 6.3 per cent in June this year, and short-term market rates have shown a decline of more than 4 percentage points the past two years. In the UK, the base rate (the "floor" for money market rates) has been increased several times following the change of Government on 1 May this year, when the authorities gave the central bank a more independent role in the implementation of monetary policy. The base rate was most recently raised to 7.25 per cent at the beginning of November. The strong pound sterling exchange rate and a tight fiscal policy imply that further interest-rate increases of significance will not be necessary in the period ahead.

The US federal funds rate (US interbank rate) has remained at 5.5 per cent since March 1997. Stable and subdued price inflation, helped by a strong dollar exchange rate, implies that interest rates will not be raised, whereas pronounced GDP growth would indicate the opposite. In Japan, the economic slump over the last few years has been met with a very expansionary monetary policy. The discount rate has been kept at a record-low level (0.5 per cent) since September 1995, and the substantial financial problems in the Japanese economy imply continued low interest rates.

#### Fiscal policy

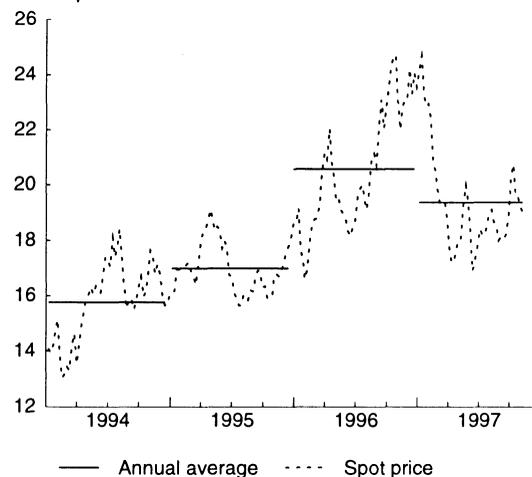
Fiscal policy in EU countries has in recent years largely focused on satisfying the convergence criteria in the Maastricht treaty, thereby paving the way for economic and monetary union. Sluggish economic trends the past year have required a further tightening of fiscal policy in

several countries. In Germany, it now appears that the budget deficit this year will be reduced to 3 per cent of GDP. The reason is that, in keeping with Eurostat's rules, expenditure on public hospitals has been eliminated from the budget figures, which has reduced the deficit by 0.3 per cent of GDP. The deficit came to 3.1 per cent of GDP in the first half of 1997. On the other hand, higher unemployment, and thus higher social security payments and lower-than-expected tax receipts, have weakened the budget balance. In France, an independent audit of government finances concluded in July that the deficit this year will be equivalent to 3.5-3.7 per cent of GDP. Against this background, the new Government proposed additional measures aimed at reducing the deficit, partly in the form of higher taxation of enterprises and reduced defence spending. New measures for 1998 were presented in September, with a view to bringing the deficit down to 3 per cent of GDP. In the UK, the new Government's budget did not contain any tax increases other than the announced one-off windfall tax on excess profits of privatized utilities. This was in accord with Labour's promises during the election campaign. The budget deficit is expected to be reduced to less than 2 per cent of GDP this year and decline further in the years ahead. In Italy, the general government budget deficit in 1996 was equivalent to 6.7 per cent of GDP. The 1997 budget contained ambitious austerity measures, and the public sector borrowing requirement has been reduced substantially. It is nevertheless doubtful whether the budget deficit can be reduced to 3 per cent of GDP this year. About two thirds of the tightening is reflected in lower spending, while a temporary "Europe tax" and "accounting measures" constitute the remainder. One of the problems viewed in relation to EMU membership is that some of the austerity measures are temporary and will only improve government finances this year.

In Sweden, the authorities' continued tightening of policy has contributed to a considerable improvement in government finances. The budget deficit is expected to shrink to 2 per cent of GDP this year. Even though Sweden will probably be eligible to participate in the planned monetary union, the Government has stated that participation from the start in 1999 is not being considered. In Denmark, the general government budget deficit has also been substantially reduced in recent years and it is actually likely that the country will record a small surplus in 1997. Two fiscal tightening packages have been presented over the last six months with the aim of avoiding an overheating of the economy. General government gross debt is also declining so that Denmark will probably be eligible for EMU membership even though such participation from the start is very unlikely.

As a result of higher-than-expected tax revenues and a continued tight spending policy, the federal budget deficit in the US for the 1996 fiscal year was reduced to 1.1 per cent of GDP. The deficit has been reduced further this year, to an estimated 0.5 per cent of GDP. The forecasts point to a surplus next year, which would be the first since the 1960s. Japan's budget balance has deteriorated substantially as a

**Spot price, Brent Blend**  
Dollar per barrel



Source: Petroleum Intelligence Weekly.

result of the many economic stimulus packages launched by the authorities through the first half of the 1990s. Fiscal policy has now been tightened and the consumption tax was raised from 3 to 5 per cent on 1 April this year. However, expansionary measures may be necessary to counteract the effects of the financial crisis in Southeast Asia, which has now also led to a deterioration in the situation in Japan's financial sector.

## International commodity markets

### The oil market

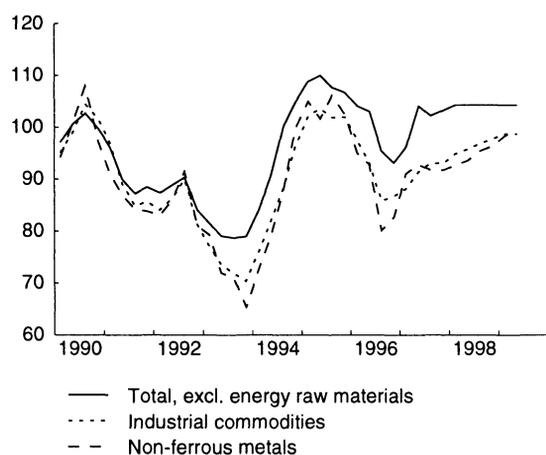
After the spot price of Brent Blend reached \$ 24 p/b towards the end of 1996, the price in 1997 has ranged between \$ 17 and 21. The price has averaged about \$ 19.5 p/b in the first eleven months of this year.

High demand for petrol in the US and to some extent Europe contributed to a rise in oil prices from \$ 17 to \$ 20 p/b at the beginning of May. Later this autumn oil consumption has been declining both in Europe and in the US. So far it appears that demand has been relatively unaffected by the currency crisis in Asia, but a negative impetus to the oil market over some time cannot be ruled out. It is uncertain how the weather phenomenon El Niño will influence the market, even though many predict a relatively mild winter in Northwest Asia (Japan) and on the east coast of the US, thereby resulting in lower demand for heating oil.

Expectations of an increase in oil exports from Iraq, within the agreement with the UN, placed a damper on prices at the end of May this year. Iraq, however, did not start to export oil until the beginning of August. The country is now producing about 0.7 million b/d and it appears that the agreement will be extended by six months, up to May next year. Towards the end of September this year tension in the Gulf increased, triggered by Iraq's displeasure and unwillingness to cooperate with UN arms inspectors. This resulted in concern about future oil production in the area

### Commodity prices on the world market

Dollar based indices. 1990 = 100



Source: HWWA-Institut für Wirtschaftsforschung.

and led to increased purchases on the forward crude oil market, boosting the price of oil to \$ 21 p/b.

OPEC production now exceeds its self-imposed production quotas by about 2.3 million b/d. Production in all member countries is now higher than the level permitted by their quotas. At the OPEC meeting in Djakarta at the end of November it was decided to increase OPEC's quotas in 1998 by 2.5 million b/d, the first increase in quotas since 1993. It is, however, unlikely that production will increase by a similar margin since many of the countries are now producing at close to capacity limits.

With a normal, cold winter this year, it appears that production is actually so high that stocks will not be reduced later this winter, a period when stocks are normally reduced. Based on these assumptions, the price will remain around \$ 19 p/b into next year. Continued high production, lower demand for heating oil and more than sufficient stocks will place a damper on a further rise in prices.

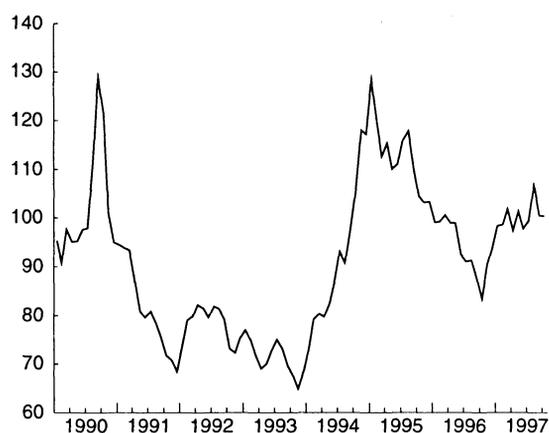
### Other commodity markets

Commodity prices, excluding energy, edged up during the first months of 1997 and peaked in May. A surge in coffee prices contributed to the rise. Over the last six months, however, prices have fallen by about 6 per cent and are thus almost back to the level prevailing at the beginning of this year. The decline in prices was particularly strong for food and beverages and metals. Prices for farm-based industrial commodities have moved on a fairly flat trend throughout 1997. According to the AIECE, commodity prices will only rise marginally from 1997 to 1998. Prices for food and beverages are expected to edge down, whereas prices for industrial commodities, according to the AIECE, will drift up as a result of the improved economic outlook for western Europe.

After passing a trough last autumn, metal prices increased during the first half of 1997. Demand was probably stimulated by the strong economic growth in the US and expan-

### Aluminium price

Dollar based index. 1979=100



Source: World Metal Statistics.

ding industrial output in Europe. Prices have nevertheless dropped this autumn, particularly for copper and nickel. The currency crisis in Southeast Asia may have contributed to the sluggish price trend, but special conditions in the various markets probably also played a role.

Aluminium prices have fluctuated somewhat through 1997, which may reflect weak market balance with a potential for major capacity increases if prices are high enough. The prospect of a substantial rise in prices is therefore limited, and the AIECE projects a rise in prices of 5 per cent from 1997 to 1998. Copper prices bottomed out in September last year after irregularities uncovered in the Japanese firm Sumitomo triggered a drop in prices. Prices rose up to June this year but then moved on a downward trend, and in October copper prices were down to about the same level as one year earlier. Copper production is expected to increase in Latin America and in China, and the AIECE projects only a modest rise in prices in 1998. Weaker demand for steel products contributed to lower nickel prices through most of 1996. Following a short-lived rebound at the beginning of this year, prices are now lower than in December 1996. Even though demand will probably increase by about 4 per cent this year, higher production in Russia will curb price increases. The AIECE's forecasts nevertheless show a rise in prices of 6 per cent next year.

The demand for tin exhibited a sluggish trend, partly because tin is gradually being replaced by other products such as aluminium and plastic. Production has nevertheless remained high, particularly in China, and prices have been falling for some time. Against this background, the AIECE projects only a marginal rise in prices next year. Zinc prices rose by more than 50 per cent between January and September this year when it recorded its highest level for seven years. However, prices fell sharply again in October, probably as a result of China's substantial supplies of zinc to the market. The global demand for zinc is expected to increase, which may result in a resumed rise in prices. Lead prices have also been relatively weak through 1997. The demand for batteries was limited due to the mild

winter, while production increased by 2.4 per cent in the first half of the year. An upswing in demand will probably result in a moderate rise in prices next year.

World steel production grew by 5.4 per cent in the first seven months of 1997 after remaining unchanged through 1996. Output showed a particularly sharp increase in western Europe and Asia, expanding by more than 7 per cent. Demand has also picked up this year, increasing by an estimated 3 per cent. The AIECE projects that prices will be raised in the fourth quarter of 1997 and further in the second quarter of 1998, but there is some risk that developments in Asia will prevent a further rise in prices.

Prices for farm-based industrial commodities fell substantially through the beginning of 1996, but prices have generally been stable since then. Pulp prices fell by 50 per cent during the first half of 1996 and exhibited a sluggish trend up to mid-1997 when prices rebounded. The upswing is being supported by higher orders from Europe, whereas demand appears to be declining in the US. Prices for wood products have dropped so far in 1997 after the year began with difficult weather conditions in January, which curbed demand from the construction sector. Prices are expected to move on a weak trend as a result of continued low building activity in continental Europe and Japan.

After falling through the second half of 1996, food and beverage prices rebounded sharply up to May of this year. This was particularly influenced by coffee prices, which surged by 35 per cent from the fourth quarter of 1996 to the first quarter of this year, partly due to the uncertainty surrounding this year's production in Brazil. Coffee prices have gradually fallen somewhat as a result of favourable weather conditions in coffee-producing countries.

## Norwegian economy

### Developments in 1997

According to preliminary figures from the quarterly national accounts (QNA), the growth in output and demand slowed somewhat between the second and third quarter of this year. GDP, total consumption and exports are set to record lower annual growth in 1997 than last year, whereas the growth in investment will probably be markedly higher. Investment growth is primarily being fuelled by investment in the petroleum sector and in the general government sector, while growth in private mainland investment appears to be approximately the same as in 1996. Employment has risen sharply so far this year and, adjusted for normal seasonal variations, LFS unemployment was reduced to 4.1 per cent in the third quarter. Information concerning wage settlements so far this year indicates an annual wage growth of about 4.2 per cent, while consumer prices will rise by 2.6 per cent at an annual rate. The surplus on the current account for the period to end-September is estimated at nearly Nkr 50 billion, a good Nkr 5 billion lower than in the same period one year earlier. As a result of relatively high oil prices so far in the fourth quarter, the surplus may reach about Nkr 65 billion on an annual basis.

Mainland demand expanded by a seasonally adjusted 0.4 per cent between the second and third quarter of 1997. As a result of vigorous growth in the second quarter, this demand component so far in 1997 has been a good 4.6 per cent above the level in the same period last year. This is largely ascribable to general government investment: After incorporating new data, it now appears that this investment rose as much as 33 per cent (equivalent to Nkr 6.7 billion) from the period January-September 1996 to the same period this year. Much of the rise can be attributed to local government investment linked to the implementation of the primary school reform (school start for six-year-olds).

Local government consumption has so far this year expanded at a slightly faster pace than through 1996, and as an average for the first three quarters of 1997 was about 3 per cent higher than in the same period last year. Even though central government consumption has shown very moderate growth, this entails an increase in total demand from the general government sector of nearly 6 per cent from the period January-September 1996 to the same period this year. On an annual basis, growth for this demand component is set to be about 5 per cent. According to the Bonded Government's supplementary proposition to the Jæglund Government's government budget, the Ministry of Finance's non-oil, cyclically-adjusted budget indicator still indicates that fiscal policy has had a contractionary effect in 1997. When it is taken into account, however, that a substantial share of local government investment in the education sector will be financed through future central government transfers, and could therefore have been included on the expenditure side in the budget indicator, little of this tightening effect remains.

Household consumption (including non-profit organizations) grew by a seasonally adjusted 0.4 per cent between the second and third quarter of 1997, after expanding at a considerably stronger pace the previous quarter. In the period January-September 1997 this consumption component has risen by 3.5 per cent compared with the level in the same period last year. Household purchases of cars, which surged by 42 per cent from 1995 to 1996, rose by nearly 11 per cent in the period January-September 1996 to the same period this year. Figures for new car registrations in October and November indicate an approximately unchanged level from the third to fourth quarter of 1997, whereas seasonally adjusted growth was recorded in the fourth quarter of last year. On an annual basis, growth may thus be less than 10 per cent. The strong growth in retail sales in October may indicate a seasonally adjusted rise in other important consumption groups in the fourth quarter of 1997, and household consumption is now projected to expand by 3.5 per cent on an annual basis, 1.2 percentage points lower than consumption growth in 1996 but half a percentage point higher than the estimate in Economic Survey 3/97.

It now appears that household real disposable income will expand by a little less than 3.5 per cent this year, after increasing as much as 4.6 per cent last year. This entails that the saving ratio will edge down from 1996 to 1997. The change in the saving ratio may be related to the fall in interest rates through 1996 and up to the second quarter of this year and to changes in household wealth. According to figures from Norges Bank, household net financial wealth increased by about Nkr 47 billion from end-June 1996 to end-June 1997. Norges Bank estimates that Nkr 31 billion of this growth reflects valuation changes, whereas net investments in financial assets accounted for Nkr 16 billion.

Higher prices for existing dwellings are also contributing to boosting household wealth. According to Statistics Norway's price statistics, prices for existing owner-occupied dwellings rose by about 9 per cent in the period January-September 1996 to the same period this year, and it is assumed that on an annual basis the rise will be of about the same magnitude. During the past year the square metre price for cooperative dwellings has increased at a noticeably faster pace than prices for existing owner-occupied dwellings, although it appears that the rise in prices has slowed in the third quarter and so far in the fourth quarter.

Seasonally adjusted figures for housing starts (measured in square metres) have moved on a downward trend during the last six months. Housing investment thus declined slightly in the third quarter. As a result of brisk growth in this investment during the previous four quarters, however, growth on an annual basis is likely to be relatively high. Since the prices for existing dwellings have risen at a fas-

ter rate than prices for new detached dwellings the past four years, there may be a potential for resumed growth in residential construction in the period ahead.

Private mainland investment, excluding dwellings, stagnated in the third quarter after expanding sharply in the previous quarter. Investment in manufacturing and other goods-producing industries declined, whereas investment in service industries continued to expand. Investment in the transport and communications sector - which includes the new Gardermoen airport and the Gardermoen railway - contributed to boosting growth. Statistics Norway's investment intentions survey for the fourth quarter indicates that manufacturing investment will increase moderately this year. All in all, private mainland investment is likely to

show a growth of nearly 7 per cent this year while total mainland investment (including general government) is projected to rise by about 11 per cent, i.e. almost on a par with the strong growth recorded in 1994 and 1995.

So far this year, petroleum investment has been more than 20 per cent above the level of the first three quarters of 1996. Estimates from Statistics Norway's investment intentions survey for the fourth quarter indicate that petroleum investment may expand by about 24 per cent on an annual basis. Following three years of declining petroleum investment, this represents a demand impetus for Norwegian and foreign suppliers equivalent to 1.4 per cent of mainland GDP. So far this year, however, there have been no clear

### Macroeconomic indicators

Growth from previous period unless otherwise noted. Per cent

	1995	1996	Seasonally adjusted			
			96.4	97.1	97.2	97.3
<b>Demand and output</b>						
Consumption in households and non-profit organizations	2.7	4.7	1.3	-0.5	2.6	0.4
General government consumption	1.0	3.3	0.5	-0.3	0.6	0.6
Gross fixed investment	3.7	4.8	1.6	3.8	10.2	-0.8
- Mainland Norway	12.9	6.6	2.5	0.1	11.3	-0.1
- petroleum activities <sup>1</sup>	-13.5	-5.5	-9.0	20.6	12.3	-3.6
Final domestic demand from mainland Norway <sup>2</sup>	4.0	4.7	1.3	-0.4	3.7	0.4
Exports	3.6	10.0	2.5	-1.9	4.0	0.2
- crude oil and natural gas	8.1	15.5	0.4	-1.5	2.1	-3.5
- traditional goods	4.2	10.3	2.1	0.5	7.6	0.1
Imports	5.5	6.5	3.6	-0.4	6.4	-0.4
- traditional goods	9.4	9.3	2.8	-1.4	7.2	-0.8
Gross domestic product	3.6	5.3	-0.0	0.5	2.4	-0.3
- Mainland Norway	3.1	3.7	1.0	0.5	1.8	0.5
<b>Labour market<sup>3</sup></b>						
Man-hours worked	1.2	2.0	0.9	1.1	0.3	-0.6
Employed persons	2.1	2.5	0.5	0.5	0.9	0.8
Labour force	1.6	2.1	0.0	0.4	1.0	0.5
Unemployment rate, level <sup>4</sup>	5.4	4.9	4.4	4.3	4.5	4.1
<b>Prices</b>						
Consumer price index <sup>5</sup>	2.4	1.3	1.8	3.1	2.7	2.3
Export prices, traditional goods	7.1	-1.5	3.2	-2.4	-1.0	4.1
Import prices, traditional goods	0.7	0.4	1.0	-2.1	-0.6	3.4
<b>Balance of payment</b>						
Current balance, bill. Nkr	30.7	72.5	17.1	22.1	13.0	14.6
<b>Memorandum items (unadjusted, level)</b>						
Eurokrone rate (3 month NIBOR)	5.4	4.8	4.7	3.4	3.4	3.9
Average borrowing rate <sup>6</sup>	7.7	7.1	6.8	6.3	5.9	6.1
Crude oil price, Nkr <sup>7</sup>	107.5	133.1	151.6	141.2	128.2	137.8
Importweighted krone exchange rate	100.4	100.7	100.2	96.7	100.6	102.9
Norges Bank's ECU-index	103.6	102.5	101.6	97.6	101.3	101.9

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

<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 1995 and 1996 are from the national accounts. The quarterly figures are from Statistics Norway's Labour force survey (LFS), since the new quarterly national account series for employment are too short for seasonal adjustment.

<sup>4</sup> According to Statistics Norway's labour force survey (LFS). The 1995-figure is adjusted in accordance with the alternation on the LFS from the beginning of 1996, and is raised by 0.5 percentage points compared to forecasts published earlier.

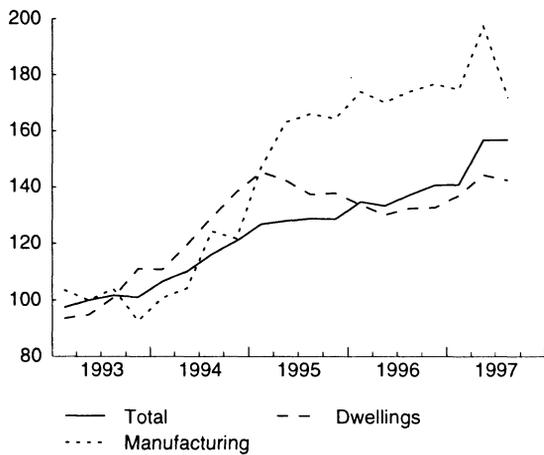
<sup>5</sup> Percentage, change from previous year.

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

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

Sources: Statistics Norway and Norges Bank.

**Gross fixed capital formation, mainland Norway**  
Seasonally adjusted volume indices, 1993=100



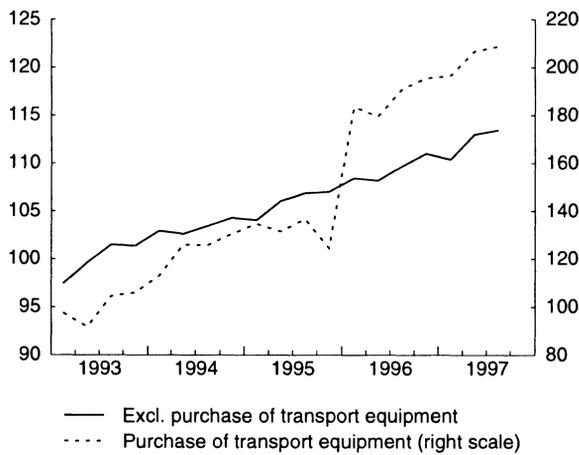
Source: Statistics Norway.

**Exports**  
Seasonally adjusted volume indices, 1993=100



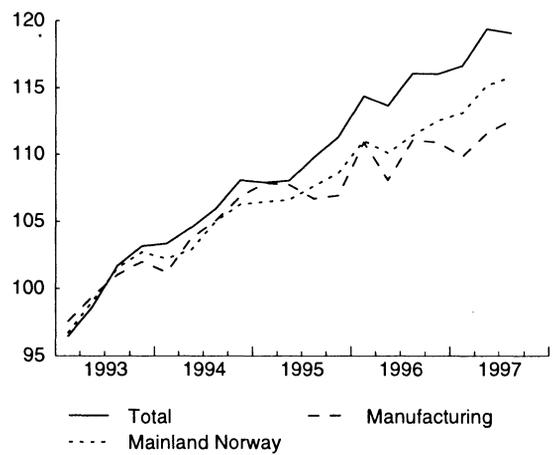
Source: Statistics Norway.

**Consumption in households**  
Seasonally adjusted volume indices, 1993=100



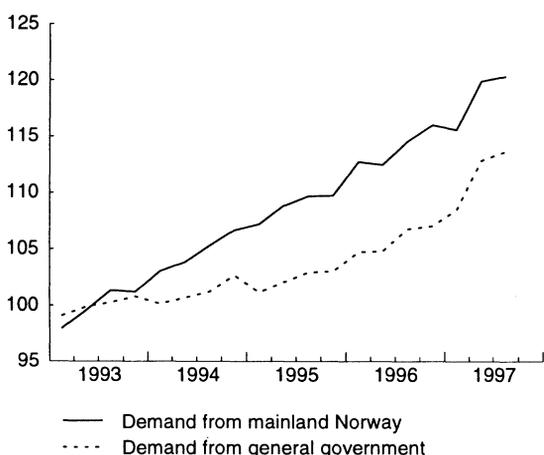
Source: Statistics Norway.

**Gross domestic product**  
Seasonally adjusted volume indices, 1993=100



Source: Statistics Norway.

**Demand from mainland Norway**  
Seasonally adjusted volume indices, 1993=100



Source: Statistics Norway.

**Labour force and employment**  
1990=100. Seasonally adjusted and smoothed



Source: Statistics Norway.

signs of this impetus in the production figures for the engineering industry.

The volume of traditional merchandise exports levelled off in the third quarter of 1997 after expanding sharply in the previous quarter. Exports of fish and fish products declined, whereas exports of metals, industrial chemicals and refined oil products contributed to a moderate rise in exports of manufactured goods. External trade figures for October do not indicate a further increase in traditional merchandise exports in the fourth quarter of 1997, and on an annual basis these exports are projected to show a growth of nearly 8 per cent. So far this year, exports to the US, Japan and Denmark have contributed to boosting export figures, whereas exports to Norway's three largest trading partners Sweden, the UK, and particularly Germany have risen at a slower pace than the total. Exports of traditional goods to non-core trading partner countries are still rising at a faster pace than total traditional merchandise exports, but the differential in growth rates has narrowed compared with last year. Exports of crude oil and natural gas have been relatively stable so far in 1997 following a sharp rise through most of 1996. Measured in Norwegian kroner, oil prices have edged down from the high level recorded in the fourth quarter of last year, but so far this year prices have still been higher than the average for last year. Prices for traditional export goods generally picked up in the third quarter of 1997 after declining through the previous two quarters. For the period January-September 1997 prices have been approximately on a par with the average level for last year.

On a seasonally adjusted basis, the volume of traditional merchandise imports was virtually unchanged between the second and third quarter of 1997 after expanding at a relatively brisk pace in the previous quarter. As an average for the period January-September 1997, traditional merchandise imports were 9.7 per cent above the level in the same period one year earlier. Imports of cars and other transport equipment that is not produced in Norway have contributed to curbing the growth in imports so far this year, while imports of engineering products and wood products have boosted the figures. The growth in imports of these goods may be related to the brisk rise in mainland investment. Prices for traditional imported goods edged up again in the third quarter after declining in the previous two quarters. Adjusted for normal seasonal variations, prices so far this year have been a good 1 per cent lower than the average for last year. Compared with prices for traditional export goods, this entails a moderate terms of trade gain for Norway.

As a result of sluggish developments in the production of crude oil and natural gas, total GDP fell moderately between the second and third quarter of 1997, while mainland GDP expanded. Production in manufacturing and other goods-producing industries as well as the general government sector made a positive contribution, while the level of activity in private services showed a moderate decline. For the first three quarters of the year as a whole,

however, output growth in private services was appreciably stronger than in manufacturing industry, but was nevertheless not as high as the growth recorded by the construction and electricity supply sectors. On an annual basis, mainland GDP growth may be about 3.4 per cent, of which a few tenths of a percentage point can be attributed to a normalization of electricity production from the low level last year.

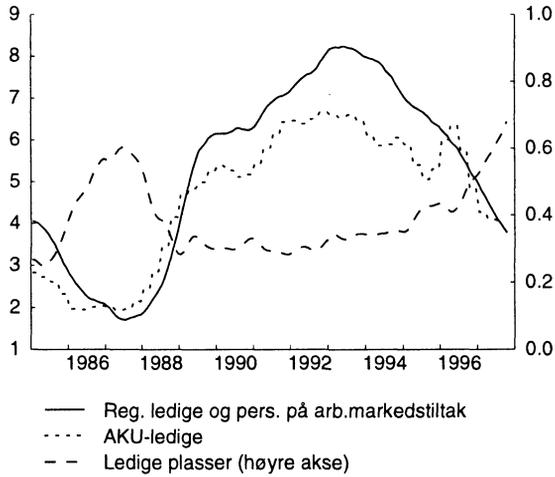
According to preliminary figures from the new quarterly employment accounts, the number of persons employed advanced by about 63 000, or 3 per cent, from January-September 1996 to the same period this year. Unemployment, measured by Statistics Norway's Labour Force Survey (LFS), was reduced by nearly 14 000 in the same period. The sharp rise in the labour force over the past few years thus appears to have continued in the first three quarters of this year. In this period the total labour force participation rate in Norway for the age group 16-74 years averaged 72.8 per cent, an historically record level.

Adjusted for normal seasonal variations, LFS unemployment stood at 4.1 per cent of the labour force in the third quarter of 1997, the lowest level since the third quarter of 1988. The Directorate of Labour's figure for the sum of registered unemployed and persons participating in labour market programmes, excluding rehabilitation, has continued to decline in 1997 at a faster pace than LFS unemployment, and adjusted for normal seasonal variations this unemployment measure stood at 3.9 per cent in the third quarter. The number of unfilled vacancies at employment offices has risen markedly over the past year and came to a seasonally adjusted 0.6 per cent of the labour force in the third quarter of 1997. This is approximately on a par with the historically high level recorded in 1987. According to Statistics Norway's general business tendency survey, the number of manufacturing enterprises reporting that the supply of labour was a constraint on production rose again in the third quarter of 1997, and this indicator is now at about the same high level recorded at the peak of the boom in the mid-1980s.

On an annual basis, employment is projected to rise by 2.9 per cent in 1997 after expanding by 2.5 and 2.1 per cent, respectively, in the previous two years. As an average for the year LFS unemployment is estimated at 4.2 per cent, a decline of 0.6 percentage point from last year.

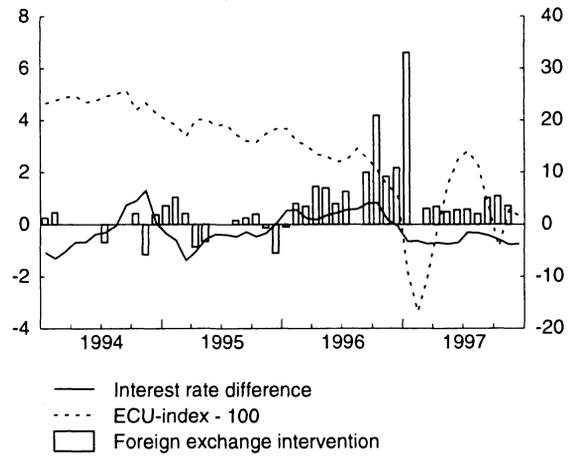
In the first ten months of 1997 the consumer price index was an average 2.6 per cent higher than in the same period last year. After rising from the fourth quarter of 1996 to the first quarter of 1997, year-on-year price inflation has moved on a clear downward trend through the year and was 2.1 per cent in October. The increase in electricity prices through the second half of 1996 and up to January 1997, followed by a pronounced decline in April and July, is an important factor behind this performance. In addition, car taxes contributed to pushing down the year-on-year rise in the consumer price index last year, whereas a number of excise duties were increased substantially more than

**Arbeidsledige og beholdning av ledige plasser**  
Sesongjustert og glattet. Prosent av arbeidsstyrken.



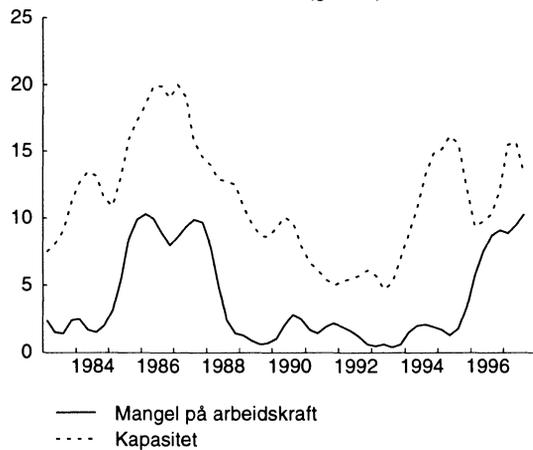
Kilde: Arbeidsdirektoratet og Statistisk sentralbyrå.

**Interest rate difference and exchange rate against ECU and Norges Bank's foreign exchange intervention (bill.NKr)**



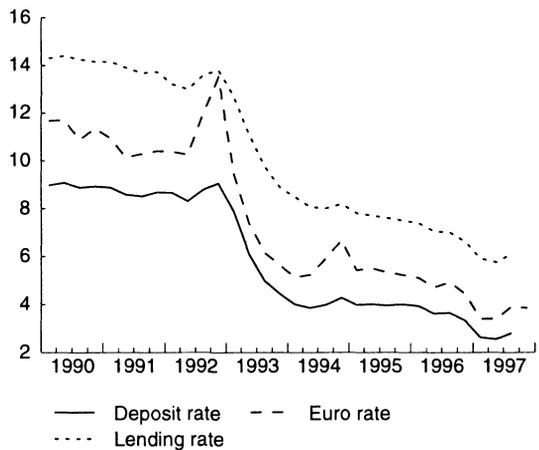
Source: Norges Bank.

**Faktorer som begrenser produksjonen for industrien i inneværende kvartal**  
Andel av foretakene. Prosent (glattet)



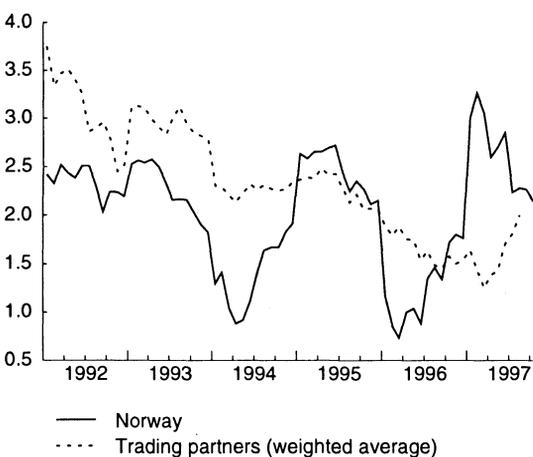
Kilde: Statistisk sentralbyrå.

**Average deposit and lending rate in private financial institutions and 3 month Nkr euro rate**



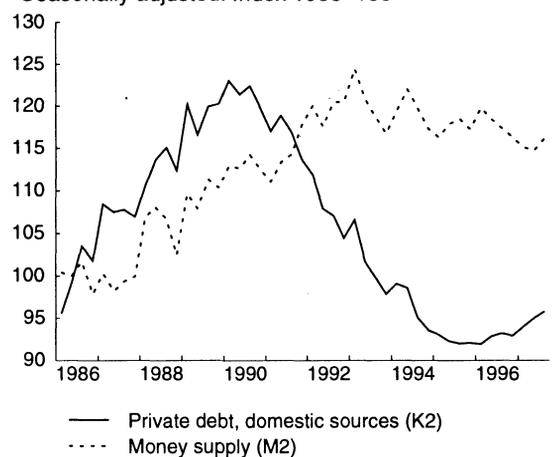
Source: Norges Bank.

**Consumer price indices**  
Measured from the same month the previous year



Source: Statistics Norway.

**Money supply and private debt**  
Per cent of mainland GDP  
Seasonally adjusted. Index 1986=100



Sources: Statistics Norway and Central Bank of Norway.

the general rise in prices. The elimination of VAT compensation from 1 July 1996 also contributed to reducing year-on-year price inflation from June to July this year. On an annual basis, consumer prices are likely to rise by 2.6 per cent. This is higher than price inflation in the ECU area and also higher than the average for our main trading partners. The differential in the rate of inflation, however, has narrowed through the year. About half a percentage point of the rise in prices in Norway this year is ascribable to changes in indirect taxes in excess of an inflation adjustment. Annual wage growth in 1997 is estimated at 4.2 per cent, moderately lower than the result for last year.

After Norges Bank announced in January that exchange-market interventions would be halted for a period, the krone exchange rate has shown considerably greater fluctuations than during the previous eight years. Between December and February the krone appreciated by more than 4.5 per cent against the ECU and then depreciated up to end-July. Since then the krone has again appreciated slightly, and at the beginning of December the exchange rate was at approximately the same level as one year earlier. The import-weighted krone exchange rate has moved on a similar path. As an average for the first 11 months of 1997, the Norwegian krone has appreciated by 2.3 per cent in relation to the average rate against the ECU last year and by 0.5 per cent against an import-weighted exchange rate index.

Following a decline at the beginning of 1997, Norwegian money market rates were fairly stable through the remaining months of the first half of this year. Financial institutions' interest rates, however, declined through the period, and at end-June were a good one percentage point lower than the level one year earlier. On 16 July Norges Bank raised its key rates for banks by 0.25 percentage point. Norwegian money market rates rose by about half a percentage point from June to July. Since then the 3-month Euro-rate has remained at a little less than 3.9 per cent in spite of a slight rise in the equivalent ECU rate, and gradually in the German 3-month rate as well. As a result of the rise in money market rates, financial institutions raised their interest rates by about 0.3 percentage point from end-June 1997 to end-September this year.

The fall in interest rates at the beginning of 1997 may be one of the reasons that credit growth this year has picked up relative to the growth in nominal mainland GDP. Adjusted for normal seasonal variations, the credit volume, measured in this way, grew by about 2 per cent from the second half of 1996 to the period January-September this year.

The surplus on the current account is provisionally estimated at NKr 49.7 billion for the first three quarters of 1997, equivalent to 6.3 per cent of GDP. The surplus was NKr 5.7 billion lower than in the same period last year. NKr 2.3 billion of this deterioration can be ascribed to an increase in the deficit on the interest and transfers balance.

The remainder relates to the value of imports, which so far this year has risen at a faster pace than the value of exports.

## Outlook for the period ahead

### Moderate international growth

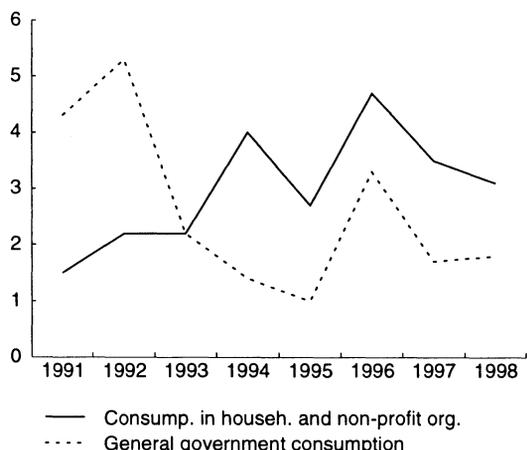
Only modest changes have been made to our projections for developments in the world economy since the last Economic Survey was published in September. Growth in the EU is expected to be slightly higher in 1998 than in 1997. Growth in the US, on the other hand, is projected to be slightly weaker, entailing that GDP growth in the two areas will be more or less the same in 1998. Our projections for market growth for traditional Norwegian exports in the period ahead have therefore not been adjusted to any extent. Our historical figures, however, have been revised considerably due to new information. This, along with new information from the third-quarter QNA, has resulted in an upward revision of a good 2 per cent for the growth in Norway's traditional merchandise exports in 1997 compared with the previous Economic Survey. The revision of the historical figures also entails that our projection for the growth in traditional exports has been increased somewhat for 1998.

Price inflation in the EU has been subdued in 1997 and is expected edge up in 1998. In line with this picture, money market rates are expected to increase slightly from 1997 to 1998. The uncertainty concerning the EMU process, however, still exists and the possibility of currency realignments before determining the entry parities for the Euro cannot be ruled out. This will influence both member countries in EMU and those remaining outside.

In line with the moderate growth estimate for the world economy, no major changes are expected in commodity prices. OPEC recently decided to increase its production quotas, but so far this does not seem to have influenced oil prices to any great extent. The climate negotiations in Kyoto may prove to be far more important for oil prices. At this time, however, it does not seem likely that participants will reach agreement on such extensive climate measures that this will result in a pronounced fall in crude oil prices. It is not inconceivable, however, that oil prices will fluctuate somewhat in the period ahead as a result of the uncertainty surrounding the outcome of the negotiations.

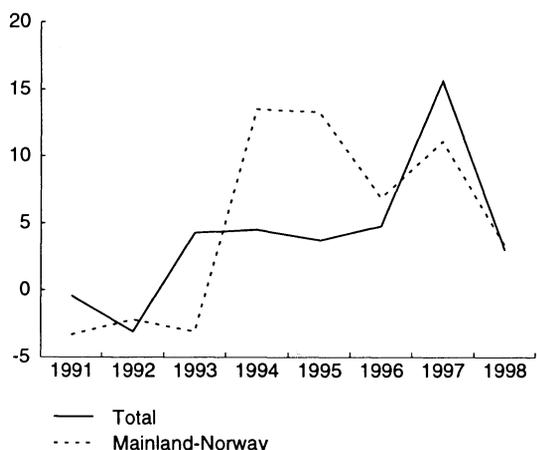
Developments in the world economy have this autumn been characterized by financial instability in many Asian economies. So far this has not been reflected in most institutions' forecasts for economic developments among Norway's main trading partners. In the box presented earlier we have attempted to indicate how developments in Asia might influence the world economy in the period ahead, and in the following we will attempt to outline some possible consequences for the Norwegian economy.

**Consumption**  
Percentage growth



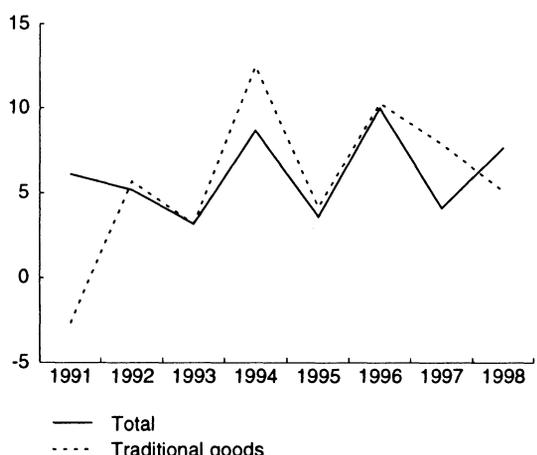
Source: Statistics Norway

**Gross fixed capital formation**  
Percentage growth



Source: Statistics Norway

**Exports**  
Percentage growth



Source: Statistics Norway

**Changes in the contribution to growth from petroleum activities**

Petroleum investment has expanded sharply in 1997, but is only expected to show a modest rise from 1997 to 1998. These projections are based on Statistics Norway's investment intentions survey. In line with earlier estimates, however, investment is expected to fall considerably in the years ahead.

Oil and gas production, and particularly oil production, has shown little change from 1996 to 1997. In 1998, however, the production of both oil and gas is expected to rise by about 10 per cent. The crude oil price is projected to decline from \$ 19 to \$ 18 p/b from 1997 to 1998, while the average dollar exchange rate against the Norwegian krone is expected to remain unchanged.

**Greater growth impetus from fiscal policy**

General government consumption is projected to expand by about 2 per cent from 1996 to 1997 and at about the same rate next year. General government gross investment, which has risen at a far faster pace in 1997 than we assumed earlier, is projected to edge down next year. However, this investment is expected to remain at a very high level in 1998.

The tax programme for 1998 has changed in relation to the estimates on which we based our last Economic Survey. First, transfers to households will increase more than assumed earlier, primarily through the increase in minimum pensions but also through the introduction of cash support for families with small children. Both these changes will also have a substantial impact on the growth in transfers from 1998 to 1999 inasmuch as the measures will not be introduced until later in 1998 but will apply throughout 1999. This will contribute to a stronger growth in household disposable income than assumed earlier.

In addition to higher transfers, the budget plans for 1998 entail a relief in direct taxes in relation to an inflation adjustment of thresholds and amounts in personal taxation. This will, among other things, reduce both the average tax and the marginal tax for large groups of employees and thereby boost household disposable income. The increase in rates for excise duties in excess of the inflation adjustment on which we based our estimates in the previous Economic Survey will have the opposite effect. The initial inflationary impetus from higher excise duties is estimated at half a percentage point in 1998, about the same as in 1997. When this inflationary impetus has had an impact on the rest of the economy, partly through wage formation, the effects will be slightly greater. This entails that our projections for consumer price inflation for 1998 have now been revised upwards by a considerable margin compared with the last Economic Survey.

Even though higher excise duties will have a negative impact on household income in 1998, the combined changes in transfers and direct and indirect taxes in the 1998 government budget will have the effect of increasing

household real disposable income, and thereby private consumption. The projected growth in private consumption in 1998 has thus been revised upwards by about one percentage point compared with the estimate in the last report.

### Continued brisk growth in output and demand in 1998

The high growth in the mainland economy and in imports in 1997 has primarily been spurred by brisk growth in fixed investment. Next year investment is expected to show little change, which will contribute to slower import growth. The growth in household and general government consumption is now expected to be about the same in 1997 and 1998. Along with the projected high growth in oil and gas exports, total GDP is projected to be one percentage point higher in 1998 than in 1997. The growth in the mainland economy, on the other hand, is expected to be slightly lower than in 1997, but still somewhat higher than was previously envisaged.

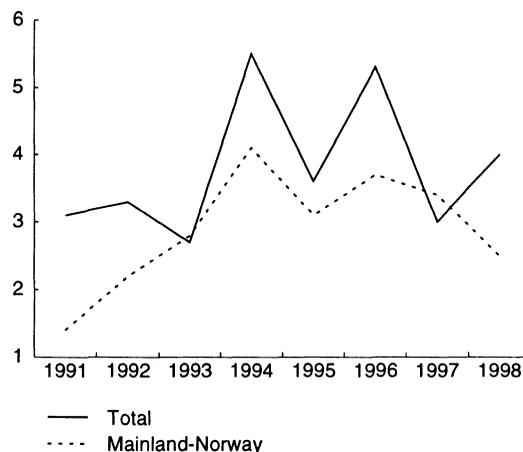
The most important change in the demand impetus for the mainland economy from 1997 to 1998 is a projected lower growth in investment, entailing that household consumer demand will become the main driving force in the economy. As noted above, petroleum investment is now expected to show a modest rise from 1997 to 1998 and the same applies to general government investment. Both these demand components, however, have expanded sharply in 1997 and are now at an historically high level. Housing investment has also risen through the previous quarters, but it appears that growth will be somewhat more subdued in the period ahead. It is assumed, however, that the growth in housing investment in 1998 will continue at about the same rate as in 1997, entailing that housing starts will show resumed growth in the months ahead. Whereas manufacturing investment will only rise marginally from 1996 to 1997, this investment is expected to increase considerably in 1998. Manufacturing industry's own investment plans also indicate a resumed rise in investment in this industry in the period ahead. For other mainland industries no major changes are expected in investment growth between 1997 and 1998. All in all, this will result in a substantial decline in investment growth from 1997 to 1998.

The relatively robust rise in mainland GDP in 1997 has been fuelled by brisk growth in both traditional merchandise exports and domestic demand. In 1998, manufacturing industry is projected to expand at about the same pace as in 1997, i.e. about 2 per cent. Growth in the construction sector is expected to decline considerably between 1997 and 1998 following buoyant growth this year. The growth rate for service industries will show little change from 1997 to 1998, but oil and gas production will exhibit sharp growth in 1998 after expanding at a slow pace in 1997.

### More moderate employment growth next year

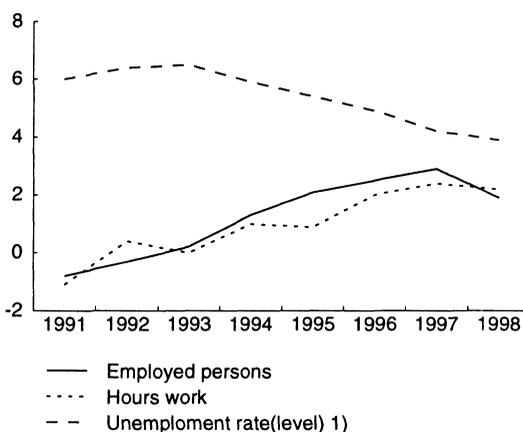
Employment growth has been very high since 1995. This year the growth in employment may reach 3 per cent, mea-

**Gross domestic product**  
Percentage growth



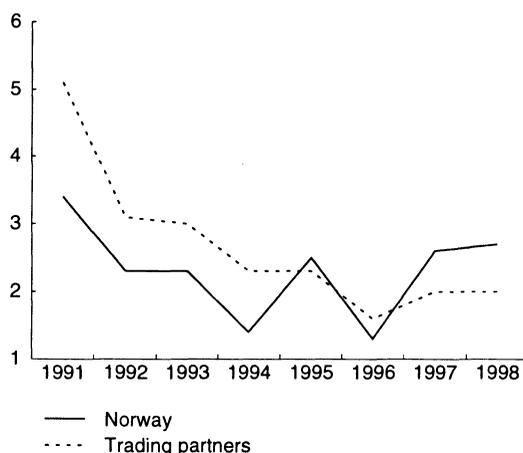
Source: Statistics Norway

**Labour market**  
Percent



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

**Consumer price indices**  
Percentage growth



Source: Statistics Norway

**Main economic indicators**

Percentage change from previous year unless otherwise noted

	Forecasts						
	Accounts 1996	SN 1997	NB <sup>1</sup> 1997	MoF <sup>2</sup> 1997	SN 1998	NB <sup>1</sup> 1998	MoF <sup>2</sup> 1998
<b>Demand and output</b>							
Consumption in households and non-profit organizations	4.7	3.5	3 1/2	3.2	3.1	3 1/4	3.2
General government consumption	3.3	1.7	2 3/4	2.0	1.8	2 1/4	1.8
Gross fixed investment	4.8	15.6	11	11.6	3.0	3 1/2	3.0
- Mainland Norway	6.6	11.1	6 1/4	7.1	3.3	3 1/2	3.5
- petroleum activities	-4.4	24.3	27	25.8	3.4	4	1.3
Demand from mainland Norway <sup>3</sup>	4.7	4.5	3 3/4	3.6	2.8	3	2.9
Stockbuilding <sup>4</sup>	-0.5	-0.6			0.0		
Exports	10.0	4.1	5 3/4	5.9	7.7	6 1/2	8.1
- crude oil and natural gas	15.5	1.0	7	4.7	11.9	10 3/4	12.9
- traditional goods	10.3	7.9	6	7.9	5.1	5	6.5
Imports	6.5	9.9	8 1/2	8.3	5.0	4 1/2	3.7
- traditional goods	9.3	8.0	7	7.2	5.3	4	4.3
Gross domestic product	5.3	3.0	4	3.9	4.0	4	4.6
- Mainland Norway	3.7	3.4	3 1/2	3.5	2.5	3	3.0
<b>Labour market</b>							
Employed persons	2.5	2.9	2 3/4	2.8	1.9	2	1.5
Unemployment rate (level)	4.9	4.2	4 1/4	4.2	3.9	3 3/4	3.8
<b>Prices and wages</b>							
Wages per standard man-year	4.4	4.2	4	3 3/4	4.3	4 1/2	3 1/2
Consumer price index	1.3	2.6	2 1/2	2.5	2.7	2 1/4	2 1/2
Export prices, traditional goods	-1.5	1.5	0	0.5 <sup>8</sup>	3.1	2	4 <sup>8</sup>
Import prices, traditional goods	0.4	-0.6	-3/4	-1.5 <sup>8</sup>	0.7	1 1/2	1 <sup>8</sup>
Real price, dwellings	7.1	6.0			4.8		
<b>Balance of payment</b>							
Current balance (bill. NKr)	72.7	65	85	79.5	81	85	96.2
Current balance (per cent of GDP)	7.1	6.1	7 3/4		7.1	7 1/4	
<b>Memorandum items:</b>							
Household savings ratio	5.5	5.2	4 3/4	5.4	5.6	4 1/2	5.4
Money market rate (level)	4.8	3.7			4.2		
Average borrowing rate (level) <sup>5</sup>	7.1	6.0			6.4		
Crude oil price NKr (level) <sup>6</sup>	132	134	135	135	128	125	125
International market growth	2.7	6.6			6.1		
Importweighted krone exchange rate <sup>7</sup>	0.2	-0.5			0.2		

<sup>1</sup> NB: Forecasts according to Norges Bank, Penger og kreditt 1997/3<sup>2</sup> FIN: Ministry of Finance's forecasts. St.prp. nr. 1 (1997-98) Tillegg nr. 3, Ministry of Finance.<sup>3</sup> Consumption in households and non-profit organizations + general government + gross fixed capital formation in mainland Norway.<sup>4</sup> Change in stockbuilding. Per cent of GDP.<sup>5</sup> Households' borrowing rate in private financial institutions.<sup>6</sup> Average, Norwegian oil production.<sup>7</sup> Increasing index implies depreciation.<sup>8</sup> Forecasts according to national budget 1998.

sured in number of persons employed, and about 2.5 per cent in man-hours worked. With a slower growth in the mainland economy next year, the growth in employment will be reduced. Unemployment is nevertheless projected to fall through most of 1998, and it is possible that it will pass a cyclical trough at the end of next year. We then assume that labour force participation rates will continue to rise next year but at a slower pace than in 1997. It is conceivable that higher transfers to households will have a negative influence on future labour force participation, although it is not assumed that this will occur to any extent in 1998. In order to illustrate the importance of the uncertainty surrounding labour force participation for macro-

economic developments, we have looked at the effects of constant participation rates in the years ahead. In this case the labour supply increases only as a result of pure demographic changes. These calculations are discussed below.

### Approximately unchanged wage and price inflation in the period ahead

It is now assumed that the consumer price index will rise by 2.6 per cent in 1997 after the year-on-year rise was reduced to 2 per cent at the end of the year, in line with earlier estimates. Our projection for price inflation next year has been revised upwards by a good half a percentage

point compared with the previous Economic Survey. This is primarily ascribable to the increase in excise duties, etc. which was approved in connection with the Storting's deliberations on next year's government budget. The isolated effect of these indirect tax changes on prices is estimated at about half a percentage point. This change also helps to explain part of the increase in the projection for wages. No changes have been assumed in the krone exchange rate against the ECU in the projection period. All in all, our current projections entail that wage and price inflation in 1998 will be approximately the same as in 1997.

### Current-account surplus will remain high

The surplus on the current account amounted to about Nkr 50 billion in the first three quarters of 1997. For 1997 as a whole, the surplus is expected to be about Nkr 65 billion, equivalent to a good 6 per cent of GDP. Brisk growth in oil and gas production next year may boost the current-account surplus to more than Nkr 80 billion. A shift in the composition of demand will contribute to reducing import growth next year. An increase in international interest rates in the period ahead will gradually contribute to increasing the surpluses on the current account as Norway is now a net creditor nation.

### Effects of some alternative assumptions

Our projections for developments in the Norwegian economy in the period ahead are uncertain. This is partly reflected in our inability to draw up forecasts for the economy which later prove to be totally accurate. When drawing up quantitative projections for the Norwegian economy with the help of an econometric model, three types of forecasting errors arise: errors linked to the model's description of the workings of the economy, erroneous estimates for variables that are determined exogenously as well as errors linked to preliminary national accounts figures on which the model is based.

In the KVARTS model, estimates must be provided for a number of key variables before the model can simulate developments in the Norwegian economy. We can roughly divide these estimates into three main categories: estimates for developments in the world economy (prices, market growth, exchange rates and interest rates), estimates for economic policy in Norway (indirect taxes, tax rates, transfers, general government investment and consumption) as well as other unmodelled aspects of the Norwegian economy where developments in the petroleum sector have been particularly important. Over the past few years it has been easy to point to many estimates presented in our Economic Surveys which have later proved to be inaccurate. For example, there was a period when we substantially underestimated the growth in petroleum investment from 1996 to 1997. Before the government budget for 1997 was approved, we assumed unchanged real tax rates, whereas the Storting voted to increase excise duties in real terms. A similar situation has arisen for indirect taxes in 1998.

### Macroeconomic developments 1997-2000. Reference scenario

Growth rates in per cent

	1997	1998	1999	2000
Mainland GDP	3.4	2.5	1.5	1.0
Wages	4.2	4.3	3.6	3.2
Consumer prices	2.6	2.7	2.4	2.2
Unemployment (level)	4.2	3.9	4.1	4.3

Based on our reference scenario, which is described in the main table above, we shall in this section illustrate the effects on main macroeconomic aggregates of changes in some variables which we must estimate and where it is relevant to shed light on the uncertainty in the estimates. We have chosen to illustrate the uncertainty through five alternative model-based calculations:

- Higher level of petroleum investment
- Lower growth in the labour supply
- Lower prices and activity internationally due to the crisis in Asia
- Higher growth in general government expenditure
- Increase in excise duties in excess of an inflation adjustment of the rates

Before examining the effects of these alternatives, we shall first provide a rough outline of possible macroeconomic developments in the years up and including 2000. This is hereafter referred to as the reference scenario. All the alternatives are calculated on the basis of this reference scenario. The most important assumption on which the calculations for 1999 and 2000 are based may be summarized as follows: Moderate GDP growth among our trading partners, a more or less unchanged inflation rate, and a modest increase in nominal interest rates in the period ahead. For fiscal policy in Norway, we assume that there will be no major changes in the growth in government expenditure on goods and services compared with developments in 1998. Changes in the rules for transfers that were approved this year, but which will also have an effect in 1999, have been incorporated. This results in a sharp growth in transfers to households also in 1999. Petroleum investment falls sharply after 1998, in line with the estimates e.g. in the National Budget 1998. Direct and indirect tax rates are adjusted in line with wage and price inflation, respectively.

For the Norwegian economy, these assumptions result in slower mainland GDP growth after 1998. The decline in unemployment comes to a halt around the end of next year and then edges up. Price and wage inflation falls slightly from the level in 1997 and 1998, but generally shows little change. The current account and general government sector will continue to record very high surpluses assuming unchanged nominal oil prices in Norwegian kroner after 1998. The main developments are described in the table above. Figures for 1997 and 1998 are the same as those presented in the main table above.

**Effects of unchanged petroleum investments 1998-2000**

Deviation from the reference scenario (per cent)

	1999	2000
Mainland GDP	0.8	1.5
Wages	0.4	1.1
Consumer prices	0.0	0.2
Unemployment (level)	-0.3	-0.4

**Effects of unchanged participation rate**

Deviation from the reference scenario (per cent)

	1998	1999	2000
Mainland GDP	0.1	0.6	1.5
Wages	1.1	3.6	6.8
Consumer prices	0.1	0.4	1.1
Unemployment (level)	-1.0	-1.8	-2.4

**Effects of higher petroleum investment**

It appears that petroleum investment will expand as much as 24 per cent in 1997, whereas growth in 1998 is expected to be only 3 per cent. It is assumed, however, that after this time petroleum investment will decline by about 20 per cent both in 1999 and 2000 on a par with the estimates in the National Budget 1998. Based on earlier experience, it is conceivable that the level of petroleum investment has been underestimated. In order to illustrate the importance of this we have calculated the effects of unchanged investment in 1999 and 2000 compared with the level in 1998. We assume, however, no change in oil and gas production based on the assumption that it takes time before this investment translates into production, but also because in this connection we wish to isolate the demand impetus of higher investment.

The effect on some macroeconomic aggregates is shown in the table below as percentage changes in relation to the reference scenario. Measured in billion 1993-NKr, this alternative scenario entails a greater demand impetus of NKr 11 billion in 1999 and as much as NKr 20 billion in the year 2000. In the latter year this corresponds to about 2 per cent of GDP. The increase in investment is equally distributed on a very detailed set of investment categories in the petroleum sector. This is not entirely realistic, but the calculations nevertheless provide a rough indication of how sensitive our scenario is to considerable changes in petroleum investment.

In the alternative scenario for petroleum investment, mainland GDP in 1999 rises by 0.8 per cent in relation to the reference scenario, whereas the deviation in 2000 is 1.5 per cent. Employment increases and unemployment edges down. This increases wages by 0.4 per cent in 1999 and as much as 1.1 per cent in 2000 compared with the reference scenario. Because it takes time before changes in wages feed through to consumer prices, the effect on prices is limited in these two years, but far greater in the longer term. Unemployment is reduced in relation to the reference scenario, entailing that the unemployment rate will remain constant from 1998 to 2000 and not rise as in the reference scenario.

**Effects of a lower labour supply**

The brisk growth in the Norwegian economy since 1993 has contributed to a sharp growth in employment. A little less than a fourth of the growth in employment has its corollary in reduced unemployment, about a fourth in purely demographic conditions and nearly half in higher labour

force participation. As a result, labour force participation in Norway in 1997 has reached a historical peak. In the reference scenario, labour force participation increases further in the period ahead so that the labour force rises by about 30 000 on average each year. In the alternative we now shall study, participation rates are adjusted downwards so that the labour force only increases by a good 10 000 each year. This corresponds to approximately unchanged participation rates by sex and age in the period from 1997 up to 2000.

The immediate impact of a lower labour supply is lower unemployment compared with the reference scenario. This results in higher wage growth throughout the period. In addition, transfers which are partly linked to changes in unemployment are reduced. This partly offsets the growth in household income as a result of higher wages. Over time, higher wages result in a deterioration in cost competitiveness and the loss of export markets and higher import shares. This leads to a weakening of manufacturing output in particular. Higher wages also result in lower employment through factor substitution as the business sector replaces labour with other factors of production (material inputs and capital). In the short and medium term, however, the effect of higher wages on income dominates, entailing that household consumption and housing investment increase. This is also the main explanation for the increase in production in the mainland economy. The balance of payments deteriorates both as a result of lower exports and higher imports. Higher inflation as a result of this contributes, along with the deterioration in the balance of payments, to higher interest rates, which also reduce domestic demand.

The table above shows that a stabilization of participation rates has a considerable influence on changes in unemployment. Unemployment is reduced to 2 per cent in 2000, which represents more than a halving in relation to the reference scenario. Since wages increase faster the lower the rate of unemployment is, wage growth rises sharply and the level of wages is nearly 7 per cent higher than in the reference scenario in 2000. An extension of the calculations after the year 2000 would have further increased the nominal differences. The change in consumer prices is more modest, and the consumer price index is a good 1 per cent higher in 2000 than in the reference scenario. The limited impact is partly due to lags in the adaptation to higher costs, but is also related to our assumption that prices for primary industry goods are not adjusted in step with wage growth, which might conceivably occur. Imports rise by about twice the rate of mainland GDP and traditional exports are reduced by a good 1 per cent in 2000. If we

**Effects of the crisis in Asia on the Norwegian economy**

Deviation from the reference scenario (per cent)

	1998	1999	2000
Mainland GDP	-0.1	-0.2	-0.3
Wages	-0.1	-0.5	-0.9
Consumer prices	-0.1	-0.4	-0.5
Unemployment (level)	0.0	0.1	0.1

had extended the calculations to the period after 2000, the strong rise in real wages would gradually have been reduced, which along with higher interest rates would have curbed household demand, while the deterioration in competitiveness would have had a greater impact in the form of reduced output. In the period up to the year 2000, we see that the main effect of this scenario is a sharp rise in nominal and real wages in relation to the reference scenario.

**Effects of the crisis in Asia**

We have not incorporated the effects of the crisis in Asia in our reference scenario. In the discussion of the world economy earlier, we presented an analysis of possible effects of the crisis in Asia on the international economy based on the model NIGEM. It was shown that both interest rates and prices might edge down as a result of developments in Asia. Moreover, traditional Norwegian export markets might expand at a slightly slower pace as a result of lower growth in Asia and because most OECD countries would record a deterioration in competitiveness in relation to Asian enterprises. In the following we show, with the help of calculations using KVARTS, the potential effects on the Norwegian economy as a result of the developments described above. We focus on three impulses as a result of the crisis. Interest rates in Norway are, in isolation, assumed to be reduced by 0.2 per cent in the period 1998 to 2000 as a result of the crisis in Asia. Import prices in Norway as well as Norwegian exporters' prices internationally are assumed to be reduced by about half a per cent each year in 1998 and 1999. Finally, market growth is assumed to be reduced by 0.7 per cent in 1998 and 0.9 per cent in 1999. In 2000, the changes in level from 1999 are assumed to be maintained.

A deterioration in competitiveness and lower market growth gradually reduce the growth in traditional exports. The effects on exports, however, will be offset by a gradual adaptation of Norwegian price and wage levels to lower price inflation internationally. In isolation, the fall in interest rates and lower prices help to maintain the level of household consumption, entailing that the impetus primarily stems from lower traditional exports. After a period, this pushes down mainland investment and towards the end of the period household consumption also edges down. Mainland production is affected in a slightly negative direction and this also applies to unemployment, which rises slightly. Summarizing, the growth in the Norwegian economy may be curbed to some extent; but it does not appear that the economy will be significantly influenced by the crisis in Asia,

**Effects of 1 percentage point higher government consumption growth**

Deviation from the reference scenario (per cent)

	1998	1999	2000
Mainland GDP	0.3	0.7	1.3
Wages	0.2	0.5	0.9
Consumer prices	0.0	0.1	0.2
Unemployment (level)	-0.3	-0.5	-0.7

**Effects of higher general government consumption**

The estimates for growth in general government consumption are uncertain. This is due not least to the local government sector where behaviour is not always easy to estimate. A strong rise in local government revenues as a result of brisk growth in the Norwegian economy results in higher tax receipts and higher revenues from fees. It is conceivable that this will result in a stronger growth in local government expenditure than we have assumed in the reference scenario. In the following, we estimate the effects if general government consumption increases by 1 per cent more per year from 1998 to 2000. The effects of this are higher output, higher unemployment, lower unemployment, higher wages and prices. A growth in imports approximately on a par with mainland output growth and lower exports point to the opposite. The amplified effects on GDP primarily stem from household demand. In the course of a three-year period the negative effects of higher real wages are too limited to curb the positive impact on production. Such effects, however, are present in the longer term. A more expansionary fiscal policy results in a weaker budget balance and a smaller current-account surplus, i.e. lower saving. The effects on interest rates are relatively small and contribute little to reducing demand.

**Effects of higher excise duties**

In recent years changes in excise duties have had a considerable influence on consumer prices. The subdued level of price inflation in 1996 was closely related to reduced car taxes, while the relatively high rate of inflation in 1997 is partly related to the elimination of VAT compensation on food in the summer of 1996 and the increase in excise duties at the beginning of this year. This will be repeated at the beginning of next year and thus contribute to consumer price inflation in 1998 at about the same level as in 1997. Here, we examine a permanent increase in excise duties which is so great that the immediate effect on the consumer price index is 0.5 per cent if these taxes fully feed through to prices in the same quarter they are introduced. Higher consumer prices reduce household disposable income and thereby household consumption. Higher prices, however, also result in higher wages after a period, which counteracts this tendency. After four quarters prices have risen by about 0.6 per cent and wages by about 0.4 per cent. A tighter fiscal policy involving higher excise duties thereby has an effect on prices and wages beyond the immediate impact. The effects on tax revenues are also uncertain as these depend on the price sensitivity of demand for the taxed product.

**National accounts: Final expenditure and gross domestic product**

At fixed 1993-prices. Million kroner

	Unadjusted		Seasonally adjusted							
	1995	1996	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3
Final consumption exp. of households and NPISHs <sup>1</sup> . . . . .	439745	460253	110683	114023	113674	115531	117025	116388	119374	119876
Household final consumption expenditure. . . . .	418273	438615	105291	108584	108297	110131	111602	110901	113749	114256
Goods . . . . .	236636	250933	59219	62531	61764	62763	63876	62853	64944	65495
Services . . . . .	178753	183822	45333	45495	45679	46033	46615	46715	47200	47192
Direct purchases abroad by resident households . . . . .	17412	18384	4489	4362	4410	4871	4741	4926	5254	5168
Direct purchases by non-residents . . . . .	-14528	-14524	-3750	-3804	-3555	-3536	-3629	-3593	-3649	-3599
Final consumption exp. of NPISHs. . . . .	21471	21639	5392	5439	5377	5400	5423	5487	5624	5619
Final consump. exp. of general government . . . . .	184282	190313	46701	46966	47241	47926	48181	48020	48296	48596
Final consump. exp. of central government . . . . .	74479	77587	18857	19140	19224	19576	19646	19475	19359	19365
Central government, civilian . . . . .	53687	55914	13608	13742	13847	14103	14222	13854	13906	13910
Central government, defence . . . . .	20792	21673	5248	5398	5378	5473	5425	5622	5453	5455
Final consump. exp. of local government . . . . .	109803	112726	27845	27826	28016	28350	28534	28545	28937	29231
Gross fixed capital formation. . . . .	182235	190998	46791	45962	46256	49002	49778	51683	56945	56506
Petroleum activities. . . . .	45417	42932	11832	10320	10507	11575	10530	12694	14262	13750
Ocean transport . . . . .	3483	5882	1477	529	1014	1707	2631	2320	1887	1981
Mainland Norway. . . . .	133336	142184	33483	35113	34734	35720	36617	36669	40796	40774
Mainland Norway ex. general government. . . . .	105647	113171	26810	27822	27682	28327	29339	28489	30614	30497
Manufacturing and mining . . . . .	15823	17156	4057	4295	4201	4296	4363	4312	4873	4246
Production of other goods. . . . .	11459	11290	2852	2932	2697	2767	2894	2647	3018	2979
Dwelling services. . . . .	24544	23080	6007	5834	5675	5780	5791	5978	6290	6211
Other services . . . . .	53821	61644	13894	14760	15110	15484	16291	15552	16433	17061
General government . . . . .	27689	29014	6673	7290	7052	7393	7278	8181	10182	10277
Changes in stocks and stat. discrepancies . . . . .	27455	22872	8027	7268	4841	6492	4272	5910	4339	2780
Gross capital formation . . . . .	209691	213870	54818	53230	51096	55494	54050	57594	61283	59287
Final domestic use of goods and services . . . . .	833718	864437	212203	214218	212011	218951	219257	222002	228953	227758
Final demand from mainland Norway <sup>2</sup> . . . . .	757363	792751	190867	196101	195649	199177	201824	201077	208465	209246
Final demand from general government <sup>3</sup> . . . . .	211971	219327	53374	54256	54293	55319	55459	56201	58478	58873
Total exports . . . . .	355919	391488	91384	97152	95578	98139	100619	98721	102669	102874
Traditional goods. . . . .	131716	145246	32744	36948	35472	36038	36788	36959	39755	39815
Crude oil and natural gas . . . . .	125818	145312	34412	35061	35972	37073	37207	36664	37448	36152
Ships and oil platforms . . . . .	10888	8785	2133	2615	2078	1275	2817	1856	1707	1378
Services. . . . .	87498	92145	22095	22528	22056	23753	23807	23242	23759	25529
Total use of goods and services . . . . .	1189637	1255925	303586	311371	307589	317089	319875	320723	331622	330632
Total imports. . . . .	289675	308520	74352	75881	73540	78146	80954	80655	85802	85448
Traditional goods. . . . .	197477	215786	50073	52858	52479	54470	55979	55196	59179	58713
Crude oil. . . . .	1244	1176	185	214	219	226	517	392	317	368
Ships and oil platforms . . . . .	13206	13925	5024	3732	2248	3612	4333	4936	3510	3539
Services. . . . .	77748	77633	19069	19077	18594	19838	20124	20131	22796	22828
Gross domestic product <sup>4</sup> . . . . .	899962	947405	229234	235490	234050	238943	238922	240068	245820	245183
Mainland Norway (market prices) . . . . .	746445	773844	188857	193063	191426	193724	195630	196616	200180	201267
Petroleum activities and ocean transport . . . . .	153517	173561	40378	42427	42623	45219	43292	43452	45640	43917
Mainland Norway (basic prices) . . . . .	663381	683450	167637	170674	169461	171086	172228	174312	176403	176841
Mainland Norway ex. general government . . . . .	525189	541580	132571	135706	134136	135447	136291	138283	139951	139995
Manufacturing and mining . . . . .	103209	106024	25713	26664	25991	26704	26666	26404	26829	27061
Production of other goods. . . . .	74935	72466	19492	19106	17968	17404	17988	18976	19701	19904
Service industries. . . . .	347045	363090	87367	89936	90177	91340	91637	92902	93421	93030
General government. . . . .	138192	141870	35066	34968	35326	35639	35937	36030	36452	36845
Correction items . . . . .	83064	90394	21220	22389	21965	22638	23402	22304	23777	24426

Notes, see "Technical comments".

**National accounts: Final expenditure and gross domestic product**

Percentage volume change in 1993-prices

	Unadjusted		Seasonally adjusted							
	1995	1996	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3
Final consumption exp. households and NPISHs <sup>1</sup>	2.7	4.7	-0.3	3.0	-0.3	1.6	1.3	-0.5	2.6	0.4
Household final consumption expenditure	3.1	4.9	-0.3	3.1	-0.3	1.7	1.3	-0.6	2.6	0.4
Goods	2.8	6.0	-1.2	5.6	-1.2	1.6	1.8	-1.6	3.3	0.8
Services	2.8	2.8	1.1	0.4	0.4	0.8	1.3	0.2	1.0	-0.0
Direct purchases abroad by resident households	0.8	5.6	3.6	-2.8	1.1	10.5	-2.7	3.9	6.7	-1.6
Direct purchases by non-resident	-6.9	-0.0	7.7	1.4	-6.5	-0.5	2.6	-1.0	1.5	-1.4
Final consumption exp. of NPISHs	-3.5	0.8	0.3	0.9	-1.1	0.4	0.4	1.2	2.5	-0.1
Final consump. exp. of general government	1.0	3.3	1.0	0.6	0.6	1.5	0.5	-0.3	0.6	0.6
Final consump. exp. of central government	-0.2	4.2	0.9	1.5	0.4	1.8	0.4	-0.9	-0.6	0.0
Central government, civilian	0.5	4.1	0.9	1.0	0.8	1.8	0.8	-2.6	0.4	0.0
Central government, defence	-1.9	4.2	0.8	2.8	-0.4	1.8	-0.9	3.6	-3.0	0.0
Final consump. exp. of local government	1.8	2.7	1.0	-0.1	0.7	1.2	0.7	0.0	1.4	1.0
Gross fixed capital formation	3.7	4.8	5.4	-1.8	0.6	5.9	1.6	3.8	10.2	-0.8
Petroleum activities	-13.5	-5.5	2.1	-12.8	1.8	10.2	-9.0	20.6	12.3	-3.6
Ocean transport	-32.7	68.9	-306.6	-64.1	91.5	68.3	54.2	-11.8	-18.7	5.0
Mainland Norway	12.9	6.6	-0.1	4.9	-1.1	2.8	2.5	0.1	11.3	-0.1
Mainland Norway ex. general government	16.3	7.1	1.3	3.8	-0.5	2.3	3.6	-2.9	7.5	-0.4
Manufacturing and mining	42.0	8.4	-1.1	5.9	-2.2	2.3	1.6	-1.2	13.0	-12.9
Production of other goods	3.7	-1.5	2.4	2.8	-8.0	2.6	4.6	-8.6	14.0	-1.3
Dwellings services	13.0	-6.0	0.3	-2.9	-2.7	1.9	0.2	3.2	5.2	-1.3
Other services	14.6	14.5	2.2	6.2	2.4	2.5	5.2	-4.5	5.7	3.8
General government	1.6	4.8	-5.4	9.3	-3.3	4.8	-1.5	12.4	24.5	0.9
Changes in stocks and stat. discrepancies	100.2	-16.7	18.1	-9.5	-33.4	34.1	-34.2	38.3	-26.6	-35.9
Gross capital formation	10.7	2.0	7.1	-2.9	-4.0	8.6	-2.6	6.6	6.4	-3.3
Final domestic use of goods and services	4.2	3.7	1.8	0.9	-1.0	3.3	0.1	1.3	3.1	-0.5
Final demand from mainland Norway <sup>2</sup>	4.0	4.7	0.1	2.7	-0.2	1.8	1.3	-0.4	3.7	0.4
Final demand from general government <sup>3</sup>	1.1	3.5	0.1	1.7	0.1	1.9	0.3	1.3	4.1	0.7
Total exports	3.6	10.0	1.9	6.3	-1.6	2.7	2.5	-1.9	4.0	0.2
Traditional goods	4.2	10.3	-1.1	12.8	-4.0	1.6	2.1	0.5	7.6	0.1
Crude oil and natural gas	8.1	15.5	11.1	1.9	2.6	3.1	0.4	-1.5	2.1	-3.5
Ships and oil platforms	2.1	-19.3	-42.6	22.6	-20.6	-38.6	121.0	-34.1	-8.0	-19.3
Services	-2.8	5.3	1.0	2.0	-2.1	7.7	0.2	-2.4	2.2	7.5
Total use of goods and services	4.0	5.6	1.8	2.6	-1.2	3.1	0.9	0.3	3.4	-0.3
Total imports	5.5	6.5	3.2	2.1	-3.1	6.3	3.6	-0.4	6.4	-0.4
Traditional goods	9.4	9.3	0.5	5.6	-0.7	3.8	2.8	-1.4	7.2	-0.8
Crude oil	32.0	-5.5	-43.7	15.6	2.2	3.6	128.6	-24.3	-19.2	16.2
Ships and oil platforms	7.0	5.4	107.3	-25.7	-39.8	60.7	19.9	13.9	-28.9	0.8
Services	-3.6	-0.1	-2.1	0.0	-2.5	6.7	1.4	0.0	13.2	0.1
Gross domestic product <sup>4</sup>	3.6	5.3	1.4	2.7	-0.6	2.1	-0.0	0.5	2.4	-0.3
Mainland Norway (market prices)	3.1	3.7	0.9	2.2	-0.8	1.2	1.0	0.5	1.8	0.5
Petroleum activities and ocean transport	5.9	13.1	3.7	5.1	0.5	6.1	-4.3	0.4	5.0	-3.8
Mainland Norway (basic prices)	2.8	3.0	0.9	1.8	-0.7	1.0	0.7	1.2	1.2	0.2
Mainland Norway ex. general government	3.0	3.1	0.9	2.4	-1.2	1.0	0.6	1.5	1.2	0.0
Manufacturing and mining	3.0	2.7	0.2	3.7	-2.5	2.7	-0.1	-1.0	1.6	0.9
Production of other goods	8.4	-3.3	3.3	-2.0	-6.0	-3.1	3.4	5.5	3.8	1.0
Service industries	1.9	4.6	0.6	2.9	0.3	1.3	0.3	1.4	0.6	-0.4
General government	1.8	2.7	0.9	-0.3	1.0	0.9	0.8	0.3	1.2	1.1
Correction items	5.9	8.8	1.0	5.5	-1.9	3.1	3.4	-4.7	6.6	2.7

Notes, see "Technical comments".

**National accounts: Selected price indices**

1993 = 100

	Unadjusted		Seasonally adjusted							
	1995	1996	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3
Final consumption exp. of households and NPISHs <sup>1</sup>	104.0	105.2	104.7	103.6	105.2	105.8	106.3	107.8	107.9	108.0
Final consumption exp. of general government . . .	106.3	109.7	107.0	108.9	109.7	109.7	110.7	112.5	112.5	112.6
Gross fixed capital formation . . . . .	105.8	109.1	105.3	106.7	110.9	109.3	109.5	120.7	103.8	111.7
Mainland Norway . . . . .	105.8	109.3	105.8	107.5	109.9	109.4	110.4	108.1	107.9	110.3
Final domestic use of goods and services . . . . .	104.7	107.0	105.8	105.0	107.0	107.8	108.2	108.7	108.5	110.1
Final demand from mainland Norway <sup>2</sup> . . . . .	104.9	107.0	105.5	105.6	107.1	107.4	108.1	109.0	109.0	109.5
Total exports . . . . .	99.3	105.4	98.8	101.5	104.2	105.0	110.7	108.5	106.0	108.4
Traditional goods . . . . .	108.9	107.3	108.8	107.1	107.5	105.6	108.9	106.3	105.3	109.6
Total use of goods and services . . . . .	103.1	106.5	103.7	103.9	106.1	106.9	109.0	108.6	107.7	109.5
Total imports . . . . .	102.7	103.7	103.0	103.4	103.9	102.9	104.7	103.8	104.2	107.5
Traditional goods . . . . .	102.8	103.2	102.8	103.8	103.2	102.3	103.3	101.2	100.6	104.0
Gross domestic product <sup>4</sup> . . . . .	103.2	107.4	103.9	104.1	106.8	108.3	110.5	110.2	108.9	110.3
Mainland Norway . . . . .	106.3	107.9	107.4	105.6	108.1	108.3	109.5	110.2	110.3	111.4

Notes, see "Technical comments".

**National accounts: Selected price indices**

Percentage change from pervious year

	Unadjusted		Seasonally adjusted							
	1995	1996	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3
Final consumption exp. of households and NPISHs <sup>1</sup> . . .	2.8	1.1	0.6	-1.1	1.5	0.6	0.4	1.5	0.1	0.1
Final consumption exp. of general government . . . . .	3.9	3.3	0.4	1.7	0.7	0.0	0.9	1.6	-0.0	0.1
Gross fixed capital formation . . . . .	3.7	3.1	-2.2	1.3	4.0	-1.5	0.2	10.3	-14.0	7.5
Mainland Norway . . . . .	3.7	3.3	-1.0	1.6	2.3	-0.5	1.0	-2.1	-0.2	2.2
Final domestic use of goods and services . . . . .	3.0	2.2	0.5	-0.8	1.9	0.7	0.4	0.4	-0.2	1.5
Final demand from mainland Norway <sup>2</sup> . . . . .	3.3	2.0	0.3	0.1	1.5	0.2	0.7	0.8	-0.0	0.5
Total exports . . . . .	2.3	6.2	1.0	2.8	2.7	0.8	5.4	-2.0	-2.3	2.3
Traditional goods . . . . .	7.1	-1.5	0.6	-1.6	0.4	-1.8	3.2	-2.4	-1.0	4.1
Total use of goods and services . . . . .	2.8	3.3	0.7	0.2	2.1	0.8	1.9	-0.4	-0.8	1.7
Total imports . . . . .	1.0	1.0	0.6	0.4	0.5	-0.9	1.7	-0.8	0.3	3.2
Traditional goods . . . . .	0.7	0.4	0.4	1.0	-0.5	-0.9	1.0	-2.1	-0.6	3.4
Gross domestic product <sup>4</sup> . . . . .	3.4	4.1	0.7	0.2	2.7	1.3	2.0	-0.2	-1.1	1.2
Mainland Norway . . . . .	4.5	1.5	0.5	-1.7	2.4	0.1	1.1	0.7	0.1	1.0

Notes, see "Technical comments".

**Technical comments on the quarterly figures**

Footnotes:

<sup>1</sup> NPISHs: Non-profit institutions serving households.<sup>2</sup> Defined as total final consumption expenditure plus gross fixed capital formation in mainland Norway.<sup>3</sup> Defined as general governments final consumption expenditure plus gross fixed capital formation.<sup>4</sup> Gross domestic product is measured at market prices, while value added by industry is measured at basic prices.*Quarterly calculations:* The calculations are made on a less detailed level than the calculations for the annual national accounts, and are based on more simplified procedures.

# Economic policy calendar 1997

## September

2. Statoil records record half-year profits of Nkr 760 million after taxes.

4. Norsk Hydro presents plans for trial drilling on the Snow White field in the Barents Sea. There is a thin layer of oil under the gas in the field, and Hydro hopes to be able to extract 95 million barrels of oil. Fishermen and environmentalists react to the plans for oil drilling in one of the most important fishing areas in the Barents Sea.

6. Statoil's drilling on the Connemara field off the coast of Ireland shows no results and the company enters a loss of Nkr 1.2 billion on its books.

6. The Government does not approve Elkem's application to purchase or lease the power station in Sauda for a new period of 50 years. The Ministry of Petroleum and Energy decides that Statkraft (Norwegian Energy Corporation) will be allowed to take over and develop the Sauda waterfalls when the leasing agreement with Elkem expires in 2010. Minister of Petroleum and Energy Rannveig Frøiland asks Elkem to conduct commercial negotiations with Statkraft.

9. Veidekke AS wins the round of sealed tenders to build Coca Cola's 50 000 sq.m. production plant in Lørenskog. The contract has a total value of Nkr 180 million.

11. Statoil and other Norwegian companies are awarded contracts to develop the British oil field Pierce. The contract is awarded by Enterprise Oil and is worth Nkr 2 billion.

12. The Norwegian fish farming company Pan Fish becomes the largest salmon producer in the US and Canada after acquiring Scan Am Group and Nor Am Aquaculture. The price for the two companies is about Nkr 130 million.

13. Statkraft and Norsk Hydro conclude a framework agreement for deliveries of electricity. Statkraft's current agreement with Hydro is extended to 2020. Hydro will also receive 1 Twh annually in excess of the amount covered by the current agreement, which is one of the largest in Norway's history with a value of Nkr 20 billion.

15. Procon Drilling Services is awarded a five-year contract with Norsk Hydro for production drilling on several fields with options for another five years. The total value of the fixed component of the contract is Nkr 530 million.

16. As a result of reduced voter support compared with the last general election, Prime Minister Thorbjørn Jagland announces that the Government will resign after having presented the government budget in October.

18. Smedvig extends a rig contract with Statoil for three years. The rate is raised by 10 per cent compared with the current agreement, to about \$ 130 000 a day.

25. Shipowner John Fredriksen buys the tankers of the Greek shipping company John S. Latsis for between \$ 125-130 million. Following this purchase, John Fredriksen is the world's largest owner of tankers.

25. The Norwegian Shipowners' Association announces a lockout for 270 employees in the Federation of Offshore Workers Trade Union (OFS). The lockout will cover all OFS members that have not already been designated to go on strike. This means that altogether 18 rigs will be affected by the conflict.

30. Australian Bulk Minerals will start new mining operations at the iron ore company Sydvaranger in Kirkenes. The company will invest Nkr 500 million to begin operations next summer, which will create between 250 and 300 new jobs.

30. The Government decides to sell some of the state's shares in Den norske Bank and Christiania Bank. The plan is to reduce the state's ownership stake from about 50 per cent in each of the banks to a third. The Government wants to use the revenues, which based on current prices will amount to about Nkr 6 billion, to establish the Government Environment Fund and the Technology Fund, and as share capital for an investment fund in which the state will own 49 per cent of the shares.

30. Sævik Supply orders a new offshore vessel for Nkr 315 million from Th. Hellesøy Skipsbyggeri. The shipping company also has an option for two similar ships.

## October

2. The Petroleum Tax Office levies instalment taxes totalling Nkr 28.3 billion for the 1997 income year. This is almost Nkr 5.5 billion more than the corresponding amount last year and the third largest amount since centralized assessment was introduced in 1980.

2. Saga Petroleum revises upwards reserves on the Snorre field by 94 million barrels of oil. The upward revision represents a gross value of production of Nkr 13 billion based on the current oil price and dollar exchange rate.

3. Dyno Industrier ASA and two Australian companies, Westfarmers and National Mutual Life, will build an ammonium nitrate plant in Australia with a capacity of 180 000 tonnes a year. Dyno is aiming at a stake of 25 per cent in the project, which is estimated to cost Nkr 1.3 billion.

4. The Federation of Offshore Workers Trade Union (OFS) decides to call off its strike after the Government tabled a proposal on 3 October for compulsory arbitration in the ongoing conflict between OFS and the Norwegian Ship-owners' Association.
4. Uglund International Holding orders a car ship with a capacity of 6 100 cars from Tsuneishi shipyard in Japan. The contract price is about £ 34 million.
8. Brøvig Offshore signs a letter of intent with Statoil for the exclusive use of the production ship "Crystal Sea". The contract runs through 1998 and is worth a minimum \$ 21 million.
9. Norsk Hydro's gas discovery on Ormen Lange contains at least 100 billion, perhaps up to 300 billion cubic metres of gas, with a gross value from NKr 70 to 200 billion.
11. Bratvaag Skipsverft wins a contract, worth more than NKr 300 million, to build an offshore vessel for the shipping company DOF Shipping. The shipyard's order backlog now amounts to more than NKr 2 billion.
14. The US company Marathon Oil demands that NKr 989 million plus interest from 1 August be repaid by the operator Statoil and other partners in the Statpipe group. The US company is of the view that this is the excess amount they have paid in rates for transporting gas from the Heimdal field.
14. Minister of Finance Jens Stoltenberg presents the National Budget for 1998. The budget shows a surplus on the current account of NKr 93.7 billion, whereas the government budget surplus is estimated at NKr 78.5 billion. At the end of 1998 the Government Petroleum Fund will amount to about NKr 200 billion. Central government expenditure will increase in real terms by one per cent, including a sharp rise in central government investment and a decline in real terms in central government consumption. The Government is increasing expenditure on the elderly, hospitals, day-care centres, single parents and development aid by NKr 6 billion. The increase in taxes and excise duties comes to NKr 2.5 billion in the budget.
15. The American economists Robert Merton and Myron Scholes are awarded this year's Nobel prize for economics for having developed methods for pricing share options.
17. A consortium headed by Kværner, which includes the participation of Anglo Japanese Turkish Consortium, wins a contract to design, finance, build and operate a bridge project over the Gulf of Izmit in Turkey. The consortium has pledged to raise NKr 12 billion which is necessary to complete the project.
17. Rieber Shipping AS orders an offshore vessel from Flekkefjord Slipp & Maskinfabrikk AS. The ship will be delivered in April 1999 and cost NKr 350 million.
17. Prime Minister Kjell Magne Bondevik presents the new ministers in his Government. Gudmund Restad from the Centre Party is appointed new minister of finance, Lars Sponheim from the Liberal Party is appointed minister of industry, while Marit Arnstad from the Centre Party becomes the new minister of petroleum and energy.
20. There is dissension among some groups of member of the Federation of Norwegian Professional Associations (AF). Engineers, business economists, lawyers and dentists resign from the union and form a new union, the Federation of Professional Employees. Physicians, who resigned from AF last year, also want to join the new union. The resignations are due to dissatisfaction with AF union leaders' ability to gain acceptance for their demands in pay negotiations.
20. The shipping company Leif Høegh signs a contract with the Chinese shipping company Shougang for the purchase of two bulk vessels of 210 000 deadweight tonnes for a little more than NKr 700 million.
28. Navis ASA from Stavanger orders a new drilling vessel from Samsung Heavy Industries in South Korea. The price for the ship and drilling equipment is about NKr 1.6 billion. The company has also signed a contract for a second ship, a decision which must be taken before 15 February 1998, as well as an option for a third ship.
29. The Ullstein Group will build two seismic ships and an advanced offshore vessel costing altogether NKr 1.1 billion. The ships are to be built for the Australian company Western Atlas International Inc. in Houston, Texas and will cost a little more than NKr 700 million. The offshore vessel shall be built for Solstad Shipping and cost just under NKr 400 million.
30. Kværner Energy is awarded a contract, worth NKr 200 million, for supplying four gas turbines to Eldfisk for Phillips Petroleum Norway.

## November

3. The International Council for Ocean Research recommends a cod quota of 550 000 tonnes next year, 340 000 tonnes less than this year. If the recommendation is approved, Norwegian and Russian fishermen will lose catches worth NKr 3.3 billion.
5. Smedvig signs a letter of intent with the US company ENSCO International Inc. for the sale of the rig "West Omicron". The sale is worth \$ 103 million.
8. The coalition Government formed by three centre parties proposes a reduction in the government budget surplus of about NKr 1 billion compared with the Labour Party's proposal. According to the supplementary proposition to the government budget for 1998, expenditure will rise by NKr 4.3 billion, while taxes, excise duties and other revenues will increase by NKr 2.3 billion.

10. State revenues from petroleum taxes came to Nkr 32 billion last year. This is over Nkr 12 billion more than in 1995. Statoil, Norsk Hydro and Saga were assessed nearly half of the total amount.

12. Moxy Trucks in Fræna is awarded a contract to build 300 construction dumpers for the French company European Equipment Ltd., which is Europe's largest for the leasing of construction machinery. Moxy won the contract in competition with Swedish Volvo and British Caterpillar. Worth Nkr 400 million, this is the company's largest ever individual contract.

12. Secondary-school teachers form a new trade union and join the new Federation of Professional Employees. The reason is dissatisfaction with the Federation of Norwegian Professional Associations (AF) and the teachers' union's demands concerning pay and working conditions.

14. The number of persons paying a surtax on higher incomes rose by 30 000 from 1995 to 1996. In 1996, 860 000 taxpayers paid a surtax of Nkr 11 billion.

17. Cap Gemini is awarded a ten-year contract, worth Nkr 4.8 billion, for computer support services for British Steel.

21. Statoil and Norsk Hydro sign a joint venture agreement with the French oil company Total and the state-owned oil company Maraven from Venezuela. The two Norwegian companies will invest Nkr 9 billion in the oil industry in Venezuela, which is expected to record a sharp upswing in the period ahead.

28. Unemployment, measured by registered unemployed at employment offices, is declining at a faster pace than ever before and has been reduced to 56 800, equivalent to 2.5 per cent of the labour force. Unemployment has not been lower since 1987. The number of vacancies has risen by 46 per cent the past year.

28. The Storting approves the Government's proposals for the government budget for 1998. Following negotiations with the Conservative Party and the Progress Party, the government budget surplus has been reduced by about Nkr 3 billion compared with the centre coalition Government's original proposal.

# Labour productivity growth in Norway using national accounts data

*Erling Joar Fløttum and Tor Skoglund*

*The average annual growth of GDP per hour worked in Norway was 2.8 per cent in the period 1978-1994. The labour productivity growth was somewhat higher in the second part of the period than in the first part, and stronger in goods producing activities than in service activities. However, there are great measurement problems involved in the estimations of the service activities. The latest general revision of the Norwegian national accounts has resulted in a more satisfactory treatment of service activities, but this article indicates remaining areas where further research is needed. Other countries are also facing the same measurement problems concerning service activities as Norway. United States data show a low annual growth of GDP per hour worked at about 1 per cent, and productivity growth has been decreasing in recent years. This has been characterized as a paradox with reference to the increasing use of information technology.*

## Introduction

The aim of this article is to throw light on the labour productivity growth in Norway by using new national accounts data. National accounts data may be used to construct various productivity measures. Output or value added may be used for numerator, and both concepts may be measured at different prices (basic prices, producers' prices, factor cost). As the labour variable in the denominator may be expressed as the number of employed persons, as the number of full-time equivalent persons or as total hours worked, it is possible to construct 18 different productivity measures. The relevance of these measures is discussed in Fløttum et al. (1997). The conclusion is that it is most suitable to use hours worked in combination with output or value added at basic prices, and we shall confine our study to these concepts. We shall also compare the Norwegian estimates with estimates for other countries.

## Statistical sources

### Revised national accounts

Statistics Norway has recently completed a comprehensive general revision of the national accounts. New sources and improved methods of estimation are introduced in various parts of the national accounts. The revised national accounts comprise among other things a better description of private services. In addition, new definitions and classifications are introduced based on new international guidelines of the System of National Accounts 1993 (SNA 1993) and the European System of Accounts 1995 (ESA 1995). Definitions and classifications of the revised national accounts,

and a summary of the main changes, are described in Statistics Norway (1996a and 1996b).

Revised national accounts are estimated for all years back to 1978. These figures, which were published in Statistics Norway (1997), form the basis of the analysis in this article.

### Output and value added at constant prices

Output estimates in the national accounts in principle include all output of goods and services from domestic production. Value added in an activity is defined as the value of output less the value of intermediate consumption. Constant-price estimates of output and value added are calculated by deflating current values by price indices at the detailed product level.

The calculation of volume changes mainly follows the same methods and approach as applied before the general revision. Volume changes are calculated in terms of growth rates and corresponding implicit data on changes of prices. Constant-price estimates are calculated at prices of the previous year, in other words, changing base year every year.

### Total hours worked

The national accounts contain estimates of employed persons, full-time equivalent persons and total hours worked, all three concepts specified by kind of activity. Total hours worked is reflecting the volume of labour input in production activities, and is considered to be the most relevant concept in productivity studies. Total hours worked is defined as actual hours worked by employees and self-employed, including overtime and excluding absence from work due to holidays, sick leave etc. The estimate is also influenced by calendar effects (movable public holidays, leap year).

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### Volume changes in the national accounts

The calculation of constant-price estimates is carried out within the framework of integrated supply and use tables, by deflating values (current prices) by price indices at the detailed product level. Constant-price estimates for aggregates of supply, uses and value added follow through adding up and balancing constant-price estimates of products. They include aggregates such as output by industry, categories of exports and imports, categories of final uses, intermediate consumption by industry, value added by industry and GDP. The principle of double deflation is used, i.e. separate deflation of output and intermediate consumption in order to arrive at value added at constant prices. The condition of great details is linked to the condition that individual products are as price homogeneous as possible, with a possibility for adapting to basic statistics available for values as well as for prices.

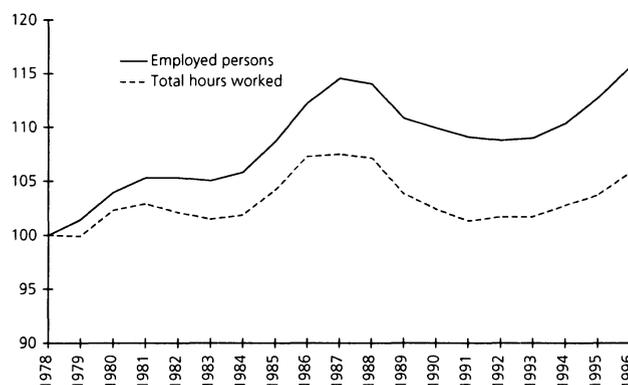
The deflation approach is also differentiated through valuation. This entails that the variables mentioned above are expressed both at basic prices and at producers' prices. Basic prices mean that corresponding taxes on products are deducted and subsidies on products are added to output recorded at producers' prices (excluding value added tax). Basic prices are chosen as the main price concept for products and derived items like output and value added in the revised national accounts for the purpose of achieving a standard common valuation internationally and at the national level. By using basic prices, the problem of effects on valuation from the government's taxation policy is reduced.

The estimation of total hours worked is closely linked to the estimation of the other employment estimates in the national accounts, see Hansen and Skoglund (1997). In addition, it is emphasized to obtain the best possible consistency between employment estimates for employees and the value of wages and salaries. Total hours worked is calculated by estimating each of the underlying components. The standard hours of work is influenced by legislation and agreements, and major changes are normally implemented at intervals of some years. In 1982, the standard number of holidays per year increased by one day. In 1987, the standard working hours per week were reduced from 40 to 37.5 hours for many groups of employees.

The most uncertain factors behind the estimates of hours worked in the national accounts are the estimates of part-time work, the estimates of overtime and the estimates of absence from work. These are based on different data sources (Labour Force Surveys, Manufacturing Statistics, Central Government Register of Employees etc.).

The estimates of total hours worked are assessed to have best quality for manufacturing activities, and to be least satisfactory for local government activities and for several private service activities. The estimates must also be appraised as less satisfactory for activities with a high portion of self-employed, as in agriculture and in fishing etc.

**Figure 1. Employed persons and total hours worked. Indices. 1978=100**



Since 1978, growth of total hours worked has been considerably lower than the growth of the number of employed persons. This is shown in figure 1. In the period 1978-1996, total hours worked increased by about 6 per cent, while number of employed persons increased by 15 per cent. An important reason behind this is that average hours of work in a full-time equivalent man-year have decreased. In addition, part-time employment and absence from work were somewhat higher in 1996 than in 1978.

Total hours worked reached a top in the years 1986-1988, when the level was about 7 per cent above the level in 1978. The growth was particularly strong in the years 1985 and 1986. In the period 1989-1991, total hours worked first dropped, then increased again.

### Labour productivity growth 1978 -1994

Final national accounts estimates according to the new system are available for the years 1978-1994. Average labour productivity growth estimates are presented below for the whole period, and for the four sub-periods 1978-1982, 1982-1986, 1986-1990 and 1990-1994.

### Total economy for Norway

GDP per hour worked – as a measure for labour productivity of the total economy – has increased by 2.8 per cent annually on average over the whole period according to the new national accounts estimates. For Mainland Norway, however, the productivity growth has been significantly lower, 1.8 per cent. With extremely high value added per hour worked, this difference in average growth is explained from the oil activities, which have experienced an enormous production development in this period.

Table 1 also shows that labour productivity development of the total economy has a slightly increasing trend. Average productivity growth was 2.7 per cent in the first half, i.e. in the period 1978-1986, while 3.0 per cent in the second half, 1986-1994, as measured by GDP per hour worked. It is noted also that labour productivity developments follow cyclical movements, with some 1 per cent higher productivity growth in 1982-1986 (2nd period) and in 1990-1994

**Table 1. Labour productivity for the total economy. Average annual percentage change in volume**

	1978-1994	1978-1982	1982-1986	1986-1990	1990-1994
GDP per hour worked	2.8	2.0	3.3	2.4	3.6
GDP Mainland Norway per hour worked	1.8	1.5	1.9	1.8	2.1

Source: Statistics Norway

(4th period) than in the preceding periods 1978-1982 (1st period), respectively 1986-1990 (3rd period).

The general revision lead to relatively moderate changes as concerns GDP growth per hour worked. For instance, average productivity growth for the years 1982-1990 was revised upwards from 2.7 per cent to 2.8 per cent, and correspondingly, for Mainland Norway from 1.7 per cent to 1.8 per cent.

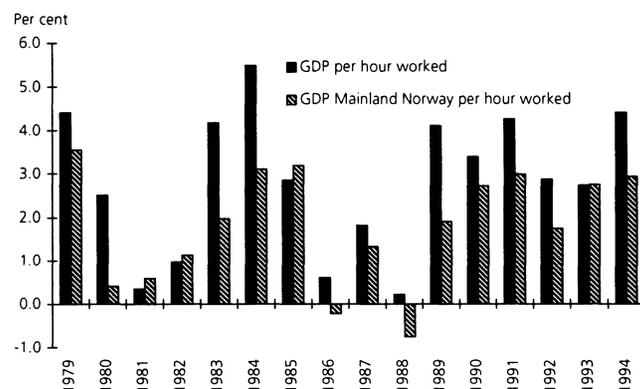
These results show that the new Norwegian national accounts estimates do not have a downward trend in labour productivity like in the United States and several other countries. In the United States, this fact has been referred to as «the productivity paradox», when confronting this development with the strong growth in the use of various forms of information technology.

The presentation by industry below is structured in three parts: (i) agriculture, forestry and fishing, (ii) industrial activities, and (iii) service activities. In the detailed presentation, market production is mostly distinguished from non-market production. For the latter, output is measured by production costs, thus having statistical repercussion to the productivity measure interpretation.

The presentation also illustrates to which extent the choice of concept – measures of value added or output for the numerator – influences the results.

### Agriculture, forestry and fishing

For the whole period, average labour productivity growth was particularly high in fishing and fish farming, 8.1 and 8.3 per cent based on value added and output respectively. Forestry and logging – 4.0 per cent – also had average productivity growth considerably above average growth for the total economy. Average productivity growth in agricul-

**Figure 2. GDP per hour worked and GDP Mainland Norway per hour worked. Percentage change from previous year in volume**

ture and hunting - 2.4 per cent - was slightly below the total average in terms of value added, while above productivity growth measured from output (3.5 per cent). While growth was very high in the late 1980s (3rd period) in all three industries, it was even more so in the 1990s for fishing and fish farming by more than 16 per cent (annual average) measured from output and 23 per cent on the basis of value added. There has been enormous expansion in fish farming in Norway since mid 1980s. As concerns traditional fishing, output and value added may vary over the years from natural conditions. Furthermore, for all three industries hours worked by self-employed are considered to be estimates with particular uncertainty.

### Industrial activities

Measured by output at basic prices per hour worked, labour productivity growth in manufacturing was 3.6 per cent as annual average over the whole period. Growth was relative-ly constant over time, although somewhat weaker in sec-

**Table 2. Labour productivity in agriculture, forestry and fishing. Average annual percentage change in volume**

	1978-1994	1978-1982	1982-1986	1986-1990	1990-1994
<b>Value added at basic prices per hour worked</b>					
Agriculture and hunting	2.4	2.5	-1.7	6.6	2.4
Forestry and logging	4.0	5.9	3.2	8.4	-1.1
Fishing and fish farming	8.1	5.0	-1.1	6.7	23.1
<b>Output at basic prices per hour worked</b>					
Agriculture and hunting	3.5	4.0	1.1	5.9	3.1
Forestry and logging	4.0	5.5	3.3	8.6	-1.1
Fishing and fish farming	8.3	2.3	3.6	11.4	16.3

ond half (3.5 per cent) than in first half (3.8 per cent). Another result to be noted is the considerable difference by concept in the case of manufacturing, from 3.6 per cent growth on the basis of output to just 2.1 per cent growth when measured by value added.

Within manufacturing, labour productivity growth – measured on the basis of output – has been high in particular for export-oriented industries like basic chemicals, basic metals, and pulp, paper and paper products (5-6 per cent). For the large activity group of machinery and equipment etc., the productivity growth was same as for total manufacturing. Lowest productivity growth was in publishing, printing and reproduction, and in furniture and other manufacturing (1-2 per cent growth on average).

Labour productivity growth in construction was somewhat lower than in manufacturing. However, growth was much more unstable, with considerable heights in the 2nd and 4th period, while on the other hand growth was clearly weak in the two other periods. It should be added that constant-price estimates for this industry are more uncertain than for most other industries.

While the labour productivity level in oil and gas extraction (allied services inclusive) is far above the corresponding level in other industries, the growth in labour productivity in this industry has not been particularly high (2.4 per cent), in fact somewhat lower than for the total economy. However, it should be emphasized that growth was very strong in the last two periods, i.e. approximately 7 per cent.

Measured by value added per hour worked, labour productivity growth was considerably lower compared with the output per hour worked measure both in total manufacturing and construction, also somewhat lower in electricity, while approximately the same in mining and quarrying, and a little higher for oil and gas extraction (allied services inclusive). Within manufacturing, there are many deviations around 1 - 2 percentage points between the two concepts (in both directions). The deviation for total manufacturing is very much influenced by the two groups machinery and equipment etc. and food products, beverages and tobacco. In these groups labour productivity growth were close to that of total manufacturing when using the output measure, but came out 2 - 3 percentage points lower when measured by value added, for food products, beverages and

**Table 3. Labour productivity in industrial activities. Average annual percentage change in volume**

	1978-1994	1978-1982	1982-1986	1986-1990	1990-1994
<b>Value added at basic prices per hour worked</b>					
Oil and gas extraction, incl. services	2.8	- 8.7	4.0	9.8	7.2
Mining and quarrying	4.2	- 3.1	7.3	6.0	7.1
Manufacturing	2.1	2.3	2.8	2.1	1.2
Food products, beverages, tobacco	- 0.6	0.3	- 0.8	- 2.2	0.4
Textiles, wearing apparel, leather	3.9	3.0	4.8	4.1	3.6
Wood and wood products	1.1	0.4	4.7	2.5	-3.0
Pulp, paper and paper products	6.6	6.6	7.1	7.0	5.5
Publishing, printing, reproduction	- 0.2	1.2	0.5	- 2.5	- 0.2
Basic chemicals	6.8	12.2	2.9	8.6	3.8
Chemical-,non.met mineral products	2.5	1.9	2.0	4.0	2.0
Basic metals	5.7	0.3	9.0	7.1	6.6
Machinery and equipment etc.	1.4	0.7	2.1	1.8	0.9
Ships, oil platforms and modules	2.4	6.0	5.4	- 3.2	1.6
Furniture, other manuf.,recycling	- 0.7	2.0	- 0.4	- 0.8	- 3.4
Electricity, gas and steam supply	0.7	1.3	- 1.5	2.8	0.3
Construction	2.0	- 0.8	1.7	3.1	3.9
<b>Output at basic prices per hour worked</b>					
Oil and gas extraction, incl. services	2.4	- 7.3	4.0	7.1	6.7
Mining and quarrying	4.4	1.6	6.6	5.3	4.3
Manufacturing	3.6	3.8	3.7	4.5	2.4
Food products, beverages, tobacco	2.8	3.4	2.1	3.4	2.4
Textiles, wearing apparel, leather	4.4	3.1	4.4	5.2	4.8
Wood and wood products	2.5	3.3	2.8	1.2	2.5
Pulp, paper and paper products	5.3	6.7	5.8	5.9	3.1
Publishing, printing, reproduction	1.2	2.4	2.0	0.3	0.1
Refined petroleum products	2.9	0.3	1.9	11.5	- 1.8
Basic chemicals	4.8	7.9	3.5	3.4	4.4
Chemical -,non.met.mineral products	4.1	4.8	3.8	4.3	3.4
Basic metals	6.0	0.8	9.3	9.5	4.9
Machinery and equipment etc.	3.7	4.0	4.1	4.0	2.9
Ships, oil platforms and modules	2.7	5.0	3.8	2.0	0.1
Furniture, other manuf.,recycling	1.8	3.9	2.8	0.7	- 0.3
Electricity, gas and steam supply	1.2	2.5	0.4	2.1	- 0.1
Construction	3.2	1.0	4.9	0.2	6.7

Source: Statistics Norway.

tobacco even with a negative growth for the whole period. In the latter case, there are several computational problems, and in addition, the value added margin is quite small for this industry and might cause some curious results. This is even a more severe problem in the industry of refined petroleum products, for which reason this industry has been omitted in the value added table.

### Service activities

For service activities, the results show – in total – lower growth than for the goods producing industries (agriculture, forestry and fishing, and industrial activities). Service activities excluding general government services – for both concepts – have had an average growth in labour productivity of approximately 2 per cent for the whole period. General government services had productivity growth of 0.7 per cent based on value added, and slightly higher when using the output measure.

There are considerable differences in labour productivity growth within service activities. In some activities, growth has been particularly high, such as in post and telecommunications (telecommunications in particular), in other activities such as wholesale and retail trade and other transport activities growth was at the same pace as for the total economy, while in most other service activities labour productivity growth was quite small or even slightly negative in some cases.

Also for service activities, results depend on which of the two concepts are used. For the whole period, 10 out of 11 service activities specified in the table show higher growth when measured by output than by value added, but differences are mainly small, below 1.5 percentage point. An exception is found for hotels and restaurants, in which output-based productivity is close to zero, while considerably on the negative side (almost - 5 per cent) when measured by value added.

As concerns the productivity trends, they are - not unexpectedly - more stable for service activities than for goods producing industries. However, for a couple of industries the productivity trend is uneven and unstable: post and telecommunications for which growth has increased rather enormously in the 1990s (growth was approximately 10 percentage points higher in the 4th period than in the 1st period), and in ocean transport with output measure showing a difference of 8 percentage points from top (2nd period) to bottom (4th period).

The so-called productivity paradox in part has been explained by difficult measurement problems in service activities, reinforced by the increasing economic importance for these activities over time (cf. Griliches (1994)). The Norwegian estimates to some extent are also hit by this criticism, although the effect is milder than in the case of the US data. One explanation for this is that the recent general revision in Norway increased the quality and the attention paid to the service activities, and implemented

**Table 4. Labour productivity in service activities. Average annual percentage change in volume**

	1978-1994	1978-1982	1982-1986	1986-1990	1990-1994
<b>Value added at basic prices per hour worked</b>					
Wholesale and retail trade	3.6	3.8	4.6	1.4	4.5
Hotels and restaurants	-4.9	-10.0	-2.9	-3.6	-2.7
Water transport	0.4	0.7	2.8	-1.2	-0.7
Ocean transport	0.0	1.4	3.0	-3.2	-1.2
Other transport activities	1.9	0.7	1.0	2.9	3.0
Post og telecommunications	7.2	2.2	5.9	8.2	12.6
Financial intermediation, insurance	-0.7	-1.1	-0.6	-1.1	0.2
Business services etc.	0.1	-1.9	2.5	-1.2	1.1
Personal services, miscellaneous	-0.3	-0.6	0.9	-1.7	0.1
Service activities excl. government	1.8	1.4	2.2	1.6	2.2
General government activities	0.7	0.8	0.7	0.7	0.5
<b>Output at basic prices per hour worked</b>					
Wholesale and retail trade	3.2	3.3	3.9	2.2	3.5
Hotels and restaurants	-0.3	-0.5	-0.6	-0.1	0.1
Water transport	1.7	0.5	7.0	0.4	-0.9
Ocean transport	1.6	0.8	7.9	-0.8	-1.3
Other transport activities	3.0	1.9	2.8	3.6	3.5
Post and telecommunications	7.5	4.1	6.8	5.5	13.8
Financial intermediation, insurance	0.8	0.9	1.0	0.0	1.1
Business services etc.	1.0	0.6	1.1	0.6	1.7
Personal services, miscellaneous	1.0	1.2	1.7	-0.3	1.4
Service activities excl. government	2.3	2.0	2.8	2.0	2.3
General government activities	1.1	1.3	0.9	1.4	0.9

Source: Statistics Norway.

results that were the outcome of the service statistics development since last general revision of the national accounts some twenty years ago. However, this explanation is mostly focused on the estimates in current prices, while the productivity estimates – irrespective of the two concepts – refer to volume measures or constant-price estimates. Thus, statisticians are facing challenges on the price side and in how to utilize methods in order to arrive at best possible constant-price estimates. Such challenges are particularly large in the area of services. It is therefore likely that considerable margins of error may occur when compiling productivity estimates in several of the service activities, see below. In addition, it is assumed that productivity growth is underestimated for service activities as a whole: «It is likely that a negative bias exists of the real growth of value added in services (corresponding to an overstatement of the service price increase)».<sup>1</sup>

In the table, several service activities show approximately zero, very low or even negative growth in labour productivity. In particular when using the value added per hour worked measure, there are several examples on such negative growth, even for the whole period. Not the least for these industries, challenges lie ahead to further evaluate the methods of estimation, in order to increase the quality of the estimates, if possible.

#### *Hotels and restaurants*

This industry has had a strong expansion in the period under consideration, over which total hours worked increased by 40 per cent. Measurement problems also occur in deflation, in particular for the part of output (a third) which is not consumed by households, and for the intermediate consumption of hotels and restaurants.

#### *Financial intermediation, insurance*

Estimates for this industry show labour productivity growth in the area of plus minus 1 per cent. Like in most other countries, employment is used as volume indicator for financial services. This may produce unreasonable results in view of the heavy use of information technology in this industry. Internationally, work is under way on new conventions to apply, which relatively soon (probably in 2-3 years time) might provide a better platform for comparable and more reliable constant-price estimates for this industry.

#### *Business services etc.*

Business services etc. indicate zero labour productivity growth when estimated according to the value added concept for the whole period, while 1 per cent annual growth when measured by output per hour worked. This industry has had very strong growth in output and employment from 1978 to 1994, i.e. with 5.4 per cent annual output growth and a quadrupling of hours worked. To find adequate price

indicators for the deflation of current estimates is a main problem here, complicated by the fact that just a small fraction of these services is allocated to household consumption expenditure. So far, a good solution has not been found, and cost indices are resorted to.

#### *Personal services, miscellaneous*

For personal and miscellaneous services results are similar to those of business services etc.: 1 per cent annual growth in labour productivity when using the output measure, and close to zero growth (slightly negative growth) when using the value added measure. There are parallel problems here, but despite a larger share of services allocated to households in this case, the price deflation is still problematic, inter alia for using price indices of local government fees. It should be noted that this industry group also includes a substantial element of non-market production (non-profit institutions serving households) which complicates the measurement of labour productivity in the same way as for general government activities (see below).

#### *General government activities*

The productivity measurement problem has not been solved for general government activities, since output (and subsequently value added) at current prices is estimated on the basis of production costs in the non-market sphere. Market prices and margins of operating surplus are lacking for this part. Conventionally, labour productivity growth has been fixed at 0.5 per cent for all non-market industries within general government, with the exception of defence activities for which labour productivity is assumed to be constant. For market production (i.e. water supply and sewage and refuse disposal in local government), the current estimates have been deflated by price indices. In the new international guidelines, volume measures other than the traditional cost-based measures have been proposed, but this is most difficult to establish and implement in the national accounts estimates in the near future.

## **International comparisons**

### **Total economy**

International comparisons on productivity growth are not easily accessible. Above, we have presented labour productivity development in Norway through the measures of value added per hour worked and output per hour worked. To represent labour or employment in the labour productivity measure, hours worked were chosen since most experts consider this item to be the best measure of labour inputs. In attempting a comparison between labour productivity growth in Norway with other countries by using these measures, one finds that just a few OECD-countries publish estimates on hours worked in their national accounts tables. The most recent annual publication from OECD containing detailed national accounts estimates through 1995 (see OECD (1997)) includes estimates on hours worked – for employees – just for 6 countries: Australia, Canada, Finland, Norway, Sweden and United States. The estimates for Norway show 3.0 per cent annual growth in GDP per hour

<sup>1</sup> Cited from a document presented in a meeting held at Eurostat in September 1997 of Working Group on National Accounts, see Eurostat (1997).

worked on average for the period 1986-1994 (2.0 per cent for Mainland Norway). By assuming same growth for self-employed as for employees, we find that average labour productivity growth in this period was lower than in Norway both in Sweden and United States (Sweden 1.3 per cent, United States 0.9 per cent), while growth was somewhat higher in Finland (3.2 per cent).

In looking behind these results, it is seen that they reflect quite different compositions in terms of output and labour input development. In the United States, total period growth in GDP volume was more than 21 per cent, while growth in hours worked also was high by some 13 per cent. In Norway, GDP growth was also high by 19 per cent, but hours worked were in fact reduced by 4 per cent from 1986 to 1994. In both Finland and Sweden, GDP growth was modest (about 7 and 8 per cent), with a reduction in hours worked in both countries, rather modest in Sweden like in Norway, while quite dramatic in Finland by a more than 17 per cent lower level in hours worked (for employees) in 1994 compared with 1986.

The estimates above sufficiently suggest that labour productivity growth in Norway for the total economy has been reasonably strong since the mid 1980s, and much stronger than e.g. in the United States.

## Manufacturing

Bureau of Labor Statistics in the United States publishes international statistics for labour productivity growth in manufacturing, see Sparks and Greiner (1997). Figures for the period 1979-1995 for selected countries are given in table 5. The table shows that in all these countries, except Canada, labour productivity growth in manufacturing was higher than in Norway. It should be clarified that the production measure used is the one based on value added. As shown above, labour productivity growth in Norwegian manufacturing industries has been considerably higher when using the measure of output per hour worked. How-

**Table 5. Labour productivity growth in manufacturing in selected countries. Average annual percentage change in volume**

	1979-1995	1979-1985	1985-1990	1990-1995
Norway	1.7	2.4	1.4	1.2
Sweden	3.3	3.0	1.8	5.1
France	3.1	3.0	3.4	2.8
Germany	2.2	2.1	2.1	2.4
Netherlands	3.3	4.4	1.9	3.3
United Kingdom	4.2	4.4	4.6	3.7
United States	2.6	3.3	2.2	2.3
Canada	1.7	2.4	0.4	2.3
Japan	3.4	3.5	4.3	2.3

Source: Bureau of Labor Statistics. Productivity is measured as value added growth at constant prices (national accounts figures) per hour worked. Figures on hours worked are national accounts figures for Norway, Sweden and France, for other countries other sources have been used. Productivity figures for Norway has been updated by Statistics Norway.

ever, we have no information of this kind as concerning other countries compared here.<sup>2</sup> Referring to the figures in table 5, labour productivity growth in Norwegian manufacturing industries was particularly low in first half of the 1990s seen in an international perspective. Norway is the only country listed that had positive growth in hours worked in manufacturing from 1990 to 1995. For the whole period 1979-1995, however, there was a considerable reduction – also by international standards – 1.4 per cent on average. The modest growth in labour productivity in Norwegian manufacturing industries reflects a lower production growth than in most other countries.

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<sup>2</sup> In NOU 1996:4 it is assumed that the difference between output and value added growth might be less in other countries than in Norway.

# Capital stock and consumption of fixed capital in the Norwegian national accounts\*

Steinar Todsén

In connection with a major revision of the Norwegian national accounts, new calculations have been made of capital stock and consumption of fixed capital. The calculations are primarily derived by the perpetual inventory method (PIM). The PIM is based on long time series for gross fixed capital formation, and estimates stocks of fixed capital and capital consumption with the help of assumptions concerning service lives and depreciation profiles. This method was also used in the previous calculations, but changes have been made with regard to depreciation method and service lives. This article describes the method of calculation and summarises the most important results.

## Introduction

This article describes the calculation of capital stock and consumption of fixed capital (depreciation) in the national accounts and presents the most important results. Statistics Norway has recently carried out an extensive revision of the national accounts (see separate box), and in this connection new calculations have been made of stocks of fixed capital and capital consumption.

The calculations are primarily derived by the perpetual inventory method (PIM), which is based on long time series for gross fixed capital formation. Capital stock and capital consumption are estimated with the help of assumptions concerning asset lives and depreciation profiles. This method was also used previously to calculate capital stocks, but the depreciation method and asset lives have been changed. The time series of gross fixed capital formation have also been revised.

The depreciation profile has been changed from linear (straight-line) to geometric (declining balance) in most in-

dustries. This change came in response to empirical studies conducted in the US concerning prices of second-hand capital equipment. The estimates for service life have in many cases been revised downwards in order to be more in line with the estimates used in countries similar to Norway.

The following section defines the most important concepts used to calculate fixed capital. This is followed by a description of the method of calculation. The article concludes by presenting the main results for the years 1978 to 1994.

## Concepts

Figure 1 presents a schematic summary of the national accounts classification system for assets. The calculations that are described in this article cover stocks of fixed capital. In the national accounts, an asset is considered as a fixed asset if it satisfies the following two criteria:

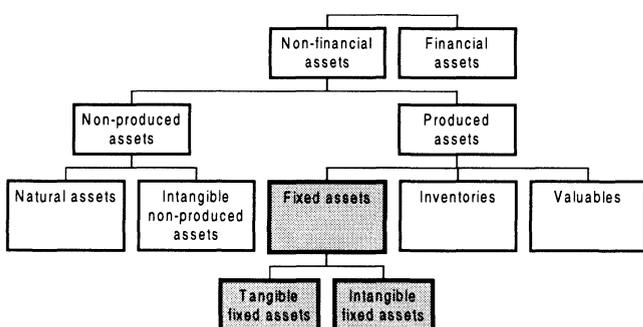
1. It is the result of a production process.
2. It is used repeatedly in a production process for more than one year.

Fixed assets comprise tangible assets such as buildings, structures, transport equipment and machinery, and intangible assets such as computer software and expenditures on exploration for oil and gas. Inventories and valuables (e.g. precious metals and antiques), which cannot be used repeatedly in production, are not recorded as fixed assets. The same applies to naturally occurring assets such as land and petroleum resources, which are not produced.

Capital stock can be measured in several ways. We can distinguish between capital as wealth and as a factor of production.

*Gross capital stock* is defined as the value of all assets which exist at a given time, valued at prices for new assets of the same type. It can be used as a measure of productive capacity.

Figure 1. Classification of assets in the national accounts



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### Main revision of the national accounts

The main revision is the designation for an extensive review of national accounts sources, methods of calculation, definitions and classifications which Statistics Norway has recently carried out. The calculations are based on new international guidelines presented in System of National Accounts 1993, published by the UN, OECD, IMF, World Bank and the EU Commission in 1993. Revised national accounts data for the years 1978-1994 are published in *Økonomiske analyser 4/97*. The main revision is described in more detail in NOS National Accounts Statistics 1988-1993.

*Net capital stock* is used to measure the value of wealth. This entails that the asset is valued at written-down replacement cost, i.e. gross capital stock less the cumulative consumption of fixed capital.

The calculations described here apply to net capital stock and changes in this value.

Net capital stock is included in the balance sheet accounts in the national accounts. In addition, the accounts show the change in the stock during a period, e.g. one year, based on the following definitional relationships:

Net capital stock at 1 January  
 + Gross fixed capital formation  
 - Consumption of fixed capital  
 + Other changes in volume  
 + Revaluations  
 = Net capital stock at 31 December

*Consumption of fixed capital* is defined as the reduction in the value of net capital stock during the period of calculation due to normal physical deterioration, damage and obsolescence. Damage resulting from more exceptional events, such as war and natural disasters, are recorded as *other changes in volume*. Pure price changes, that are not due to age but rather general inflation or altered conditions in a specific market, are recorded as *revaluations*.

### Method of calculation

National accounts figures for capital stock and capital consumption are mainly calculated by using the perpetual inventory method (PIM). This is a common method of calculation internationally, and was also used prior to the main revision.

PIM is based on long time series for gross fixed capital formation, and estimates capital stock and capital consumption with the help of assumptions concerning service lives and depreciation profiles.

The method is based on the definitional relationship between net capital stock at the beginning and end of a

period, as described above. If constant prices are used, net capital stock in the period can be written as:

$$(1) \quad KN_t = KN_{t-1} + J_t - D_t$$

where  $KN_t$  is the net capital stock at the end of period  $t$ ,  $J_t$  is gross investment in the period and  $D_t$  is capital consumption. By inserting values for  $KN_{t-1}$  successively in equation (1), capital stock in period  $t$  can be calculated by adding up gross investment undertaken in earlier periods and deducting the sum of capital consumption.

$$(2) \quad KN_t = \sum_{s=0}^L (d_s * J_{t-s})$$

Here,  $d_s$  is the depreciation function, or depreciation profile, which shows the change in the value of assets as the age  $s$  increases to its maximum lifetime  $L$ .  $d_s$  has a value equal to 1 when the asset is new ( $d_0=1$ ) and declines gradually towards 0.

When the capital stock is calculated with the help of equation (2), capital consumption can be calculated by using equation (1):

$$(3) \quad D_t = J_t - (KN_t - KN_{t-1})$$

In order to calculate capital consumption and capital stock at current prices, constant-price figures are inflated using the price index for investment. Revaluations,  $VO_t$ , represent the change in capital stock at current prices that is not due to capital consumption (or other changes in volume), and is calculated by:

$$(4) \quad VO_t = VD_t - VJ_t + (VKN_t - VKN_{t-1})$$

Here the prefix V indicates that the variables are stated at current prices.

The calculations are carried out at a detailed level. The classification by industry is the same as that used in the calculations of production and fixed capital formation in the national accounts, covering about 175 industries. Within each industry, assets are divided by type (buildings, machinery, etc.). Altogether 17 different groups are used when calculating fixed assets.

### Depreciation profile

As noted, the depreciation profile shall show the reduction in the value of the asset as it ages. The depreciation shall cover both scrapping of assets and the reduction in the value of remaining assets. For some types of assets, which have an active second-hand market, it is possible to estimate the depreciation profile based on second-hand prices, but in other cases assumptions must be used.

In the earlier calculations of fixed assets, it was assumed that the depreciation profile was linear, i.e. that

$$(5) \quad d(s) = 1 - s/L$$

where  $s$  is the age and  $L$  is the maximum life.

Linear, or straight-line, depreciation is (at the moment) the most common internationally, and was the method recommended in the previous edition of the international guidelines for national accounts, SNA 1968 (see UN, 1968). Empirical studies suggest, however, that a geometric profile is a better approach to actual depreciation than linear depreciation (see Hulten and Wykoff (1981), which estimates depreciation profiles based on prices of various types of second-hand assets).

Geometric depreciation entails that the remaining value is reduced by an equal percentage ( $a$ ) each year:

$$(6) \quad d(s) = (1 - a)^s$$

The new guidelines for national accounts, SNA 1993 (see UN/OECD/IMF/World Bank/EU Commission, 1993), permit both linear and geometric depreciation. In the US, the Bureau of Economic Analysis has recently published revised figures for fixed assets calculated on the basis of geometric depreciation profiles. This is described in Katz and Herman (1997).

Against this background, Statistics Norway has in its new calculations of fixed assets started to use geometric depreciation profiles as the main principle. For general government and non-profit organisations, however, linear depreciation is still used. The reason for this is discussed further below.

The service life is not included directly in equation (6). The depreciation rate  $a$ , however, may be calculated on the basis of an estimate for lifetime  $L$ :

$$(7) \quad a = 2/L$$

Equation (7) is derived by setting the present value of depreciation from the linear and geometric method equal to each other. The depreciation rate  $a$  is a function of lifetime  $L$  and the discount rate. By letting the discount rate approach zero, we arrive at the simple relationship in equation (7). This is shown in NOU (1989:14). The geometric depreciation profile with  $a=2/L$  is often referred to as the double-declining-balance profile in the literature.

With geometric depreciation the value of the asset in which the investment is made in one year falls more swiftly in the first few years compared with linear depreciation, and more slowly in later years. Figure 2 shows the two depreciation profiles based on a service life of 20 years, i.e. with the depreciation rate equal to 0.1 in the geometrical case. With geometric depreciation, the value will never be written down entirely to zero, but this is of little practical significance for the calculations.

The total effect on capital consumption and capital stock of shifting the depreciation profile depends on changes in investments. If investments rise over time, which is the case in most Norwegian industries, capital consumption will be higher and the stock lower with geometric than with linear depreciation.

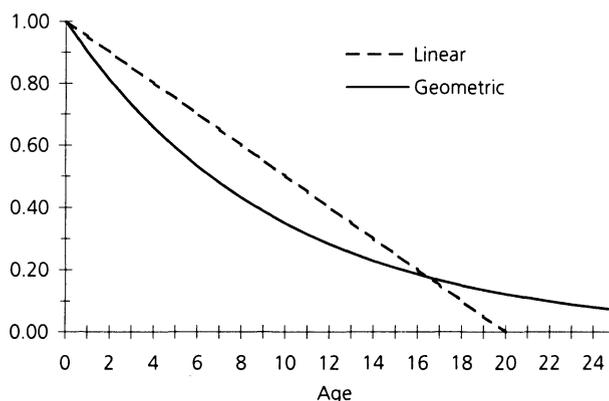
In the sectors general government and non-profit organisations, the value of production is calculated as the sum of labour costs, intermediate inputs and capital consumption. Because results from the main revision were published before the new method of calculating fixed assets was finalised, capital consumption in these industries is based on the old method of calculation. The old figures for capital consumption are calculated using straight-line depreciation and somewhat longer service lives than those now being used for corresponding groups in other industries. Furthermore, capital consumption is being calculated for roads and other construction, which were previously assumed to be equal to zero. Previously, all acquisitions of capital equipment in the military establishment were recorded as intermediate inputs, entailing that there was no basis for calculating capital consumption and capital stock in this industry. This has been changed in connection with the main revision.

## Service lives

The service life of fixed assets is an important parameter in the depreciation functions. A report published by the OECD (see OECD, 1993) shows that estimates for service lives in Statistics Norway's earlier calculations of fixed assets were relatively high compared with those used in other countries. The report also shows that the estimates vary considerably between different countries. Even though there are sound arguments that the service life can vary both between countries and over time (e.g. differences in relative prices, technological level and climatic conditions), this probably also reflects the discretionary nature of the estimates.

As a result of little empirical information concerning the service lives of fixed assets in Norway, we decided to re-

**Figure 2. Linear and geometric depreciation with a service life of 20 years**



**Table 1. Service lives in calculations of fixed assets**

Type	Life (years)
Dwellings	80
Non-residential and commercial buildings	50-60
Constructions	10-90 Most 50-60
Production wells for oil and gas	20
Oil production platforms and drilling rigs	20
Oil and gas pipelines	40
Ships and boats	20 (Ships) 30 (Fishing boats)
Aircraft and helicopters	20
Cars	10
Buses and trucks	10
Rolling stock	35
Machinery and equipment	10-40 Most 15
Computers and office equipment	8
Cultivated assets	Are not depreciated
Oil and gas exploration	20
Other intangible fixed assets	3
Valuables	Are not depreciated

use our estimates based on those used in countries like Sweden, Germany and Canada. Service lives in the new calculations have therefore been revised downwards in many cases.

Table 1 shows the service lives used for the various groups in the calculations. In some cases the life varies between the different industries, with an interval specified.

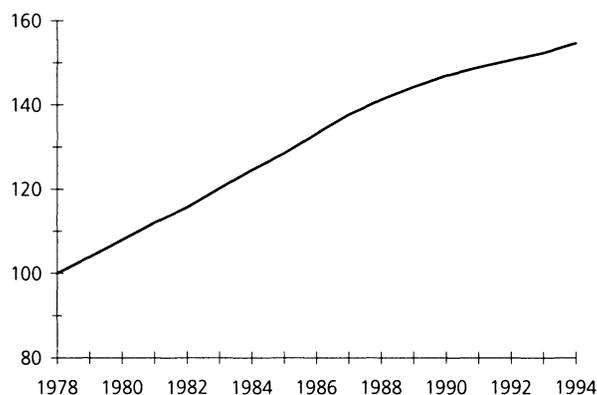
## Investment

The perpetual inventory method requires long time series for gross fixed capital formation. The series should start at least as many years prior to the first year of calculation as the service life of the asset in question.

As part of the main revision of the national accounts, new figures have been calculated for fixed capital formation, distributed in detail by industry and type at current and constant prices back to 1978. However, substantially longer time series than this are required to compute fixed capital from 1978 onwards. In connection with the method of calculation used earlier, long investment series distributed by industry and type were compiled. These have been reclassified for the new classification by industry and asset and adjusted to the new levels in 1978.

## Other methods of calculation

An alternative to the perpetual inventory method is to calculate capital stock on the basis of information concerning

**Figure 3. Capital stock. Volume index 1978=100**

the number of entities. This method is used in the national accounts in two cases, cultivated assets (i.e. livestock and fruit trees) in agriculture and ships in ocean transport.

The stock of cultivated assets is calculated by multiplying the number of livestock and fruit trees by average prices. Capital consumption is not computed for this category.

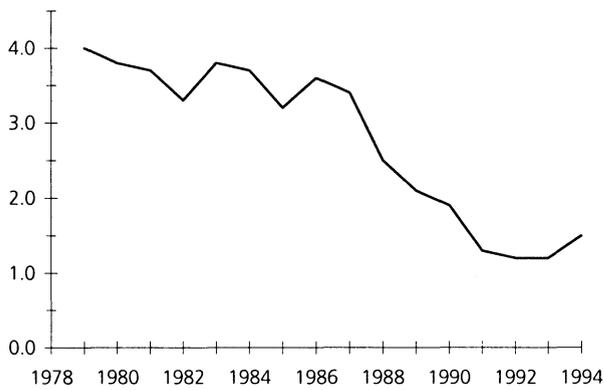
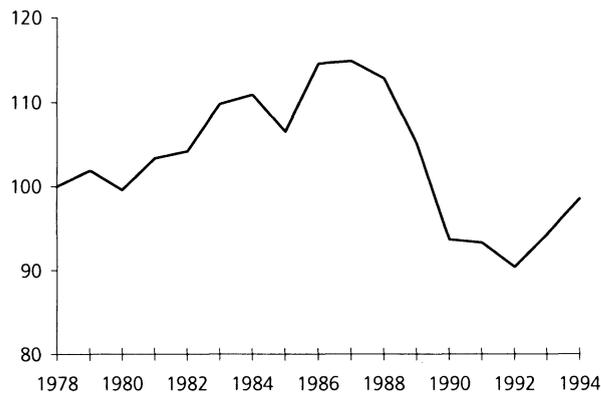
The stock of ships is calculated on the basis of the Norwegian Shipowners' Association's estimates for the value of capital assets in 1993. The value of capital assets is adjusted for differences between actual and written-down second-hand values in order to provide an estimate for net capital stock. For the years prior to and after 1993 the time series in constant 1993-prices is constructed by using a weighted index based on the number of ships and number of dead-weight tonnes as an indicator. This is adjusted for the change in the average age of the fleet (which has risen from 6 years in 1978 to 12 years in 1993). The time series at current prices is, as for other industries, calculated with the help of the price index for new investment in ships. Capital consumption is calculated using the geometric method, i.e. as 10 per cent of the capital stock the previous year.

## Main results

This section provides a brief description of the most important results from the new calculations of fixed assets. Tables showing capital stock and capital consumption for the years 1978 to 1994, distributed by industry, are published in *Økonomiske analyser 4/97*.

At the end of 1994 the total net stock of fixed capital was estimated at NOK 2621 billion. Measured at constant prices, capital stock increased by about 55 per cent from 1978 to 1994. By way of comparison, gross domestic product at constant prices rose by about 60 per cent in the same period.

The annual growth in the stock of fixed capital was about 3.5 per cent up to the end of the 1980s and then declined to about 1 per cent in the years 1991 to 1993. This is illustrated in figures 3 and 4.

**Figure 4. Capital stock. Percentage change in volume from previous year****Figure 5. Gross fixed capital formation. Volume index 1978=100**

The reduction in the growth rate for the stock of fixed capital is related to changes in gross fixed capital formation, which was reduced by about 20 per cent from 1988 to 1990, see figure 5.

Capital consumption in 1994 amounted to NOK 142 billion, corresponding to about 5.5 per cent of the net capital stock in the same year. The relatively low percentage reflects the fact that asset groups with long service lives account for the highest percentage of the stock. Table 2 shows that buildings and structures, which have service lives of 50-60 years, account for about 66 per cent of the capital stock in 1994 and 33 per cent of capital consumption.

### Revision of previously published figures

Compared with the calculations carried out prior to the main revision, capital stock has been revised upwards by 4 per cent in 1991, which is the last year for fixed capital figures based on the old method of calculation. Capital consumption has risen by 25 per cent. This is a result of the upward revision of gross fixed capital formation and changes in service lives and depreciation profiles. The revision of fixed capital formation varies considerably from one year to the next, partly as a result of the change in the principle

**Table 2. Capital stock and capital consumption in 1994 by type. Bill. NOK**

Type	Capital stock		Capital consumption	
	NOK bill.	Share	NOK bill.	Share
Dwellings	747.3	29	18.6	13
Non-residential and commercial buildings	532.8	20	17.1	12
Constructions	456.7	17	11.5	8
Production wells for oil and gas	47.7	2	4.4	
Oil production platforms and drilling rigs	229.3	9	22.5	16
Oil and gas pipelines	57.1	2	2.6	2
Ships and boats	126.3	5	12.2	9
Aircraft and helicopters	17.9	1	2.2	2
Cars	17.6	1	2.9	2
Buses, trucks	28.9	1	5.5	4
Rolling stock	9.7	0	0.6	0
Machinery and equipment	237.9	9	27.8	19
Computers and office equipment	42.6	2	7.6	5
Cultivated assets	6.2	0	0.0	0
Oil and gas exploration	60.3	2	6.2	4
Other intangible fixed assets	1.8	0	1.2	1
Valuables	1.5	0	0.0	0
SUM	2621.4	100	142.7	100

Source: Statistics Norway.

for recording investment in oil production platforms, but the average for the years 1978 to 1991 is an upward revision of about 13 per cent. This should, *ceteris paribus*, result in an increase in capital consumption and stock of about the same level. However, as a result of a higher rate of depreciation and the introduction of capital consumption for some types of structures for which capital consumption was not applied earlier, capital consumption rises at a faster pace than fixed capital formation. From this it follows that the capital stock will increase at a slower pace.

### International cooperation

International cooperation with regard to calculations of fixed capital has recently been initiated under the auspices of the UN's Statistical Commission. Participants in this project are statistical offices in about 15 countries, including Norway, and international organizations such as the UN, OECD, IMF and World Bank. The aim is to draw up more concrete and detailed guidelines for the calculations than those issued in SNA 1993, and to collect and disseminate empirical information concerning service lives and depreciation. The plan is to prepare a manual for fixed capital calculations in the course of 2-3 years. When the results of this work are available, Statistics Norway may decide to again revise the figures for capital stocks and capital consumption.

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# Research publications in English

## New titles

### Discussion paper

*Rolf Aaberge, Anders Bjørklund, Markus Jäntti, Peder J. Pedersen, Nina Smith and Tom Wennemo:*

#### **Unemployment Shocks and Income Distribution. How Did the Nordic Countries Fare During their Crises?**

DP no. 201, 1997. pp 41.

We analyse how inequality of disposable income evolved in Denmark, Finland, Norway and Sweden during the late 1980s and early 1990s when unemployment rose dramatically in all four countries. We find that a standard measure of inequality - the Gini coefficient - was surprisingly stable in all countries over this period. By decomposing the Gini coefficient into a number of income components, we can test hypotheses about the reasons for the stable income distribution. Our most straightforward hypothesis, that rising unemployment benefits have counteracted the impact of more unequally distributed earnings, gets only limited support. More complex mechanisms seems to have been at work in the Nordic countries.

*Leif Brubakk:*

#### **Estimation of Price Elasticities from Norwegian Household Survey Data**

DP no. 202, 1997. pp 34.

In this paper, a subsystem of demand equations is estimated using data from the Norwegian survey of household expenditures 1989-1991. One objective has been to obtain substantial knowledge of Norwegian household demand for a set of food groups, with emphasis on price responses, using two different approaches, namely, the method proposed in Deaton (1990), which utilizes unit values instead of market prices, and an alternative approach, which relies on market prices. Comparing the two approaches, we conclude that they produce significantly different results. Possible explanations of this finding and implications for further research are discussed.

*Jørgen Aasness and Liv Belsby:*

#### **Estimation of Time Series of Latent Variables in an Accounting System. Petrol Consumption of Norwegian Households 1973-1995**

DP no. 203, 1997. pp 23.

We present an approach for estimating time series of a set of latent variables satisfying accounting identities. We concentrate on a simple case study and comment on possible generalizations. The model consists of three main parts: (i) A system of accounting identities, e.g., a subsystem of the national accounts, which variables are considered latent. (ii) A measurement model connecting the latent variables to indicators from different sources, including micro and macro data. (iii) Stochastic processes of a subset of the latent variables in the accounting system, with stochastic trend and random walk as alternative models. The model is given a state space formulation and the Kalman filter and EM algorithms implemented in the software STAMP, are used to estimate the parameters and the time series of the latent variables. The approach is applied to estimate petrol consumption of the household and nonhousehold sectors in Norway 1973-1995, from observation of macro data on total petrol consumption and survey data of household expenditures for petrol. Satisfactory model properties are obtained. The stochastic trend model gives smooth and plausible estimates of the time series of latent petrol consumption of the household and nonhousehold sectors.

*Anders Rygh Swensen:*

#### **Change in Regime and Markov Models**

DP no. 204, 1997. pp 19.

In this paper we point out that using two-state Markov chain to describe change in regime makes it difficult to interpret the model since there is a bias towards frequent shifts. However, by using a finite Markov chain with a transition matrix satisfying certain restrictions it is possible to circumvent the difficulty and at the same time use the established procedures for estimation and filtering. The methods are applied to a couple of time series from the Norwegian quarterly national accounts.

*Karine Nyborg and Inger Spangén:*

#### **Cost-Benefit Analysis and the Democratic Ideal**

DP no. 205, 1997. pp 25.

In traditional cost-benefit analyses of public projects, every citizen's willingness to pay for a project is given an equal weight. This is sometimes taken to imply that cost-benefit analysis is a democratic

method for making public decisions, as opposed to, for example, political processes involving log-rolling and lobbying from interest groups. Politicians are frequently criticized for not putting enough emphasis on the cost-benefit analyses when making decisions. In this paper we discuss the extent to which using cost-benefit analysis to rank public projects is consistent with Dahl's (1989) criteria for democratic decision-making. We find several fundamental conflicts, both when cost-benefit analysis is used to provide final answers about projects' social desirability, and when used only as informational input to a political process. Our conclusions are illustrated using data from interviews with Norwegian politicians.

*Karl Ove Aarbu and Thor Olav Thoresen:*  
**The Norwegian Tax Reform; Distributional Effects and the High-income Response**

DP no. 207, 1997. pp 42.

Are we better or worse off after the Norwegian tax reform of 1992 and how has the reform influenced the income sizes and the distribution of total income? This question denotes our twofold analysis in this paper. We first examine the trends in average income and income distribution in the period from 1991 to 1994. Second, we ask whether the tax reform can explain parts of the observed income changes. Calculations from a tax-benefit model, assessing the direct distributional effect by applying post-reform tax rules on pre-reform data, do not predict any substantial increase in income inequality due to the tax reform of 1992. However, we find a significant post-reform increase in observed income inequality, while average income is about unaltered in the period. The increased inequality might be explained by the high income earners' response to large reductions in marginal tax rates. By applying panel data from 1991-1994 and a methodological approach developed by Feldstein (1995a), we find no evidence in support of significant behavioral responses due to decreased marginal tax rates on income. In fact, the overall elasticities are around zero, which differ substantially from Feldstein's estimate of 1.04 based on US-data. Other explanations, as the changes in the taxation of dividends, are discussed.

## Documents

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*Brita Bye and Erling Holmøy:*  
**Household Behaviour in the MSG-6 Model**  
Documents 97/13, 1997. pp 11.

*Elin Berg, Emmanuel Canon, Emmanuel and Yves Smeers:*  
**Modelling Strategic Investment in the European Natural Gas Market**  
Documents 97/14, 1997. pp 36.

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*Einar Bowitz, Taran Fæhn, Leo Andreas Grünfeld and Knut Moum:*  
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*Marie W. Arneberg:*  
Theory and Practice in the World Bank and IMF Economic Policy Models. Case study Mozambique. **Reports 96/13, 1996.**

*Terje Skjerpén and Anders Rygh Swensen:*  
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1\*  
NATIONAL ACCOUNTS FOR NORWAY

Table A1. Final expenditure and gross domestic product. At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Final consumption exp. of househ. and NPISHs	457 548	484 268	113 660	113 193	123 096	134 319	120 041	122 950	130 724
Household final consumption expenditure . . .	434 551	460 217	107 679	107 243	117 064	128 231	113 701	116 614	124 316
Goods . . . . .	245 840	262 365	60 376	61 328	64 590	76 071	62 229	67 397	68 927
Services . . . . .	185 684	193 423	47 468	45 500	50 085	50 371	51 319	48 305	52 639
Direct purchases abroad by resident househ.	18 001	19 652	3 031	4 189	7 936	4 496	3 330	4 836	8 504
- Direct purchases by non-residents . . . . .	-14 974	-15 223	-3 196	-3 773	-5 547	-2 707	-3 177	-3 925	-5 754
Final consumption exp. of NPISHs 4) . . . . .	22 997	24 051	5 981	5 949	6 033	6 089	6 340	6 337	6 408
Final consumption exp. of general government .	195 840	208 862	51 162	51 680	52 730	53 289	53 935	54 373	54 822
Final consumption exp. of central government.	78 726	84 231	20 628	20 835	21 260	21 509	21 457	21 642	21 649
Central government, civilian . . . . .	56 823	60 651	14 850	14 999	15 305	15 496	15 275	15 660	15 529
Central government, defence . . . . .	21 903	23 580	5 777	5 836	5 954	6 013	6 182	5 982	6 119
Final consumption exp. of local government . .	117 114	124 631	30 535	30 846	31 471	31 781	32 478	32 731	33 173
Gross fixed capital formation . . . . .	192 843	208 375	45 735	49 725	52 422	60 493	52 639	61 554	61 365
Petroleum activities . . . . .	47 817	46 673	9 900	12 212	12 274	12 287	12 698	17 305	15 468
Ocean transport . . . . .	3 899	6 286	1 366	972	1 578	2 369	3 408	1 663	1 858
Mainland-Norway . . . . .	141 126	155 416	34 469	36 541	38 570	45 837	36 533	42 586	44 039
Mainland-Norway excl. general government .	111 758	123 649	27 640	29 652	30 550	35 808	28 569	32 436	32 963
Manufacturing and mining . . . . .	16 455	18 196	3 434	4 272	4 697	5 793	3 460	4 923	4 490
Production of other goods . . . . .	12 019	12 096	2 253	3 211	3 140	3 492	2 181	3 381	3 345
Dwelling services . . . . .	26 481	26 089	6 341	6 189	6 586	6 973	6 697	6 854	7 112
Other services . . . . .	56 803	67 268	15 612	15 980	16 127	19 549	16 231	17 278	18 015
General government . . . . .	29 368	31 767	6 829	6 889	8 020	10 029	7 964	10 150	11 076
Changes in stocks and stat. discrepancies . . .	26 951	23 596	12 798	6 048	5 402	-651	8 517	6 938	1 020
Gross capital formation . . . . .	219 793	231 972	58 533	55 773	57 824	59 842	61 156	68 492	62 385
Final domestic use of goods and services . . . .	873 181	925 102	223 355	220 646	233 651	247 450	235 132	245 815	247 931
Final demand from Mainland-Norway 2) . . . . .	794 514	848 546	199 291	201 413	214 396	233 445	210 509	219 909	229 585
Final demand from general government 3) . . .	225 208	240 629	57 991	58 569	60 750	63 318	61 899	64 523	65 898
Total exports . . . . .	353 296	412 679	99 005	98 612	102 870	112 192	107 010	108 305	111 212
Traditional goods . . . . .	143 424	155 849	40 386	37 375	36 785	41 303	39 088	42 061	42 140
Crude oil and natural gas . . . . .	113 231	156 688	34 593	36 717	40 000	45 378	43 150	39 422	39 313
Ships and oil platforms . . . . .	10 581	9 151	2 604	2 175	1 341	3 031	2 029	1 918	1 633
Services . . . . .	86 060	90 991	21 422	22 345	24 744	22 480	22 743	24 904	28 126
Total use of goods and services . . . . .	1 226 477	1 337 781	322 360	319 258	336 521	359 642	342 142	354 120	359 143
Total imports . . . . .	297 471	319 986	75 636	75 250	81 345	87 755	79 042	89 800	92 932
Traditional goods . . . . .	202 935	222 613	53 992	53 525	53 945	61 151	53 218	60 613	59 175
Crude oil . . . . .	1 121	1 445	218	255	261	711	436	322	413
Ships and oil platforms . . . . .	12 863	14 290	3 776	2 340	3 714	4 460	5 107	3 851	4 031
Services . . . . .	80 552	81 638	17 650	19 130	23 425	21 433	20 281	25 014	29 313
Gross domestic product 1) . . . . .	929 006	1 017 794	246 728	244 008	255 174	271 885	263 105	264 320	266 208
Mainland-Norway (market prices) . . . . .	793 730	834 819	205 575	200 917	207 942	220 385	214 054	218 542	221 424
Petroleum activities and ocean transport . . . .	135 276	182 975	41 153	43 091	47 232	51 500	49 051	45 778	44 784
Mainland-Norway (basic prices) . . . . .	695 477	727 088	180 754	175 025	180 701	190 608	189 600	189 526	191 256
Mainland-Norway excl. general government . .	547 828	569 180	142 066	135 943	140 829	150 342	148 356	148 005	148 892
Manufacturing and mining . . . . .	115 043	119 515	30 345	29 313	29 207	30 650	29 329	32 799	30 274
Production of other goods . . . . .	79 293	80 875	21 781	16 003	20 930	22 162	21 360	17 321	23 377
Service industries . . . . .	353 492	368 790	89 940	90 628	90 691	97 531	97 668	97 884	95 241
General government . . . . .	147 649	157 908	38 688	39 083	39 873	40 266	41 244	41 522	42 364
Correction items . . . . .	98 253	107 731	24 822	25 892	27 241	29 777	24 454	29 016	30 168

- 1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices
- 2) Defined as total final consumption expenditure plus gross fixed capital formation in Mainland-Norway
- 3) Defined as final consumption expenditure plus gross fixed capital formation
- 4) NPISH: Non-profit institutions serving households

## NATIONAL ACCOUNTS FOR NORWAY

Table A2. Final expenditure and gross domestic product. At constant 1993-prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Final consumption exp. of househ. and NPISHs	439 745	460 253	109 507	107 867	116 841	126 038	110 551	114 009	121 422
Household final consumption expenditure . . .	418 273	438 615	104 095	102 509	111 417	120 594	105 038	108 460	115 779
Goods . . . . .	236 636	250 934	58 475	58 846	61 582	72 031	57 736	62 756	64 351
Services . . . . .	178 753	183 822	45 838	43 294	47 813	46 876	47 008	44 756	48 978
Direct purchases abroad by resident househ.	17 412	18 384	2 847	3 939	7 369	4 228	3 263	4 549	7 846
- Direct purchases by non-residents . . . . .	-14 528	-14 524	-3 066	-3 570	-5 347	-2 541	-2 969	-3 602	-5 395
Final consumption exp. of NPISHs 4) . . . . .	21 471	21 639	5 412	5 358	5 424	5 444	5 513	5 550	5 643
Final consumption exp. of general government .	184 282	190 313	46 777	46 977	48 258	48 302	47 627	48 183	48 954
Final consumption exp. of central government.	74 479	77 587	19 092	19 113	19 727	19 655	19 255	19 406	19 513
Central government, civilian . . . . .	53 687	55 914	13 730	13 759	14 210	14 215	13 626	14 015	14 021
Central government, defence . . . . .	20 792	21 673	5 362	5 354	5 517	5 441	5 630	5 391	5 492
Final consumption exp. of local government . .	109 803	112 726	27 684	27 864	28 532	28 646	28 372	28 777	29 441
Gross fixed capital formation . . . . .	182 235	190 998	42 411	45 491	48 333	54 762	48 630	55 603	55 329
Petroleum activities . . . . .	45 417	42 932	9 251	11 237	11 332	11 112	11 427	15 237	13 442
Ocean transport . . . . .	3 483	5 882	1 229	901	1 449	2 303	3 283	1 533	1 676
Mainland-Norway . . . . .	133 336	142 184	31 931	33 354	35 552	41 347	33 920	38 834	40 211
Mainland-Norway excl. general government .	105 647	113 171	25 599	27 089	28 184	32 299	26 562	29 606	30 131
Manufacturing and mining . . . . .	15 823	17 156	3 245	4 061	4 433	5 417	3 329	4 702	4 293
Production of other goods . . . . .	11 459	11 290	2 117	3 012	2 928	3 234	2 070	3 180	3 135
Dwelling services . . . . .	24 544	23 080	5 726	5 461	5 798	6 094	5 945	5 991	6 226
Other services . . . . .	53 821	61 644	14 511	14 555	15 025	17 554	15 219	15 733	16 477
General government . . . . .	27 689	29 014	6 333	6 265	7 369	9 048	7 358	9 227	10 080
Changes in stocks and stat. discrepancies . . .	27 456	22 873	12 028	5 939	5 265	-358	9 204	6 803	1 304
Gross capital formation . . . . .	209 691	213 871	54 439	51 430	53 598	54 405	57 835	62 407	56 633
Final domestic use of goods and services . . . .	833 718	864 438	210 723	206 273	218 698	228 745	216 012	224 600	227 009
Final demand from Mainland-Norway 2) . . . . .	757 363	792 751	188 215	188 197	200 652	215 687	192 098	201 026	210 587
Final demand from general government 3) . . . .	211 971	219 327	53 109	53 241	55 627	57 350	54 985	57 411	59 034
Total exports . . . . .	355 919	391 488	97 491	94 459	97 908	101 629	98 827	101 941	102 424
Traditional goods . . . . .	131 716	145 246	37 620	34 741	34 657	38 227	36 886	39 810	38 177
Crude oil and natural gas . . . . .	125 818	145 312	35 546	35 613	36 388	37 765	37 501	36 795	35 531
Ships and oil platforms . . . . .	10 888	8 785	2 615	2 078	1 275	2 817	1 856	1 707	1 378
Services . . . . .	87 498	92 145	21 709	22 028	25 588	22 820	22 585	23 630	27 338
Total use of goods and services . . . . .	1 189 637	1 255 926	308 213	300 733	316 606	330 374	314 839	326 541	329 433
Total imports . . . . .	289 675	308 520	73 539	72 848	78 817	83 316	77 013	86 204	86 123
Traditional goods . . . . .	197 477	215 786	52 162	52 129	52 702	58 794	53 237	60 182	56 711
Crude oil . . . . .	1 244	1 176	214	219	226	517	392	317	368
Ships and oil platforms . . . . .	13 206	13 925	3 732	2 248	3 612	4 333	4 936	3 510	3 539
Services . . . . .	77 748	77 633	17 432	18 253	22 277	19 671	18 449	22 196	25 505
Gross domestic product 1) . . . . .	899 962	947 405	234 678	227 885	237 787	247 056	237 831	240 337	243 307
Mainland-Norway (market prices) . . . . .	746 445	773 844	192 163	185 474	193 999	202 208	193 020	196 229	200 690
Petroleum activities and ocean transport . . . . .	153 517	173 561	42 515	42 411	43 788	44 848	44 811	44 108	42 617
Mainland-Norway (basic prices) . . . . .	663 381	683 450	170 669	164 135	171 497	177 149	171 663	173 115	176 406
Mainland-Norway excl. general government . .	525 189	541 580	135 883	129 042	135 658	140 997	135 883	136 903	139 318
Manufacturing and mining . . . . .	103 209	106 024	27 428	26 072	25 051	27 473	26 149	27 821	25 447
Production of other goods . . . . .	74 935	72 466	19 632	14 357	19 521	18 956	19 012	15 992	21 729
Service industries . . . . .	347 045	363 090	88 823	88 613	91 086	94 568	90 722	93 090	92 142
General government . . . . .	138 192	141 870	34 786	35 093	35 839	36 152	35 780	36 212	37 088
Correction items . . . . .	83 064	90 394	21 494	21 339	22 502	25 059	21 357	23 113	24 285

1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

2) Defined as total final consumption expenditure plus gross fixed capital formation in Mainland-Norway

3) Defined as final consumption expenditure plus gross fixed capital formation

4) NPISH: Non-profit institutions serving households

## NATIONAL ACCOUNTS FOR NORWAY

Table A3. Final expenditure and gross domestic product.  
Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Final consumption exp. of househ. and NPISHs	2,7	4,7	5,4	3,3	4,5	5,4	1,0	5,7	3,9
Household final consumption expenditure . . .	3,1	4,9	5,6	3,5	4,7	5,6	0,9	5,8	3,9
Goods . . . . .	2,8	6,0	7,5	4,5	4,8	7,3	-1,3	6,6	4,5
Services . . . . .	2,8	2,8	3,2	2,6	2,8	2,8	2,6	3,4	2,4
Direct purchases abroad by resident househ.	0,8	5,6	8,5	-6,9	13,0	4,7	14,6	15,5	6,5
- Direct purchases by non-residents . . . . .	-6,9	-0,0	8,0	-3,2	-0,4	-3,6	-3,1	0,9	0,9
Final consumption exp. of NPISHs 4) . . . . .	-3,5	0,8	1,8	0,2	0,5	0,6	1,9	3,6	4,0
Final consumption exp. of general government .	1,0	3,3	3,4	2,7	3,7	3,2	1,8	2,6	1,4
Final consumption exp. of central government.	-0,2	4,2	4,3	3,3	4,8	4,3	0,9	1,5	-1,1
Central government, civilian . . . . .	0,5	4,1	4,1	3,1	4,8	4,6	-0,8	1,9	-1,3
Central government, defence . . . . .	-1,9	4,2	4,7	3,8	5,0	3,4	5,0	0,7	-0,5
Final consumption exp. of local government . .	1,8	2,7	2,8	2,4	2,9	2,5	2,5	3,3	3,2
Gross fixed capital formation . . . . .	3,7	4,8	1,7	1,7	9,9	5,6	14,7	22,2	14,5
Petroleum activities . . . . .	-13,5	-5,5	-7,7	-1,7	-1,0	-11,2	23,5	35,6	18,6
Ocean transport . . . . .	-32,7	68,9	-28,7	-41,2	.	99,5	167,2	70,1	15,7
Mainland-Norway . . . . .	12,9	6,6	6,6	5,0	6,3	8,3	6,2	16,4	13,1
Mainland-Norway excl. general government .	16,3	7,1	7,1	5,7	6,8	8,6	3,8	9,3	6,9
Manufacturing and mining . . . . .	42,0	8,4	18,0	5,9	4,7	8,2	2,6	15,8	-3,2
Production of other goods . . . . .	3,7	-1,5	-1,5	-4,7	-1,3	1,7	-2,2	5,6	7,1
Dwelling services . . . . .	13,0	-6,0	-8,0	-8,2	-3,6	-4,1	3,8	9,7	7,4
Other services . . . . .	14,6	14,5	13,5	14,7	14,2	15,6	4,9	8,1	9,7
General government . . . . .	1,6	4,8	4,9	2,0	4,3	7,1	16,2	47,3	36,8
Changes in stocks and stat. discrepancies . . .	100,2	-16,7	7,5	-20,6	4,6	.	-23,5	14,6	-75,2
Gross capital formation . . . . .	10,7	2,0	3,0	-1,5	9,4	-2,2	6,2	21,3	5,7
Final domestic use of goods and services . . . .	4,2	3,7	4,3	1,9	5,5	3,1	2,5	8,9	3,8
Final demand from Mainland-Norway 2) . . . . .	4,0	4,7	5,1	3,4	4,6	5,5	2,1	6,8	5,0
Final demand from general government 3) . . . .	1,1	3,5	3,6	2,6	3,8	3,8	3,5	7,8	6,1
Total exports . . . . .	3,6	10,0	10,7	10,1	8,9	10,3	1,4	7,9	4,6
Traditional goods . . . . .	4,2	10,3	9,1	11,4	8,6	11,9	-2,0	14,6	10,2
Crude oil and natural gas . . . . .	8,1	15,5	15,8	19,3	19,3	8,6	5,5	3,3	-2,4
Ships and oil platforms . . . . .	2,1	-19,3	28,3	-30,8	-65,7	32,1	-29,0	-17,8	8,1
Services . . . . .	-2,8	5,3	4,1	1,1	7,6	8,4	4,0	7,3	6,8
Total use of goods and services . . . . .	4,0	5,6	6,2	4,4	6,5	5,2	2,1	8,6	4,1
Total imports . . . . .	5,5	6,5	7,3	1,2	8,5	8,9	4,7	18,3	9,3
Traditional goods . . . . .	9,4	9,3	9,0	7,0	9,2	11,7	2,1	15,4	7,6
Crude oil . . . . .	32,0	-5,5	-38,7	-42,8	-31,1	179,9	83,3	45,0	62,7
Ships and oil platforms . . . . .	7,0	5,4	16,8	-12,3	49,1	-13,8	32,3	56,1	-2,0
Services . . . . .	-3,6	-0,1	1,7	-10,1	2,8	5,6	5,8	21,6	14,5
Gross domestic product 1) . . . . .	3,6	5,3	5,9	5,4	5,9	4,0	1,3	5,5	2,3
Mainland-Norway (market prices) . . . . .	3,1	3,7	4,3	3,4	3,8	3,3	0,4	5,8	3,4
Petroleum activities and ocean transport . . . . .	5,9	13,1	14,1	15,2	16,3	7,3	5,4	4,0	-2,7
Mainland-Norway (basic prices) . . . . .	2,8	3,0	3,5	2,9	3,3	2,4	0,6	5,5	2,9
Mainland-Norway excl. general government . .	3,0	3,1	3,8	3,0	3,4	2,3	0,0	6,1	2,7
Manufacturing and mining . . . . .	3,0	2,7	2,7	0,3	4,5	3,6	-4,7	6,7	1,6
Production of other goods . . . . .	8,4	-3,3	5,5	-3,2	-5,7	-8,9	-3,2	11,4	11,3
Service industries . . . . .	1,9	4,6	3,7	5,0	5,3	4,5	2,1	5,1	1,2
General government . . . . .	1,8	2,7	2,6	2,7	2,7	2,6	2,9	3,2	3,5
Correction items . . . . .	5,9	8,8	10,4	7,1	7,7	10,1	-0,6	8,3	7,9

1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

2) Defined as total final consumption expenditure plus gross fixed capital formation in Mainland-Norway

3) Defined as final consumption expenditure plus gross fixed capital formation

4) NPISH: Non-profit institutions serving households

## NATIONAL ACCOUNTS FOR NORWAY

Table A4. Final expenditure and gross domestic product.  
Percentage change in prices from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Final consumption exp. of househ. and NPISHs	2,8	1,1	-0,4	1,6	1,6	1,5	4,6	2,8	2,2
Household final consumption expenditure . . .	2,7	1,0	-0,6	1,5	1,5	1,4	4,6	2,8	2,2
Goods . . . . .	2,4	0,6	-0,3	0,0	0,8	1,7	4,4	3,0	2,1
Services . . . . .	3,1	1,3	-1,1	3,2	2,1	1,1	5,4	2,7	2,6
Direct purchases abroad by resident househ.	0,9	3,4	3,9	5,4	3,8	0,4	-4,1	-0,0	0,7
- Direct purchases by non-residents . . . . .	2,2	1,7	1,4	2,0	1,7	1,7	2,6	3,1	2,8
Final consumption exp. of NPISHs 4). . . . .	5,6	3,8	3,4	4,1	3,9	3,8	4,1	2,8	2,1
Final consumption exp. of general government .	3,9	3,3	3,1	3,8	2,8	3,4	3,5	2,6	2,5
Final consumption exp. of central government.	3,7	2,7	2,6	3,5	2,0	2,7	3,1	2,3	2,9
Central government, civilian . . . . .	3,9	2,5	2,5	3,5	1,8	2,2	3,6	2,5	2,8
Central government, defence . . . . .	3,3	3,3	2,8	3,7	2,5	4,1	1,9	1,8	3,2
Final consumption exp. of local government . .	4,0	3,7	3,5	4,0	3,4	3,8	3,8	2,7	2,2
Gross fixed capital formation . . . . .	3,7	3,1	3,3	3,4	2,1	3,5	0,4	1,3	2,3
Petroleum activities . . . . .	3,1	3,3	2,8	3,5	2,4	4,3	3,8	4,5	6,2
Ocean transport . . . . .	10,8	-4,5	10,4	9,9	54,1	-9,7	-6,7	0,5	1,7
Mainland-Norway . . . . .	3,7	3,3	3,1	3,1	2,9	3,8	-0,2	0,1	1,0
Mainland-Norway excl. general government .	3,7	3,3	3,2	3,0	3,0	3,8	-0,4	0,1	0,9
Manufacturing and mining . . . . .	3,1	2,0	3,2	1,2	2,3	1,7	-1,8	-0,5	-1,3
Production of other goods . . . . .	3,3	2,1	2,8	1,6	2,4	2,0	-1,0	-0,3	-0,5
Dwelling services . . . . .	3,4	4,8	4,4	4,7	4,9	5,0	1,7	1,0	0,6
Other services . . . . .	4,2	3,4	2,8	3,2	2,8	4,5	-0,9	0,0	1,9
General government . . . . .	3,8	3,2	2,7	3,5	2,6	3,9	0,4	0,0	1,0
Changes in stocks and stat. discrepancies . . .	-7,2	5,1	7,9	-2,0	8,6	102,1	-13,0	0,1	-23,7
Gross capital formation . . . . .	2,5	3,5	4,2	2,9	2,7	4,1	-1,7	1,2	2,1
Final domestic use of goods and services . . . .	3,0	2,2	1,6	2,4	2,2	2,5	2,7	2,3	2,2
Final demand from Mainland-Norway 2) . . . .	3,3	2,0	1,1	2,4	2,2	2,4	3,5	2,2	2,0
Final demand from general government 3) . . . .	3,9	3,3	3,1	3,8	2,8	3,4	3,1	2,2	2,2
Total exports . . . . .	2,3	6,2	1,0	3,9	7,5	12,2	6,6	1,8	3,3
Traditional goods . . . . .	7,1	-1,5	-2,9	-0,9	-2,5	0,5	-1,3	-1,8	4,0
Crude oil and natural gas . . . . .	-1,6	19,8	6,7	9,9	27,2	35,4	18,2	3,9	0,7
Ships and oil platforms . . . . .	-2,2	7,2	3,3	3,9	10,9	11,1	9,8	7,3	12,7
Services . . . . .	1,0	0,4	0,7	3,6	-1,2	-1,3	2,1	3,9	6,4
Total use of goods and services . . . . .	2,8	3,3	1,4	2,8	3,7	5,2	3,9	2,2	2,6
Total imports . . . . .	1,0	1,0	-0,1	1,6	0,9	1,6	-0,2	0,8	4,6
Traditional goods . . . . .	0,7	0,4	0,6	0,3	0,1	0,5	-3,4	-1,9	1,9
Crude oil . . . . .	-2,0	36,4	9,2	25,3	40,2	50,3	9,1	-12,9	-2,7
Ships and oil platforms . . . . .	-3,7	5,4	5,7	10,5	3,3	3,9	2,3	5,4	10,8
Services . . . . .	2,5	1,5	-3,3	3,5	1,9	3,1	8,6	7,5	9,3
Gross domestic product 1). . . . .	3,4	4,1	1,8	3,2	4,6	6,5	5,2	2,7	2,0
Mainland-Norway (market prices). . . . .	4,5	1,5	0,7	2,1	1,1	2,0	3,7	2,8	2,9
Petroleum activities and ocean transport . . . .	-2,6	19,6	9,6	10,1	26,4	32,3	13,1	2,1	-2,6
Mainland-Norway (basic prices) . . . . .	3,8	1,5	0,6	2,1	1,0	2,2	4,3	2,7	2,9
Mainland-Norway excl. general government . .	3,7	0,8	-0,3	1,6	0,2	1,6	4,4	2,6	2,9
Manufacturing and mining . . . . .	9,4	1,1	1,5	1,2	1,5	0,3	1,4	4,9	2,0
Production of other goods . . . . .	3,5	5,5	2,5	2,3	4,2	12,1	1,3	-2,8	0,3
Service industries . . . . .	2,0	-0,3	-1,6	1,7	-1,1	-0,1	6,3	2,8	3,8
General government . . . . .	4,1	4,2	4,2	4,2	4,1	4,2	3,6	3,0	2,7
Correction items . . . . .	10,1	0,8	0,7	1,3	1,1	0,1	-0,8	3,5	2,6

1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

2) Defined as total final consumption expenditure plus gross fixed capital formation in Mainland-Norway

3) Defined as final consumption expenditure plus gross fixed capital formation

4) NPISH: Non-profit institutions serving households

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NATIONAL ACCOUNTS FOR NORWAY

Table A5. Gross domestic product and value added by industry.  
At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Gross domestic product 1).	929 006	1 017 794	246 728	244 008	255 174	271 885	263 105	264 320	266 208
Agriculture and hunting	12 142	12 278	2 523	175	6 097	3 483	3 045	342	5 942
Forestry and logging	3 293	2 977	1 191	754	292	741	722	468	199
Fishing and fish farming	7 416	7 203	2 335	1 532	1 558	1 778	1 846	1 519	2 049
Oil and gas extraction incl. services	105 963	150 313	32 708	34 932	38 789	43 885	41 754	37 632	37 408
Oil and gas extraction	103 749	147 301	32 086	34 241	37 976	42 998	40 762	36 544	36 361
Service act. incidental to oil and gas ext.	2 214	3 012	621	690	813	887	991	1 088	1 048
Mining and quarrying	1 812	1 827	454	476	426	471	377	502	537
Manufacturing	113 230	117 688	29 891	28 837	28 781	30 179	28 952	32 297	29 737
Food products, beverages and tobacco	16 161	17 433	4 128	4 542	4 330	4 433	4 464	5 162	4 477
Textiles, wearing apparel, leather	2 233	2 292	586	553	530	624	560	621	491
Wood and wood products	4 441	4 068	956	953	981	1 178	1 269	1 571	1 428
Pulp, paper and paper products	7 825	5 842	1 740	1 335	1 366	1 400	1 204	1 211	1 310
Publishing, printing, reproduction	12 073	13 928	3 562	3 384	3 320	3 663	3 651	3 753	3 565
Refined petroleum products	1 367	1 228	245	423	257	304	358	407	491
Basic chemicals	6 965	6 610	1 617	1 500	1 822	1 671	1 413	1 734	1 786
Chemical and mineral products	9 946	10 607	2 773	2 656	2 469	2 709	2 348	2 713	2 418
Basic metals	12 012	10 862	2 999	2 883	2 600	2 381	2 203	2 957	2 788
Machinery and other equipment n.e.c.	26 080	29 189	7 109	6 940	7 337	7 804	7 417	7 912	7 145
Building of ships, oil platforms and moduls.	10 653	11 873	3 172	2 810	2 922	2 969	3 130	3 214	2 894
Furniture and other manufacturing n.e.c.	3 475	3 755	1 005	859	847	1 044	936	1 042	943
Electricity and gas supply	24 132	21 683	7 379	4 611	3 756	5 937	6 723	5 369	4 979
Construction	32 309	36 734	8 353	8 931	9 228	10 223	9 025	9 624	10 207
Service industries excluded general government	382 805	401 451	98 385	98 787	99 134	105 145	104 965	106 030	102 616
Wholesale and retail trade	88 444	92 868	21 924	21 740	22 597	26 609	22 296	23 772	24 045
Hotels and restaurants	11 062	11 776	2 601	2 782	3 059	3 334	2 588	2 908	3 203
Transport via pipelines	13 998	16 627	4 014	3 956	4 164	4 493	4 456	4 047	3 938
Water transport	16 998	17 762	4 860	4 675	4 778	3 449	3 236	4 607	3 930
Ocean transport	15 314	16 035	4 431	4 204	4 279	3 121	2 841	4 099	3 437
Inland water and costal transport	1 683	1 727	428	472	499	328	395	508	493
Other transport industries	36 466	37 723	9 714	10 421	9 583	8 005	10 601	11 918	9 312
Post and telecommunications	19 421	20 278	4 902	4 921	4 734	5 721	4 854	5 032	4 759
Financial intermediation	37 931	35 627	7 440	9 429	8 537	10 221	11 060	9 699	8 776
Dwelling services	62 556	64 141	15 899	16 023	16 079	16 141	16 356	16 534	16 741
Business services etc.	48 360	53 583	13 833	12 779	12 139	14 832	15 431	14 382	13 485
Personal services	47 568	51 067	13 200	12 063	13 464	12 340	14 087	13 130	14 428
General government	147 649	157 908	38 688	39 083	39 873	40 266	41 244	41 522	42 364
Central government	44 158	46 722	11 447	11 563	11 798	11 914	11 990	12 065	12 331
Civilian central government	32 464	34 596	8 476	8 562	8 736	8 822	8 908	8 936	9 074
Defence	11 694	12 126	2 971	3 001	3 062	3 092	3 082	3 128	3 257
Local government	103 491	111 186	27 241	27 520	28 075	28 352	29 254	29 457	30 033
FISIM 2)	-29 645	-30 018	-7 205	-7 403	-7 314	-8 097	-7 395	-7 614	-7 680
Value added tax and investment levy	88 345	95 385	22 281	22 607	23 689	26 808	22 983	24 906	25 890
Other taxes on products, net	37 409	41 968	9 214	10 452	10 516	11 786	9 119	11 773	11 543
Statistical discrepancy	2 144	396	531	235	351	-720	-253	-50	415
Mainland-Norway (basic prices)	695 477	727 088	180 754	175 025	180 701	190 608	189 600	189 526	191 256
Market producers	606 863	673 524	163 766	159 551	168 165	182 042	177 419	173 665	173 022
Non-market producers	223 890	236 539	58 140	58 565	59 767	60 066	61 232	61 639	63 018
Education	39 340	41 940	10 292	10 356	10 563	10 729	10 808	10 897	11 230
Health and social work	70 255	75 699	18 563	18 736	19 145	19 254	20 066	20 253	20 482

1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

2) Financial intermediation services indirectly measured

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Table A6. Gross domestic product and value added by industry.  
 Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Gross domestic product 1). . . . .	3,6	5,3	5,9	5,4	5,9	4,0	1,3	5,5	2,3
Agriculture and hunting . . . . .	10,0	3,3	4,7	20,7	1,1	3,5	23,4	49,5	-0,2
Forestry and logging . . . . .	12,7	-21,9	-22,0	-21,9	-21,8	-21,8	-2,5	-3,2	-3,4
Fishing and fish farming . . . . .	7,8	4,8	16,6	7,3	3,0	-6,6	-7,5	20,7	2,6
Oil and gas extraction incl. services . . . . .	7,3	14,2	16,5	17,4	17,7	6,4	4,6	2,7	-4,8
Oil and gas extraction . . . . .	7,6	14,1	17,0	17,0	17,5	6,1	4,0	2,3	-4,8
Service act. incidental to oil and gas ext. . . . .	-8,3	19,6	-5,6	42,8	28,6	20,4	40,8	21,0	-1,6
Mining and quarrying . . . . .	2,5	1,3	6,3	-0,8	-2,6	2,5	-10,4	1,5	11,3
Manufacturing . . . . .	3,0	2,8	2,6	0,3	4,6	3,6	-4,6	6,8	1,4
Food products, beverages and tobacco . . . . .	1,7	1,9	4,8	0,6	1,3	1,2	-1,6	0,5	1,5
Textiles, wearing apparel, leather . . . . .	-3,6	1,1	-10,9	-4,3	9,9	13,4	-2,0	14,1	1,5
Wood and wood products . . . . .	2,1	1,4	-2,7	1,6	3,6	3,5	-4,0	13,5	12,6
Pulp, paper and paper products . . . . .	4,5	-6,8	-5,1	-10,4	-6,7	-4,9	-4,1	8,6	5,3
Publishing, printing, reproduction . . . . .	3,3	3,6	4,1	4,8	3,9	1,7	-1,9	4,4	2,3
Refined petroleum products . . . . .	-10,2	10,5	0,4	1,8	17,7	23,6	9,4	9,7	-4,3
Basic chemicals . . . . .	-0,2	-0,5	-1,6	-9,5	5,4	3,9	-4,4	14,6	-6,0
Chemical and mineral products . . . . .	6,7	3,3	3,3	3,6	3,2	3,3	-8,8	5,4	-1,6
Basic metals . . . . .	-2,5	3,2	1,6	3,7	3,3	4,4	2,3	9,8	0,8
Machinery and other equipment n.e.c. . . . .	7,0	4,7	4,6	0,4	7,6	6,4	-6,2	8,8	2,6
Building of ships, oil platforms and moduls. . . . .	1,0	2,7	2,7	-2,1	8,6	2,2	-12,4	1,8	-5,2
Furniture and other manufacturing n.e.c. . . . .	1,1	5,4	5,0	4,7	7,2	4,9	-1,2	23,3	15,3
Electricity and gas supply . . . . .	8,7	-15,0	7,9	-14,0	-29,7	-27,2	-23,0	8,1	36,9
Construction . . . . .	7,1	2,4	4,8	1,6	1,8	1,6	6,5	8,2	13,4
Service industries excluded general government	1,9	5,0	3,9	5,2	5,8	5,0	2,7	5,4	1,5
Wholesale and retail trade . . . . .	1,4	6,3	6,7	5,6	5,0	7,7	-2,1	8,1	5,9
Hotels and restaurants . . . . .	-0,5	4,0	3,6	3,6	3,8	4,7	-0,6	1,7	3,2
Transport via pipelines . . . . .	7,8	18,1	16,8	17,7	21,0	17,0	10,9	8,5	4,0
Water transport . . . . .	-3,8	2,2	-1,8	0,7	4,1	6,0	6,2	9,4	6,4
Ocean transport . . . . .	-2,9	2,0	-1,9	0,2	3,9	6,1	6,2	9,6	6,4
Inland water and costal transport . . . . .	-12,1	4,0	-0,7	5,5	6,6	4,5	6,4	8,0	6,4
Other transport industries . . . . .	6,4	12,2	8,1	8,3	21,3	10,2	8,4	12,6	-12,6
Post and telecommunications . . . . .	8,1	4,4	4,6	6,5	3,0	3,7	2,7	5,1	5,1
Financial intermediation . . . . .	-1,9	-0,8	-4,1	7,4	-2,1	-3,9	0,5	-5,6	-5,0
Dwelling services . . . . .	0,9	0,9	0,9	0,9	0,8	0,8	1,1	1,0	1,0
Business services etc. . . . .	1,7	6,5	4,7	6,5	8,7	6,5	7,0	8,1	6,8
Personal services . . . . .	2,7	2,9	3,8	2,6	2,6	2,6	2,5	3,9	3,2
General government . . . . .	1,8	2,7	2,6	2,7	2,7	2,6	2,9	3,2	3,5
Central government . . . . .	1,7	1,9	2,0	1,7	2,1	1,7	1,6	1,7	1,4
Civilian central government . . . . .	0,9	2,6	2,6	2,7	2,6	2,6	1,6	1,5	1,3
Defence . . . . .	4,0	-0,3	0,3	-1,1	0,6	-0,8	1,6	2,0	1,7
Local government . . . . .	1,8	3,0	2,9	3,1	3,0	3,0	3,4	3,8	4,4
FISIM 2) . . . . .	3,0	-0,1	-0,2	-0,1	-0,1	-0,1	-2,6	0,4	-1,1
Value added tax and investment levy . . . . .	3,0	5,3	6,5	4,0	4,5	6,2	1,4	8,1	7,3
Other taxes on products, net . . . . .	4,6	9,0	9,7	7,7	8,0	10,4	-4,9	4,9	4,3
Statistical discrepancy . . . . .	918,7	10,5	6,7	6,7	9,2	19,4	-39,5	-43,5	-40,0
Mainland-Norway (basic prices) . . . . .	2,8	3,0	3,5	2,9	3,3	2,4	0,6	5,5	2,9
Market producers . . . . .	4,1	5,9	6,7	6,4	7,0	3,8	1,4	6,2	1,4
Non-market producers . . . . .	1,2	2,0	2,1	1,9	2,0	1,9	1,9	2,4	2,6
Education . . . . .	1,2	2,5	2,5	2,5	2,5	2,5	1,2	2,0	3,1
Health and social work . . . . .	2,1	2,9	3,1	3,0	2,8	2,8	3,9	4,8	4,5

1) Gross domestic product is measured at market prices, while value added by industry is measured at basic prices

2) Financial intermediation services indirectly measured

## NATIONAL ACCOUNTS FOR NORWAY

Table A7. Household final consumption expenditure. At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Household final consumption expenditure . . . .	434 551	460 217	107 679	107 243	117 064	128 231	113 701	116 614	124 316
Food, beverages and tobacco. . . . .	93 326	96 704	21 697	23 865	24 932	26 210	22 060	24 953	26 644
Clothing and footwear . . . . .	25 848	26 578	5 462	6 251	6 255	8 610	5 527	6 833	6 346
Housing, water, electr., gas and other fuels . . . .	100 411	104 394	27 219	24 887	24 365	27 923	28 740	26 014	24 927
Furnishings, household equipment etc. . . . .	28 107	29 473	6 624	6 096	7 207	9 547	6 727	7 003	7 748
Health . . . . .	10 980	11 747	2 802	2 889	2 949	3 107	2 889	3 093	3 197
Transport . . . . .	68 951	78 478	17 902	19 875	21 237	19 464	18 866	22 726	23 075
Leisure, entertainment and culture . . . . .	40 343	42 852	10 480	8 861	11 534	11 978	10 709	9 983	12 419
Education . . . . .	1 965	2 056	489	440	549	577	518	480	594
Hotels, cafes and restaurants . . . . .	24 212	25 692	5 341	5 901	7 381	7 070	5 628	6 130	7 687
Miscellaneous goods and services . . . . .	37 380	37 812	9 828	7 763	8 265	11 957	11 884	8 488	8 928
Direct purchases abroad by resident househ. . . .	18 001	19 652	3 031	4 189	7 936	4 496	3 330	4 836	8 504
- Direct purchases by non-residents . . . . .	-14 974	-15 223	-3 196	-3 773	-5 547	-2 707	-3 177	-3 925	-5 754
Goods . . . . .	245 840	262 365	60 376	61 328	64 590	76 071	62 229	67 397	68 927
Services . . . . .	185 684	193 423	47 468	45 500	50 085	50 371	51 319	48 305	52 639
Services, dwellings . . . . .	80 726	82 897	20 455	20 721	20 780	20 941	21 190	21 390	21 506
Other services . . . . .	104 958	110 526	27 013	24 778	29 305	29 430	30 129	26 915	31 133

Table A8. Household final consumption expenditure.

Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Household final consumption expenditure . . . .	3,1	4,9	5,6	3,5	4,7	5,6	0,9	5,8	3,9
Food, beverages and tobacco. . . . .	3,8	1,7	3,4	0,5	0,4	2,6	-2,3	-0,2	3,3
Clothing and footwear . . . . .	-4,1	6,3	5,3	4,1	6,6	8,5	-0,9	8,9	3,4
Housing, water, electr., gas and other fuels . . . .	1,5	1,5	3,6	1,0	1,0	0,4	-0,7	1,4	0,4
Furnishings, household equipment etc. . . . .	5,2	3,7	6,4	1,1	2,2	4,7	0,8	13,8	6,8
Health . . . . .	-0,3	3,0	1,7	2,5	3,5	4,4	1,3	5,2	5,8
Transport . . . . .	3,6	14,0	13,4	11,7	13,1	17,8	1,8	11,1	4,5
Leisure, entertainment and culture . . . . .	4,1	6,0	6,9	6,1	3,5	7,8	0,6	10,7	5,5
Education . . . . .	-1,2	0,0	-0,4	1,1	-1,1	0,6	2,0	5,2	4,5
Hotels, cafes and restaurants . . . . .	4,8	3,9	3,9	3,4	3,9	4,2	3,2	0,5	2,1
Miscellaneous goods and services . . . . .	4,4	3,1	3,1	3,3	2,6	3,4	5,3	6,9	6,7
Direct purchases abroad by resident househ. . . .	0,8	5,6	8,5	-6,9	13,0	4,7	14,6	15,5	6,5
- Direct purchases by non-residents . . . . .	-6,9	-0,0	8,0	-3,2	-0,4	-3,6	-3,1	0,9	0,9
Goods . . . . .	2,8	6,0	7,5	4,5	4,8	7,3	-1,3	6,6	4,5
Services . . . . .	2,8	2,8	3,2	2,6	2,8	2,8	2,6	3,4	2,4
Services, dwellings . . . . .	1,2	0,9	1,2	0,8	0,7	1,0	1,2	1,1	0,7
Other services . . . . .	4,1	4,3	4,7	4,1	4,3	4,2	3,5	5,3	3,7

## NATIONAL ACCOUNTS FOR NORWAY

Table A9. Gross fixed capital formation by type of capital goods and by industry.  
At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Gross fixed capital formation . . . . .	192 843	208 375	45 735	49 725	52 422	60 493	52 639	61 554	61 365
Buildings and structures . . . . .	78 151	82 932	19 080	19 633	20 604	23 615	20 442	23 145	24 208
Oil exploration, drilling, pipelines . . . . .	17 939	20 413	4 119	4 921	5 852	5 521	5 391	7 095	7 612
Oil platforms etc. . . . .	25 911	24 176	4 983	6 446	6 256	6 491	7 373	9 977	7 526
Ships and boats. . . . .	5 029	7 433	1 680	1 181	1 861	2 711	3 845	2 029	2 192
Other transport equipment. . . . .	19 776	25 355	5 876	6 416	5 678	7 385	5 516	6 675	5 981
Machinery and equipment . . . . .	46 035	48 066	9 997	11 128	12 170	14 770	10 072	12 633	13 847
Agriculture and hunting . . . . .	5 054	5 293	914	1 612	1 493	1 274	915	1 614	1 521
Forestry and logging . . . . .	533	550	137	137	137	139	137	138	137
Fishing and fish farming . . . . .	535	551	148	113	159	131	244	182	168
Oil and gas extraction, incl. services . . . . .	41 730	40 680	8 676	10 626	10 396	10 983	11 600	15 176	12 880
Oil and gas extraction . . . . .	42 066	41 499	8 974	10 777	10 409	11 340	11 543	15 155	12 862
Service act. incidental to oil and gas ext. . . . .	-335	-819	-298	-151	-13	-357	57	22	18
Mining and quarrying. . . . .	462	375	76	66	127	105	39	77	85
Manufacturing. . . . .	15 993	17 821	3 358	4 206	4 569	5 688	3 421	4 846	4 405
Food products, beverages and tobacco . . . . .	3 305	3 230	592	700	674	1 264	631	870	778
Textiles, wearing apparel, leather . . . . .	196	209	41	46	71	51	61	67	61
Wood and wood products . . . . .	938	1 373	187	317	524	344	274	233	239
Pulp, paper and paper products . . . . .	1 826	1 448	339	284	243	582	217	365	352
Publishing, printing, reproduction . . . . .	880	966	204	228	227	307	194	390	248
Refined petroleum products . . . . .	425	324	73	43	140	67	21	51	88
Basic chemicals . . . . .	2 171	1 708	472	464	446	326	320	234	174
Chemical and mineral products . . . . .	1 523	2 034	345	438	590	661	357	564	645
Basic metals . . . . .	1 368	2 922	432	735	763	992	753	1 122	816
Machinery and other equipment n.e.c. . . . .	2 303	2 346	472	530	633	711	412	542	708
Building of ships, oil platforms and moduls. . . . .	673	777	134	261	134	248	127	277	165
Furniture and other manufacturing n.e.c. . . . .	384	486	67	161	123	134	53	132	131
Electricity and gas supply . . . . .	4 953	4 698	797	1 083	1 127	1 691	605	1 159	1 242
Construction. . . . .	945	1 004	258	266	224	256	280	288	277
Service industries excl. general government . . . . .	93 269	105 636	24 543	24 727	26 169	30 196	27 434	27 923	29 573
Wholesale and retail trade . . . . .	18 374	21 337	5 057	5 036	5 095	6 149	4 953	5 431	5 463
Hotels and restaurants . . . . .	1 806	2 009	522	494	497	496	481	492	733
Transport via pipelines . . . . .	6 087	5 993	1 224	1 586	1 878	1 304	1 098	2 128	2 588
Water transtort. . . . .	4 591	7 009	1 563	1 095	1 747	2 603	3 677	1 846	2 044
Ocean transport . . . . .	3 899	6 286	1 366	972	1 578	2 369	3 408	1 663	1 858
Inland water and costal transport . . . . .	692	722	197	123	169	233	269	183	186
Other transport industries . . . . .	11 194	15 571	3 927	4 171	3 301	4 172	4 083	4 310	3 974
Post and telecommunications . . . . .	7 693	7 733	1 104	1 483	2 149	2 997	1 277	1 692	2 482
Financial intermediation . . . . .	4 234	4 876	1 043	1 095	1 261	1 477	1 196	1 286	1 372
Dwelling services . . . . .	26 481	26 089	6 341	6 189	6 586	6 973	6 697	6 854	7 112
Business services etc. . . . .	6 433	8 115	2 010	1 984	1 920	2 201	2 139	2 173	2 017
Personal services . . . . .	6 378	6 903	1 751	1 593	1 734	1 824	1 831	1 712	1 786
General government . . . . .	29 368	31 767	6 829	6 889	8 020	10 029	7 964	10 150	11 076
Central government. . . . .	13 466	14 110	3 205	2 989	3 462	4 454	2 395	3 453	3 861
Civilian central government. . . . .	10 232	10 810	2 502	2 354	2 751	3 203	1 945	2 631	2 632
Defence. . . . .	3 234	3 300	703	635	711	1 251	450	822	1 229
Local government . . . . .	15 902	17 657	3 624	3 900	4 558	5 575	5 569	6 697	7 215
Mainland-Norway . . . . .	141 126	155 416	34 469	36 541	38 570	45 837	36 533	42 586	44 039
Education . . . . .	5 266	5 474	1 289	1 265	1 358	1 563	2 719	3 718	3 714
Health and social work . . . . .	6 722	8 191	1 780	1 798	2 053	2 559	1 987	1 884	2 105

## NATIONAL ACCOUNTS FOR NORWAY

Table A10. Gross fixed capital formation by type of capital goods and by industry.  
 Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Gross fixed capital formation . . . . .	3,7	4,8	1,7	1,7	9,9	5,6	14,7	22,2	14,5
Buildings and structures . . . . .	14,3	1,6	4,1	0,3	1,4	0,8	5,4	16,9	17,0
Oil exploration, drilling, pipelines . . . . .	-18,5	10,7	13,8	6,3	6,7	17,1	24,3	34,4	19,6
Oil platforms etc. . . . .	-2,5	-10,1	-17,2	-4,3	3,6	-20,2	44,1	50,4	15,4
Ships and boats. . . . .	-30,7	51,8	-26,7	-40,7	.	91,1	142,6	70,1	15,3
Other transport equipment. . . . .	17,6	22,4	15,4	22,4	19,1	32,7	-4,5	4,0	-4,4
Machinery and equipment . . . . .	4,6	4,1	4,1	4,3	2,7	5,1	3,7	14,7	16,1
Agriculture and hunting . . . . .	9,3	2,6	1,7	3,7	2,2	2,4	1,3	0,4	2,3
Forestry and logging . . . . .	2,1	-0,4	-0,6	-0,4	-0,1	-0,4	-0,1	-0,0	-0,0
Fishing and fish farming . . . . .	-35,1	2,3	-19,7	-35,3	58,5	63,8	74,5	66,0	8,7
Oil and gas extraction, incl. services . . . . .	-9,9	-5,8	-12,9	-2,1	3,4	-11,1	28,6	36,3	16,4
Oil and gas extraction . . . . .	-10,2	-4,6	-9,6	-0,5	1,2	-9,0	23,8	34,1	16,1
Service act. incidental to oil and gas ext. . . . .	-37,3	143,9	.	.	-93,9	160,6	.	.	.
Mining and quarrying . . . . .	69,8	-21,6	-26,8	-39,6	15,0	-31,9	-47,8	18,1	-31,5
Manufacturing . . . . .	41,3	9,3	19,7	7,2	4,4	9,4	3,7	15,7	-2,4
Food products, beverages and tobacco . . . . .	18,6	-4,6	5,5	-20,7	-8,7	5,1	7,7	24,8	16,9
Textiles, wearing apparel, leather . . . . .	-3,2	5,5	-34,1	-16,6	76,0	24,5	52,6	50,9	-13,7
Wood and wood products . . . . .	19,3	45,6	28,6	49,2	135,8	-5,6	52,2	-25,5	-54,6
Pulp, paper and paper products . . . . .	186,3	-22,4	69,6	-34,2	-62,5	0,3	-32,7	28,2	45,5
Publishing, printing, reproduction . . . . .	-14,3	8,4	3,6	53,8	38,8	-20,2	-3,0	70,1	8,3
Refined petroleum products . . . . .	57,1	-28,1	-5,7	-74,2	37,8	-34,8	-70,4	25,5	-35,6
Basic chemicals . . . . .	174,0	-22,7	35,9	-32,8	-34,4	-33,6	-32,8	-48,2	-59,0
Chemical and mineral products . . . . .	21,8	30,2	22,1	29,2	15,1	54,9	5,9	29,0	10,6
Basic metals . . . . .	48,1	106,7	29,5	155,1	115,8	126,9	75,9	53,0	9,3
Machinery and other equipment n.e.c. . . . .	40,1	1,3	17,9	13,7	-6,8	-7,9	-11,0	1,7	12,2
Building of ships, oil platforms and moduls. . . . .	-4,3	14,6	-4,8	83,1	0,5	-5,7	-2,1	10,1	26,9
Furniture and other manufacturing n.e.c. . . . .	34,1	24,0	21,1	47,4	28,5	2,1	-19,7	-17,2	6,7
Electricity and gas supply . . . . .	2,0	-7,0	-2,2	-13,9	-10,7	-1,4	-23,9	7,4	11,3
Construction . . . . .	22,5	2,8	1,5	7,5	1,8	0,6	9,1	8,3	20,6
Service industries excl. general government . . . . .	6,4	9,8	5,4	3,5	17,6	12,8	12,5	12,5	11,0
Wholesale and retail trade . . . . .	11,5	12,4	12,4	12,1	10,9	14,1	-1,6	7,7	5,3
Hotels and restaurants . . . . .	11,9	7,4	15,7	1,6	6,7	6,2	-7,6	-0,7	44,7
Transport via pipelines . . . . .	-32,7	-2,9	59,9	0,7	-20,1	-12,4	-12,8	30,8	30,8
Water transtort. . . . .	-29,6	57,4	-26,6	-40,1	.	87,0	149,5	66,9	14,5
Ocean transport . . . . .	-32,7	68,9	-28,7	-41,2	.	99,5	167,2	70,1	15,7
Inland water and costal transport . . . . .	-8,8	-0,3	-9,9	-30,3	35,5	14,2	35,6	42,1	3,2
Other transport industries . . . . .	27,9	33,9	21,3	40,0	26,1	50,6	6,1	3,3	14,1
Post and telecommunications . . . . .	24,2	-0,5	7,8	-2,2	10,5	-9,0	18,9	15,6	18,0
Financial intermediation . . . . .	23,4	10,8	9,1	6,1	10,8	16,1	13,6	16,4	8,2
Dwelling services . . . . .	13,0	-6,0	-8,0	-8,2	-3,6	-4,1	3,8	9,7	7,4
Business services etc. . . . .	2,2	21,3	17,5	19,4	21,1	27,3	6,5	9,1	2,8
Personal services . . . . .	6,0	5,5	6,5	4,1	4,9	6,3	4,8	7,0	2,8
General government . . . . .	1,6	4,8	4,9	2,0	4,3	7,1	16,2	47,3	36,8
Central government . . . . .	-3,7	1,4	1,2	-6,3	0,2	8,3	-25,5	15,1	8,5
Civilian central government . . . . .	-1,0	2,0	5,0	2,0	2,8	-0,8	-23,0	10,1	-4,7
Defence . . . . .	-11,4	-0,8	-9,7	-28,9	-7,6	41,0	-34,0	34,4	53,4
Local government . . . . .	6,7	7,7	8,4	9,2	7,7	6,2	53,2	71,6	58,7
Mainland-Norway . . . . .	12,9	6,6	6,6	5,0	6,3	8,3	6,2	16,4	13,1
Education . . . . .	5,5	1,1	10,4	2,9	4,2	-9,1	110,2	191,6	173,0
Health and social work . . . . .	10,3	18,9	17,4	18,1	19,4	20,2	11,6	4,5	2,7

## NATIONAL ACCOUNTS FOR NORWAY

Table A11. Exports of goods and services. At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total exports . . . . .	353 296	412 679	99 005	98 612	102 870	112 192	107 010	108 305	111 212
Goods . . . . .	267 236	321 688	77 583	76 267	78 126	89 712	84 267	83 401	83 086
Crude oil and natural gas. . . . .	113 231	156 688	34 593	36 717	40 000	45 378	43 150	39 422	39 313
Ships, new . . . . .	4 138	4 257	641	1 249	596	1 771	1 513	1 093	743
Ships, second-hand. . . . .	5 791	3 765	1 584	718	655	808	449	775	644
Oil platforms and modules, new . . . . .	63	59	11	12	25	11	22	5	195
Oil platforms, second-hand . . . . .	492	943	344	172	34	393	9	12	15
Direct exports related to petroleum act. . . . .	97	127	24	24	31	48	36	33	36
Other goods . . . . .	143 424	155 849	40 386	37 375	36 785	41 303	39 088	42 061	42 140
Agriculture, forestry and fishing . . . . .	6 767	7 035	1 683	1 798	1 654	1 900	1 863	1 888	1 782
Mining and quarrying . . . . .	2 271	2 342	662	600	549	531	479	610	558
Manufacturing products . . . . .	133 142	145 484	37 470	34 762	34 485	38 767	36 698	39 473	39 548
Food products, beverages and tobacco . . . . .	17 164	19 528	5 277	4 066	4 607	5 578	4 991	4 774	5 028
Textiles, wearing apparel, leather . . . . .	2 138	2 207	546	515	540	606	550	594	577
Wood products . . . . .	3 003	2 864	678	710	710	766	717	795	700
Pulp, paper and paper products . . . . .	12 864	11 593	3 262	2 807	2 792	2 732	2 556	2 683	2 747
Printing and publishing . . . . .	378	559	147	126	131	155	118	121	117
Refined petroleum products. . . . .	12 996	17 147	3 927	4 036	4 128	5 056	5 088	4 554	5 177
Basic chemicals . . . . .	12 019	12 107	3 204	2 775	3 084	3 044	2 939	3 450	3 337
Chemical and mineral products. . . . .	8 923	9 597	2 364	2 301	2 516	2 416	2 392	2 709	2 803
Basic metals . . . . .	29 798	30 756	8 159	7 723	7 048	7 826	7 591	8 627	8 809
Machinery and other equipment n.e.c. . . . .	31 065	35 970	9 109	8 981	8 172	9 708	8 940	10 307	9 423
Furniture and other manufacturing products	2 794	3 156	797	722	757	880	816	859	830
Electricity . . . . .	1 244	988	571	215	97	105	48	90	252
Services . . . . .	86 060	90 991	21 422	22 345	24 744	22 480	22 743	24 904	28 126
Gross receipts, shipping . . . . .	45 198	46 801	11 475	11 743	11 777	11 806	11 830	13 433	13 375
Petroleum activities, various services. . . . .	624	714	177	177	180	180	186	189	189
Oil drilling etc. . . . .	1 159	1 131	264	263	374	230	394	423	507
Pipeline transport . . . . .	2 176	3 424	736	685	855	1 148	1 074	732	801
Travel. . . . .	14 974	15 223	3 196	3 773	5 547	2 707	3 177	3 925	5 754
Other services . . . . .	21 929	23 698	5 574	5 704	6 011	6 409	6 082	6 202	7 500
Transport, post and telecommunication. . . . .	7 834	8 631	1 861	2 215	2 296	2 259	1 879	2 046	2 541
Financial and business services . . . . .	10 781	11 948	2 799	2 792	2 978	3 379	3 377	3 240	4 173
Services n.e.c. . . . .	3 314	3 119	914	697	737	771	826	916	786

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NATIONAL ACCOUNTS FOR NORWAY

Table A12. Exports of goods and services.  
Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total exports . . . . .	3,6	10,0	10,7	10,1	8,9	10,3	1,4	7,9	4,6
Goods . . . . .	5,9	11,5	12,8	13,1	9,4	10,9	0,6	8,1	3,8
Crude oil and natural gas. . . . .	8,1	15,5	15,8	19,3	19,3	8,6	5,5	3,3	-2,4
Ships, new . . . . .	-14,2	-1,4	14,5	-46,7	-39,8	365,0	127,6	-15,8	20,0
Ships, second-hand. . . . .	21,9	-39,9	12,7	-7,0	-74,0	-50,4	-73,8	-3,8	-20,9
Oil platforms and modules, new . . . . .	450,1	-9,7	-10,6	.	-47,9	164,2	92,8	-59,9	651,0
Oil platforms, second-hand . . . . .	-41,0	91,7	.	364,9	-86,6	125,9	-97,4	-93,0	-55,9
Direct exports related to petroleum act. . . . .	59,6	26,8	1,9	-3,9	20,2	86,0	43,1	27,4	6,6
Other goods . . . . .	4,2	10,3	9,1	11,4	8,6	11,9	-2,0	14,6	10,2
Agriculture, forestry and fishing . . . . .	14,8	14,1	11,1	26,5	25,0	-0,7	11,6	9,6	-5,8
Mining and quarrying . . . . .	-2,3	2,4	24,0	6,8	-0,8	-15,7	-19,8	5,8	-2,4
Manufacturing products . . . . .	3,4	10,7	8,7	11,1	8,6	14,3	-1,6	15,2	11,3
Food products, beverages and tobacco . . . . .	2,2	11,8	16,3	17,0	6,5	8,6	-4,0	12,9	2,1
Textiles, wearing apparel, leather . . . . .	-5,0	1,9	-9,2	1,1	5,5	12,0	1,4	15,2	13,2
Wood products . . . . .	-4,3	1,0	-10,9	5,7	7,4	3,5	3,5	3,4	-8,4
Pulp, paper and paper products . . . . .	4,6	3,6	-2,7	3,8	7,8	6,5	-1,9	10,6	5,9
Printing and publishing . . . . .	-16,1	56,6	95,3	71,0	28,7	37,6	-24,0	-25,4	-15,3
Refined petroleum products. . . . .	0,0	10,0	-0,8	-1,6	9,4	42,5	0,8	11,5	12,7
Basic chemicals . . . . .	-3,2	6,5	6,4	2,5	2,9	14,6	-9,0	24,5	1,8
Chemical and mineral products. . . . .	7,5	8,6	8,6	-2,8	17,3	12,2	9,1	25,3	11,4
Basic metals . . . . .	-4,7	13,2	2,6	12,7	12,2	26,9	4,5	15,6	16,8
Machinery and other equipment n.e.c. . . . .	15,0	13,4	20,8	23,6	7,4	3,9	-6,7	15,5	19,5
Furniture and other manufacturing products	8,1	11,0	15,6	14,8	1,8	12,6	6,2	16,8	3,8
Electricity . . . . .	80,6	-49,9	32,8	-52,8	-76,8	-84,6	-88,6	-50,1	93,1
Services . . . . .	-2,8	5,3	4,1	1,1	7,6	8,4	4,0	7,3	6,8
Gross receipts, shipping . . . . .	0,2	2,0	-1,9	0,2	3,9	6,1	6,2	8,0	5,7
Petroleum activities, various services. . . . .	-4,4	10,6	12,1	8,9	12,7	8,8	1,3	2,8	1,1
Oil drilling etc. . . . .	-34,5	-8,9	-26,8	-11,3	11,1	-6,7	37,0	39,9	17,9
Pipeline transport . . . . .	-3,2	47,4	17,4	25,6	55,2	96,5	42,3	39,3	39,7
Travel. . . . .	-6,9	-0,0	8,0	-3,2	-0,4	-3,6	-3,1	0,9	0,9
Other services . . . . .	-3,6	13,0	17,6	4,4	18,5	11,4	-3,0	4,7	9,5
Transport, post and telecommunication. . . . .	9,1	23,9	5,3	12,6	52,2	21,4	-0,6	-8,7	-11,6
Financial and business services . . . . .	0,8	10,8	29,0	0,9	0,3	16,2	-1,6	9,9	35,1
Services n.e.c. . . . .	-32,2	-7,1	12,5	-5,1	-7,4	-24,0	-12,8	27,5	3,7

## NATIONAL ACCOUNTS FOR NORWAY

Table A13. Imports of goods and services. At current prices. Million kroner

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total imports . . . . .	297 471	319 986	75 636	75 250	81 345	87 755	79 042	89 800	92 932
Goods . . . . .	216 919	238 348	57 986	56 120	57 920	66 322	58 761	64 786	63 619
Ships . . . . .	6 324	6 325	1 799	652	1 494	2 380	3 091	1 322	1 597
Oil platforms and modules . . . . .	359	282	33	32	192	25	36	45	76
Direct imports related to petroleum activities. . . . .	6 180	7 683	1 944	1 656	2 028	2 055	1 980	2 484	2 358
Other goods . . . . .	204 056	224 058	54 210	53 780	54 206	61 862	53 654	60 935	59 588
Agriculture, forestry and fishing . . . . .	7 890	8 088	2 299	1 907	1 730	2 152	1 936	2 323	1 831
Crude oil . . . . .	1 121	1 445	218	255	261	711	436	322	413
Mining and quarrying . . . . .	2 802	2 906	835	663	667	741	728	879	927
Manufacturing products . . . . .	191 995	208 274	50 612	50 229	50 365	57 068	49 767	57 163	56 354
Food products, beverages and tobacco . . . . .	8 927	9 493	2 162	2 339	2 505	2 487	2 228	2 595	2 968
Textiles, wearing apparel, leather . . . . .	15 201	15 344	4 059	2 971	4 519	3 795	4 159	3 471	5 137
Wood products . . . . .	3 883	4 104	947	1 031	998	1 128	1 007	1 286	1 226
Pulp, paper and paper products . . . . .	6 469	6 370	1 693	1 545	1 486	1 646	1 532	1 614	1 588
Printing and publishing . . . . .	2 799	3 386	836	712	852	986	820	842	964
Refined petroleum products. . . . .	8 828	9 362	2 084	2 232	2 483	2 563	2 516	2 804	2 751
Basic chemicals . . . . .	9 449	9 070	2 306	2 363	2 264	2 137	2 171	2 555	2 427
Chemical and mineral products. . . . .	20 551	21 757	5 277	5 511	5 285	5 684	5 171	6 167	5 877
Basic metals . . . . .	21 043	22 701	5 685	5 735	5 260	6 021	5 439	5 641	5 657
Machinery and other equipment n.e.c. . . . .	77 813	83 343	20 618	20 225	19 308	23 192	19 599	23 588	22 135
Furniture and other manufacturing products	6 587	7 049	1 683	1 556	1 658	2 152	1 772	1 980	1 967
Non-competitive imports. . . . .	10 445	16 295	3 262	4 009	3 747	5 277	3 353	4 620	3 657
Electricity . . . . .	248	3 345	246	726	1 183	1 190	787	248	63
Services . . . . .	80 552	81 638	17 650	19 130	23 425	21 433	20 281	25 014	29 313
Operating costs shipping, excl. bunkers . . . . .	19 726	20 052	4 601	4 863	4 920	5 668	5 815	6 409	7 074
Operating costs oil drilling, excl bunkers . . . . .	1 354	1 227	359	288	306	274	216	395	513
Petroleum activities, various services. . . . .	4 257	4 140	795	1 092	1 095	1 158	801	2 238	1 836
Travel. . . . .	26 923	29 128	5 407	6 581	10 254	6 886	5 621	7 399	11 168
Other services . . . . .	28 292	27 091	6 488	6 306	6 850	7 447	7 828	8 573	8 722
Transport, post and telecommunication. . . . .	3 410	2 976	677	708	907	684	864	797	826
Financial and business services . . . . .	15 273	13 350	3 073	3 128	3 245	3 904	4 033	4 320	4 666
Services n.e.c. . . . .	9 609	10 765	2 738	2 470	2 698	2 859	2 931	3 456	3 230

## NATIONAL ACCOUNTS FOR NORWAY

Table A14. Imports of goods and services.  
Percentage change in volume from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total imports . . . . .	5,5	6,5	7,3	1,2	8,5	8,9	4,7	18,3	9,3
Goods . . . . .	9,3	8,9	9,2	5,6	10,9	10,0	4,4	17,2	7,2
Ships . . . . .	-13,4	-5,6	-20,4	-58,6	78,2	18,1	66,3	86,3	-7,5
Oil platforms and modules . . . . .	103,7	-21,4	-32,3	-26,8	198,8	-83,7	-10,1	16,1	-67,4
Direct imports related to petroleum activities . . . . .	40,0	20,9	132,6	71,5	23,5	-30,8	-1,8	44,4	11,9
Other goods . . . . .	9,5	9,2	8,6	6,6	9,0	12,3	2,4	15,6	7,8
Agriculture, forestry and fishing . . . . .	7,0	3,8	3,3	-8,9	8,8	13,7	-14,7	14,6	-8,4
Crude oil . . . . .	32,0	-5,5	-38,7	-42,8	-31,1	179,9	83,3	45,0	62,7
Mining and quarrying . . . . .	2,0	1,0	27,3	-16,1	-2,1	-0,8	-16,1	27,9	17,3
Manufacturing products . . . . .	9,7	8,5	8,8	7,0	7,6	10,3	1,6	16,2	9,8
Food products, beverages and tobacco . . . . .	4,0	4,5	11,2	-0,0	0,7	7,8	6,5	12,7	9,7
Textiles, wearing apparel, leather . . . . .	1,6	-1,3	-10,0	-0,1	-0,8	8,4	2,0	14,3	6,4
Wood products . . . . .	3,2	8,2	0,0	5,9	15,2	12,0	6,6	28,5	19,3
Pulp, paper and paper products . . . . .	5,9	1,5	-1,1	0,5	1,2	5,5	2,2	14,0	12,2
Printing and publishing . . . . .	7,6	12,6	14,3	4,6	19,4	11,8	5,4	26,0	17,4
Refined petroleum products . . . . .	14,8	-8,2	-4,4	-10,8	-8,9	-8,5	9,2	29,4	6,2
Basic chemicals . . . . .	8,3	2,5	9,0	0,5	3,2	-2,3	-8,9	9,2	8,4
Chemical and mineral products . . . . .	9,9	9,6	10,6	6,8	8,8	12,3	-2,3	12,0	11,4
Basic metals . . . . .	1,0	13,9	17,4	9,2	12,6	16,6	1,4	1,6	-5,0
Machinery and other equipment n.e.c. . . . .	17,2	7,7	11,2	9,7	6,6	4,0	1,5	21,4	18,3
Furniture and other manufacturing products . . . . .	7,5	3,4	4,4	4,8	3,6	1,5	6,5	25,9	15,4
Non-competitive imports . . . . .	-3,8	48,0	28,8	23,8	47,0	96,0	4,1	7,0	-18,4
Electricity . . . . .	-54,5	.	155,9	391,0	.	.	489,7	-66,0	-95,1
Services . . . . .	-3,6	-0,1	1,7	-10,1	2,8	5,6	5,8	21,6	14,5
Operating costs shipping, excl. bunkers . . . . .	0,2	2,0	-1,9	0,2	3,9	6,1	6,2	7,1	5,3
Operating costs oil drilling, excl. bunkers . . . . .	50,6	-11,2	38,7	-15,9	-30,8	-19,8	-43,0	32,7	62,5
Petroleum activities, various services . . . . .	-36,7	-6,3	15,0	-31,7	-20,0	55,2	-2,9	97,3	61,4
Travel . . . . .	1,9	4,7	7,4	-3,3	9,6	3,8	8,4	12,5	8,2
Other services . . . . .	-5,3	-4,9	-2,4	-18,3	-0,7	3,0	7,1	29,7	21,5
Transport, post and telecommunication . . . . .	-11,5	-11,9	-15,3	-25,5	0,8	-7,6	23,4	10,1	-13,9
Financial and business services . . . . .	-1,9	-12,7	-14,3	-25,6	-9,4	0,3	7,3	31,7	38,6
Services n.e.c. . . . .	-7,7	9,4	22,4	-4,3	11,3	10,0	2,7	33,1	14,7

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NATIONAL ACCOUNTS FOR NORWAY

Table A15. Balance of payments. Summary. At current prices. Million kroner

	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total exports . . . . .	412 679	99 005	98 612	102 870	112 192	107 010	108 305	111 212
Goods . . . . .	321 688	77 583	76 267	78 126	89 712	84 267	83 401	83 086
Services . . . . .	90 991	21 422	22 345	24 744	22 480	22 743	24 904	28 126
Total imports . . . . .	319 986	75 636	75 250	81 345	87 755	79 042	89 800	92 932
Goods . . . . .	238 348	57 986	56 120	57 920	66 322	58 761	64 786	63 619
Services . . . . .	81 638	17 650	19 130	23 425	21 433	20 281	25 014	29 313
Balance of goods and services . . . . .	92 693	23 369	23 362	21 525	24 437	27 968	18 505	18 280
Primary income and transfers from abroad . . . . .	39 792	10 737	9 664	9 384	10 007	10 431	12 107	11 081
Compensation of employees. . . . .	1 200	300	300	300	300	300	300	300
Interest . . . . .	23 203	6 166	5 472	5 454	6 111	6 278	8 084	6 672
Dividends etc. . . . .	2 052	1 064	405	280	303	240	1 121	1 522
Reinvested earnings . . . . .	3 716	352	1 105	1 170	1 089	1 136	215	279
Current transfers . . . . .	9 621	2 855	2 382	2 180	2 204	2 477	2 387	2 308
Primary income and transfers to abroad . . . . .	59 965	14 707	15 304	12 560	17 394	16 325	17 596	14 757
Compensation of employees. . . . .	3 604	895	887	903	919	889	926	957
Interest . . . . .	22 978	6 066	6 046	3 872	6 994	7 447	7 941	5 633
Dividends etc. . . . .	9 513	2 268	3 982	2 777	486	2 984	4 820	954
Reinvested earnings . . . . .	4 656	1 283	-109	689	2 793	342	-891	2 301
Current transfers from general government . . . . .	8 388	1 476	1 812	1 845	3 255	1 614	1 866	1 935
Other current transfers . . . . .	10 826	2 719	2 686	2 474	2 947	3 049	2 934	2 977
Primary income and transfers from abroad, net. . . . .	-20 173	-3 970	-5 640	-3 176	-7 387	-5 894	-5 489	-3 676
Current external balance. . . . .	72 520	19 399	17 722	18 349	17 050	22 074	13 016	14 604
Capital transfer, net . . . . .	-1 017	-17	-20	-61	-919	-73	-263	-45
Net lending . . . . .	71 503	19 382	17 702	18 288	16 131	22 001	12 753	14 559

## NATIONAL ACCOUNTS FOR NORWAY

Table A16. Employed persons, employees by industry and total. 1000

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total employees . . . . .	1 915,9	1 973,5	1 933,9	1 968,0	1 995,4	1 996,2	2 009,4	2 036,8	2 059,4
Agriculture and hunting . . . . .	16,7	17,1	17,0	17,3	17,3	16,9	16,5	16,3	16,5
Forestry and logging . . . . .	3,6	3,5	3,4	3,6	3,6	3,6	3,6	3,6	3,5
Fishing and fish farming . . . . .	8,1	8,2	7,7	8,0	8,3	8,6	8,8	9,0	8,8
Oil and gas extraction incl. services . . . . .	21,0	21,7	21,2	21,7	22,0	22,0	22,1	22,2	22,4
Oil and gas extraction . . . . .	17,1	17,6	17,8	17,6	17,7	17,6	17,5	17,4	17,6
Service act. incidental to oil and gas ext. . . . .	3,9	4,1	3,5	4,2	4,3	4,4	4,6	4,8	4,8
Mining and quarrying . . . . .	4,5	4,4	4,5	4,6	4,5	4,2	4,2	4,3	4,3
Manufacturing . . . . .	292,4	298,6	291,6	297,5	302,8	302,6	304,8	308,4	311,7
Food products, beverages and tobacco . . . . .	53,3	54,5	52,8	53,8	55,5	56,1	55,8	55,6	56,7
Textiles, wearing apparel, leather . . . . .	8,5	8,4	8,3	8,7	8,6	8,2	7,9	7,9	7,9
Wood and wood products . . . . .	15,4	15,5	15,0	15,4	15,9	15,7	16,1	16,5	16,4
Pulp, paper and paper products . . . . .	11,1	10,9	11,2	10,9	11,1	10,3	11,1	10,7	11,4
Publishing, printing, reproduction . . . . .	38,9	39,7	40,0	39,6	39,7	39,6	41,2	41,4	41,8
Refined petroleum products . . . . .	1,9	1,9	1,7	2,0	2,1	1,9	1,9	2,2	2,2
Basic chemicals . . . . .	9,3	9,5	9,4	9,6	9,7	9,4	9,3	9,4	9,6
Chemical and mineral products . . . . .	20,8	21,6	20,9	21,2	22,1	22,3	21,6	22,3	22,7
Basic metals . . . . .	16,4	16,7	15,0	17,3	17,7	16,8	16,4	17,1	17,5
Machinery and other equipment n.e.c. . . . .	71,1	72,6	71,7	72,7	72,9	73,0	74,3	74,9	75,4
Building of ships, oil platforms and moduls. . . . .	33,4	34,3	33,4	33,8	34,7	35,4	35,9	36,5	36,3
Furniture and other manufacturing n.e.c. . . . .	12,3	12,9	12,3	12,5	12,8	13,9	13,5	13,8	13,7
Electricity and gas supply . . . . .	20,0	20,0	19,5	20,0	20,5	19,9	20,0	20,2	20,1
Construction . . . . .	85,6	88,0	84,1	87,4	90,4	90,2	94,1	95,0	98,5
Service industries excluded general government	814,3	846,2	821,1	843,9	860,2	859,1	860,0	877,7	888,7
Wholesale and retail trade . . . . .	268,5	283,3	272,6	282,8	288,9	288,8	289,9	300,1	303,4
Hotels and restaurants . . . . .	54,4	56,9	53,8	56,5	59,3	57,9	57,0	58,4	60,5
Transport via pipelines . . . . .	0,4	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,3
Water transport . . . . .	50,6	50,1	48,4	49,8	51,2	51,0	48,9	49,2	51,0
Ocean transport . . . . .	42,5	41,8	40,8	41,5	42,4	42,6	40,7	40,8	42,3
Inland water and costal transport . . . . .	8,1	8,3	7,6	8,3	8,8	8,4	8,1	8,4	8,7
Other transport industries . . . . .	71,4	73,6	70,6	73,1	75,6	75,1	77,4	77,8	76,9
Post and telecommunications . . . . .	50,4	50,2	50,4	50,8	50,5	49,1	49,7	49,6	48,8
Financial intermediation . . . . .	51,0	50,7	50,3	50,7	51,1	50,7	50,2	49,9	50,0
Dwelling services . . . . .	1,2	1,2	1,2	1,3	1,3	1,1	1,1	1,1	1,1
Business services etc. . . . .	111,1	119,3	115,4	119,7	120,9	121,1	124,5	129,2	132,9
Personal services . . . . .	155,3	160,4	158,0	158,8	161,0	163,9	161,2	161,9	163,8
General government . . . . .	650,0	665,7	663,9	663,9	665,7	669,2	675,3	679,9	685,1
Central government . . . . .	149,9	152,0	152,2	151,7	151,9	152,1	153,0	152,7	152,5
Civilian central government . . . . .	104,5	106,6	106,6	106,5	106,6	106,7	107,4	107,3	107,0
Defence . . . . .	45,4	45,4	45,6	45,3	45,3	45,4	45,6	45,4	45,5
Local government . . . . .	500,0	513,7	511,6	512,2	513,9	517,1	522,3	527,2	532,5
Mainland-Norway . . . . .	1 852,1	1 909,5	1 871,5	1 904,4	1 930,6	1 931,2	1 946,4	1 973,3	1 994,5
Total employees and self-employed . . . . .	2 106,7	2 159,9	2 128,2	2 157,2	2 182,5	2 171,2	2 188,4	2 224,0	2 248,6

## NATIONAL ACCOUNTS FOR NORWAY

Table A17. Employed persons, employees by industry and total.  
Percentage change from the same period in the previous year

	1995	1996	96:1	96:2	96:3	96:4	97:1	97:2	97:3
Total employees . . . . .	2,6	3,0	2,6	3,8	2,9	2,7	3,9	3,5	3,2
Agriculture and hunting . . . . .	0,8	2,8	4,1	3,3	1,4	2,5	-3,1	-6,0	-4,6
Forestry and logging . . . . .	1,1	-0,6	1,5	-0,3	-2,1	-1,2	7,7	0,2	-4,6
Fishing and fish farming . . . . .	2,7	1,1	-3,3	-0,3	1,1	7,0	13,1	12,3	6,2
Oil and gas extraction incl. services . . . . .	-2,0	3,7	1,6	4,3	4,0	5,0	4,0	2,5	1,5
Oil and gas extraction . . . . .	-1,8	3,5	4,3	3,4	2,9	3,5	-1,5	-0,8	-0,6
Service act. incidental to oil and gas ext. . . . .	-3,2	4,6	-10,3	8,0	8,8	11,7	32,4	16,3	10,1
Mining and quarrying . . . . .	-0,7	-0,0	2,9	3,3	-0,2	-5,9	-5,5	-5,6	-5,0
Manufacturing . . . . .	3,1	2,1	2,2	2,3	1,6	2,5	4,5	3,7	2,9
Food products, beverages and tobacco . . . . .	1,3	2,3	1,7	1,3	1,6	4,6	5,7	3,4	2,3
Textiles, wearing apparel, leather . . . . .	-1,4	-0,9	-2,1	2,1	0,1	-3,9	-4,5	-8,7	-7,3
Wood and wood products . . . . .	3,5	0,5	-0,6	0,4	1,1	1,1	7,4	7,1	3,0
Pulp, paper and paper products . . . . .	1,9	-2,0	2,9	-2,1	-2,4	-6,3	-0,8	-2,3	2,6
Publishing, printing, reproduction . . . . .	2,1	2,0	3,9	2,8	0,7	0,7	3,1	4,6	5,3
Refined petroleum products . . . . .	-4,0	-0,0	-1,6	0,7	0,9	-0,2	10,2	9,6	8,5
Basic chemicals . . . . .	2,1	3,0	4,7	4,4	2,3	0,8	-1,5	-1,7	-1,5
Chemical and mineral products . . . . .	4,9	4,0	2,5	2,1	4,3	7,1	3,2	5,2	2,8
Basic metals . . . . .	-0,3	2,0	-3,6	4,5	3,6	3,2	9,2	-1,1	-1,1
Machinery and other equipment n.e.c. . . . .	5,1	2,1	3,4	3,4	1,0	0,7	3,6	3,0	3,3
Building of ships, oil platforms and moduls. . . . .	5,1	2,8	2,1	1,6	2,5	5,0	7,5	8,0	4,7
Furniture and other manufacturing n.e.c. . . . .	5,0	5,0	2,9	3,7	2,9	10,2	9,8	10,7	6,7
Electricity and gas supply . . . . .	1,2	-0,0	0,3	0,6	-0,2	-0,7	2,4	0,9	-1,8
Construction . . . . .	8,4	2,9	4,4	3,7	1,1	2,6	12,0	8,8	9,0
Service industries excluded general government . . . . .	2,8	3,9	2,7	4,9	4,4	3,7	4,7	4,0	3,3
Wholesale and retail trade . . . . .	5,0	5,5	3,0	6,5	6,6	5,9	6,3	6,1	5,0
Hotels and restaurants . . . . .	2,0	4,5	2,4	4,0	5,7	5,7	6,0	3,4	2,0
Transport via pipelines . . . . .	-2,0	-0,4	25,0	.	.	-68,8	-50,0	-	-25,0
Water transport . . . . .	1,8	-1,0	-2,1	-1,3	-0,4	-0,1	0,9	-1,1	-0,5
Ocean transport . . . . .	1,8	-1,5	-2,5	-1,7	-1,1	-0,7	-0,2	-1,6	-0,3
Inland water and costal transport . . . . .	1,7	2,0	0,4	1,1	3,1	3,1	6,9	1,4	-1,4
Other transport industries . . . . .	-1,0	3,1	1,1	3,2	4,0	4,0	9,6	6,5	1,8
Post and telecommunications . . . . .	0,7	-0,4	2,6	3,2	-0,4	-6,4	-1,3	-2,3	-3,4
Financial intermediation . . . . .	0,5	-0,6	-0,8	0,4	-0,8	-1,1	-0,3	-1,6	-2,3
Dwelling services . . . . .	2,6	2,5	3,2	7,6	7,2	-7,7	-4,9	-9,7	-11,9
Business services etc. . . . .	4,3	7,4	6,6	9,8	7,2	6,2	7,9	7,9	9,9
Personal services . . . . .	2,1	3,3	3,0	3,4	2,8	4,0	2,0	1,9	1,8
General government . . . . .	1,6	2,4	2,5	3,4	2,1	1,7	1,7	2,4	2,9
Central government . . . . .	-0,7	1,4	1,7	1,8	1,3	0,7	0,5	0,6	0,4
Civilian central government . . . . .	0,6	2,0	2,2	2,4	2,0	1,3	0,8	0,7	0,4
Defence . . . . .	-3,6	0,0	0,7	0,3	-0,2	-0,7	-0,1	0,4	0,4
Local government . . . . .	2,3	2,7	2,7	3,8	2,4	2,0	2,1	2,9	3,6
Mainland-Norway . . . . .	2,6	3,1	2,7	3,9	3,0	2,8	4,0	3,6	3,3
Total employees and self-employed . . . . .	12,8	2,5	2,6	3,3	2,2	2,1	2,8	3,1	3,0

**B**-blad

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