

Economic Survey

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Economic survey

Perspectives

2001 was the third year in which the Norwegian mainland economy recorded a growth pause. In the course of last year, the labour market showed some deterioration while underlying price inflation gradually slowed, partly as a result of a substantially stronger krone exchange rate. 2001 was a favourable year for most people due to growth in real income and high employment. A high oil price over the past two years has resulted in record current account surpluses, and petroleum revenues have been manifested in a rapidly rising Government Petroleum Fund. This, combined with high cost inflation and increasing pressures on the public sector, led to important economic policy choices. 2001 was the year in which we decided to move forward – not backward into an oil-driven economy.

In 2001, the authorities introduced two new guidelines for economic policy. Monetary policy shall hereafter be oriented with a view to achieving a moderate rise in consumer prices compared with the earlier objective of maintaining a stable exchange rate against the euro. In fiscal policy, the expected real return on the Petroleum Fund is to be included on the revenue side of the government budget, with petroleum revenues being gradually phased into the Norwegian economy. In practice, this means that fiscal policy will be somewhat more expansionary than planned earlier. The new guidelines imply that the central government will continue to save all current petroleum revenues in the Petroleum Fund. In this way both the Petroleum Fund and the remaining value of petroleum reserves will benefit future generations.

The authorities' decision concerning how much of the total petroleum wealth shall finance current consumption has a considerable influence on Norway's total saving and hence consumption possibilities in the future. Even though it is not derived in a stringent way from first principles, the fiscal policy guideline has many intuitive advantages:

- It satisfies a need for predictability in the question of when petroleum revenues are to be used. This need has risen as the petroleum wealth more liquid and hence more visible.
- It is relatively simple to present and implement in practice.
- The current policy guidelines were introduced at a time when the fiscal policy stimulus, measured by the structural and activity connected state budget deficit, was very similar to the new guidelines, with the result that the transition itself did not create problems for the Norwegian economy. The guideline entails a gradual phasing in of substantial financial revenues through the Petroleum Fund.
- The guideline separates the use of revenues from cyclical fluctuations in current petroleum earnings. This means that, in contrast to what Norway has experienced earlier, we can avoid abrupt and substantial adjustments in fiscal policy for budget balance reasons.
- The guideline implies that a large portion of the petroleum wealth shall continue to be saved. The accumulation of financial assets means that we can limit reductions in tax-financed public services and/or growth-inhibiting tax increases when the ageing of the population increases public expenditure on pensions.
- The guideline applies to the management of a large portion of central government wealth in general, irrespective of the size of current petroleum revenues. When all petroleum reserves have been depleted and the Petroleum Fund has

reached its maximum size, the guideline can still be applied in the same way as in 2002. In this respect, the guideline is not confined to any one situation or time.

- Because the policy has been set out as a guideline, this places constraints on fiscal policy, making it more difficult to allow short-term considerations to dominate in a situation when the budget balance itself does not impose particular constraints on policy.

An important objective of economic policy ever since the dramatic fall in oil prices in the winter of 1985/1986 has been to reduce the Norwegian economy's sensitivity to rapid shifts in petroleum revenues. Following a turbulent adjustment period, recent years have generally been characterized by high petroleum revenues and a strong expansion of the Norwegian economy. This has permitted a high level of central government saving accompanied by a sharp growth in interest income from the Petroleum Fund and increased scope for manoeuvre in fiscal policy. However, we need to look no further than 1998 to find a year when a sharp drop in oil prices resulted in a tightening of economic policy that was perceived as fairly painful. As a result of the caution exercised, we are now in a position to combine substantial economic policy leeway with a gradual phasing in of petroleum revenues into the economy. The historical experience of Norway's oil policy, as well as that of other countries' experience of financial imbalances, clearly demonstrates how high the costs can be if a substantial tightening of policy over several years proves necessary.

Long-term projections of the Norwegian economy show that the sharp rise in the number of elderly persons from around 2020 will result in considerable increases in general government expenditure on pensions and health care. The new fiscal policy guideline will contribute to financing this spending growth, thereby allowing us to avoid substantial cutbacks in public welfare services and large increases in taxes for the economically active population in the future. Even with the new guideline, however, adjustments of taxes or the social security system will be necessary in order to maintain a reasonable budget balance when we face the challenges of an ageing population. These adjustments should be acceptable when we take into account that the expected number of years as a pensioner will increase in pace with a projected rise in life expectancy. No pension system, whether this be private pension saving or a public social security scheme, will survive financially without higher contributions if the number of years of disbursement increase. Assessed in the light of such fundamentals as the supply of economic resources and age composition, all of our neighbouring countries and trading partners will be in an even more demanding situation. It is particularly the maturing of the system for supplementary pensions that is generating substantial pressures on public finances in Norway compared with other countries where reforms will contribute to curbing growth in public expenditure.

Even though the new fiscal policy guideline has many sound features, it remains to be seen whether they will be observed. Adherence to the guideline will result in the accumulation of very substantial capital in the Petroleum Fund. This Fund will be very liquid and visible compared with oil and gas under the seabed. The question is whether voters and politicians will manage to maintain discipline as required by the guideline when pressures for more public-financed services and transfers gradually increase.

An important precondition for encouraging saving is to define clearly the benefits we can look forward to. Here, the policy seems to lack sufficient clarity. The ageing of the population is obviously a clear motive, but it is in no way self-evident that the future care of the elderly and pensions should take precedence over other benefits when deciding how the return on the Petroleum Fund is to be used. On the other hand, it is difficult to envisage a clearer saving objective for

which there would be consensus. The freedom inherent in not defining a saving objective may be costly. The result may be that the guideline is quickly breached and that the wealth is saved to a far lesser extent. The lack of clarity as to how the revenues are to be used may also reinforce the impression that the wealth is "in play". We run the risk that considerable resources are used in a contest where the objective is to obtain a share of the petroleum revenues before it is too late.

Norway has become one of the richest countries in the world. Our natural resources have made a definite contribution, but this also applies when GDP is adjusted for the resource rent in the petroleum sector. However, not many countries with similar access to substantial natural resources have succeeded in exploiting this advantage in an equally sound manner. A contest for natural resource revenues has been suggested by many observers as a plausible explanation as to why countries that have experienced a windfall eventually end up among the less prosperous countries. Another explanation is that these countries have had a myopic view of the wealth acquired. A rapid use of the wealth can create habits and attitudes in relation to consumption and work that are very difficult to reverse. In practice, it has proved to be far more difficult to reduce real income than to increase it, which is a pleasant process. The guideline for the use of the real return on the Petroleum Fund will help to ensure that the benefits of a "natural windfall" will be lasting and not result in the displacement of other income, so that we do not end up squandering our natural advantages.

It is absolutely not the case that the real return on the Fund will gradually be of such a size that there will no longer be a need for an internationally exposed sector in Norway. Petroleum revenues, both now and in the future, will only be able to cover a small portion of our need for internationally mobile goods and services. Nor will our other natural resource-based industries be able to bridge this gap. This means that as we gradually increase the use of petroleum revenues in the economy, we must also further develop the type of industry that is virtually free to choose its country of location, i.e. companies that are not dependent on geographical proximity to Norwegian natural resources or Norwegian customers. If this rootless type of enterprise is to be located in Norway, it must be profitable under the conditions that prevail here. However, there is no validity in the view that the level of wages required by internationally exposed industries is clear-cut. In reality, these rootless enterprises, both those in existence and those in the future, are a heterogeneous group where the ability to remunerate labour and other input factors varies considerably. However, this does not imply less stringent requirements concerning prices and costs, requirements that will be particularly demanding to satisfy in a situation when it is easy to become exuberant as a result of rapidly rising financial wealth abroad.

It is important that cost requirements do not result in attempts through various business and tax policy instruments to secure sufficiently favourable operating parameters and hence the competitiveness of internationally exposed enterprises. This would not solve any problems if wage formation does not function in a way that is compatible with the capacity to pay wages in a sufficiently large internationally exposed business sector. Various types of support would then be quickly passed on to wages. The problem with international competitiveness would then not only remain unsolved. In addition, the economy's ability to derive welfare from its resources will have deteriorated over time. Selective support schemes create distortions and entail an inefficient use of resources and less clear-cut operating parameters. Moreover, support schemes must be financed and this also contributes to inefficiency. The prospect of favourable operating parameters increases the profitability of using resources for lobbying instead of production. Increasing the profitability of the business sector through transfers and other support is an effective but not particularly forward-looking way of using petroleum revenues.

International economy

In 2001, the international economy was dominated by the cyclical downturn in the US and its effects on the rest of the world. GDP growth slowed sharply in most countries. Growth forecasts for 2001 were lowered, and expectations concerning 2002 were reduced, particularly following the terrorist attacks in the US on 11 September. Oil prices were at a high level at the beginning of the year but fell markedly through the year. International commodity prices also declined, and consumer price inflation moved on a clear downward trend after showing a sharper rise through the previous two years. Central banks' key rates were in some cases reduced sharply.

US

The cyclical downturn was the dominant feature of the US economy in 2001. The US did not record negative GDP growth until the third quarter, but based on a more extensive set of indicators the National Bureau of Economic Research (NBER) officially declared that the US entered a recession as early as March 2001. The upturn had then lasted for ten years, a record-long expansionary phase for the US economy in the postwar period. Based on the deviation between actual and trend (potential) GDP, however, the cyclical peak was passed as early as the second quarter of 2000. Measured in this way, the past decade has consisted of two business cycles where the previous peak was passed in the third quarter of 1994, with a subsequent trough in the fourth quarter of 1995, resulting in an upturn of 4½ years and a full cycle from peak to peak of nearly 6 years. Measured as the deviation from trend, US business cycles normally last 4-5 years, based on the NBER's dating somewhat longer. Ir-

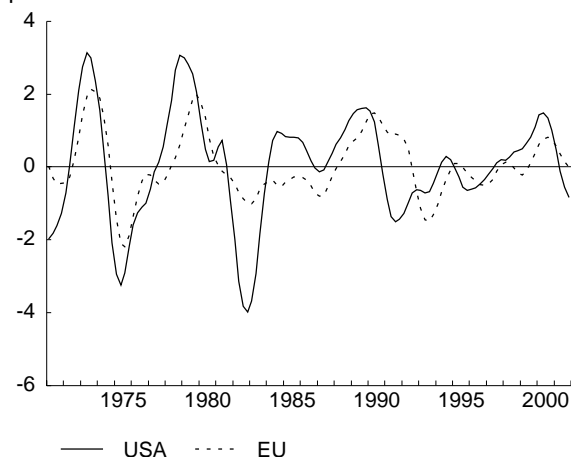
respective of the dating system applied, the last upturn has lasted for an unusually long time.

The prolonged period of expansion partly reflects a supply side-driven upturn, particularly fuelled by large investment in ICT equipment, which contributed to countering capacity constraints and restraining inflation. However, it was probably also due to the fact that the Asian crisis in 1998, which for the US was primarily a financial crisis, was met by an expansionary monetary policy that contributed to extending the demand-driven component of the upturn. The subsequent tightening of monetary policy through 1999 contributed to curbing the most interest-sensitive components of the demand for goods and services. Housing starts passed a peak as early as the end of 1998, housing investment in the second quarter of 1999, while new car registrations and purchases of consumer durables passed a peak in the first quarter of 2000. The subsequent downturn has been amplified by the fall in ICT investment, but it is too early to say whether this is primarily due to normal adjustment mechanisms during a downturn or whether it means that the underlying, prolonged supply side-driven upturn is over.

As the slowdown gradually became more pronounced, the Federal Reserve reduced its rates by almost 5 percentage points, from 6.5 per cent at the beginning of 2001 to 1.75 per cent at the end of the year. The latest cut in interest rates came partly in response to the deteriorating outlook following the terrorist attacks on 11 September. Fiscal policy, which was revised in an expansionary direction in the form of tax reductions as early as summer 2001, became even more

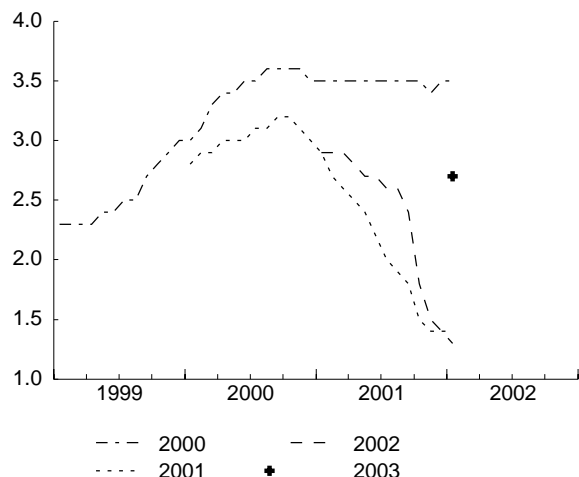
GDP - cyclical deviations

5 quarter moving average of deviation from trend per cent*



* Trend based on HP(1600)-filter. Source: OECD.

GDP growth forecasts for Norway's main trading partners for 2000 - 2003 given on different dates



Source: Consensus Forecasts.

Macroeconomic projections according to selected sources

Annual change in per cent

	GDP-growth					Inflation (consumer prices)				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2002
USA										
NIESR	4.1	4.1	1.1	1.2	3.7	1.6	2.7	1.9	0.6	1.0
ConsF	4.1	4.1	1.0	0.9	3.5	2.2	3.4	2.9	1.6	2.5
EC	4.1	4.2	0.9	0.5	3.4	2.2	3.3	3.0	1.8	2.0
OECD	4.1	4.1	1.1	0.7	3.8	1.6	2.7	1.8	1.0	1.4
Japan										
NIESR	0.7	2.2	-0.3	-0.8	0.8	-0.5	-1.0	-1.6	-1.3	0.4
ConsF	0.7	2.4	-0.3	-1.2	0.7	-0.3	-0.7	-0.7	-0.9	0.7
EC	0.8	1.5	-0.6	-0.9	0.5	-0.3	-0.7	-0.6	-0.8	0.2
OECD	0.8	1.5	-0.7	-1.0	0.8	-0.7	-1.1	-1.3	-1.5	-1.5
EMU										
NIESR	2.6	3.4	1.6	1.4	2.6	1.1	2.4	2.7	1.8	1.9
ConsF	..	3.4	1.5	1.2	2.7	..	2.2	2.6	1.6	1.8
EC	2.7	3.4	1.6	1.3	2.9	1.2	2.4	2.8	1.8	1.8
OECD	2.7	3.5	1.6	1.4	3.0	1.1	2.1	2.5	1.6	1.7
Trading partners										
NIESR	2.9	3.5	1.5	1.4	2.5	1.2	1.9	2.3	1.5	1.6
ConsF	3.0	3.5	1.4	1.3	2.8	1.4	2.2	2.5	1.7	1.9
EC	3.0	3.4	1.4	1.3	2.8	1.3	2.3	2.5	1.7	1.9
OECD	2.9	3.5	1.4	1.3	2.8	1.2	1.7	2.2	1.8	1.8

Sources: NIESR from February 2002, Consensus Forecasts from January 2002, European Commission and OECD from November 2001. All the inflation projections from OECD apply to the consumption deflator, the same holds for NIESR's forecasts for the US and Japan.

expansionary through various packages of measures that were approved after the attacks.

After lasting for one and a half years, it may now appear that the downturn in the US is bottoming out. According to preliminary estimates, GDP growth was again marginally positive in the fourth quarter, fuelled by higher private consumption and public expenditure on goods and services. The fall in total industrial production almost came to a halt in December and many of the more leading sub-indices showed a rise. Admittedly, inventories continued to be reduced through November, but this may rapidly change and generate a positive contribution to growth if the recovery materializes. Various indicators for the housing market have for a period again shown a somewhat firmer trend following the uncertainty that arose after 11 September last year. Housing starts appear to have passed a trough as early as the fourth quarter of 2000. Residential construction is usually a leading component in the business cycle, and declines in housing starts, housing investment and the production of intermediate goods were also among the variables that reacted ahead of this downturn. However, it is still too early to conclude that the trough has been passed. Part of the increase in activity is related to very short-term after-effects of the events in September, for example interest-free financing of car loans. If a recovery is already under way in the US economy, the latest downturn must generally be characterized as fairly moderate compared with earlier downturns.

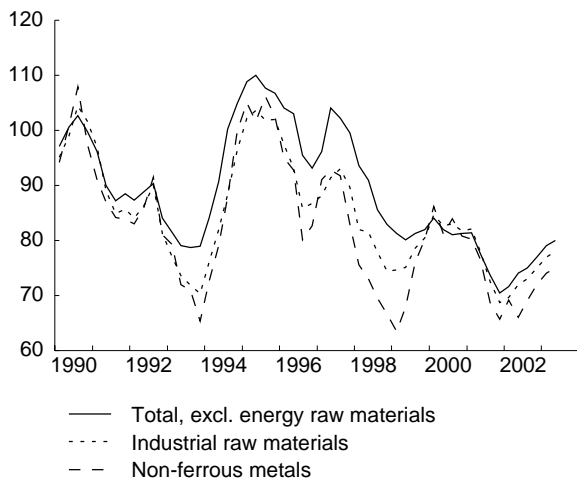
The combination of strong monetary and fiscal policy stimulus should normally result in a pronounced cyclical upswing in the US early in the first half of this year, but the after-effects of the terrorist attacks may contribute to postponing the turnaround. The fact that the reduction in interest rates in the US has this time been accompanied by a stronger – compared with a normally weaker – dollar will also contribute to curbing the stimulus of the decline in interest rates for US enterprises. Moreover, it is doubtful whether conditions in the private sector in the US are conducive to generating an upturn that will be as strong as would normally be expected. Low household saving, only a moderate fall in housing investment, a historically high level of corporate investment and a stock market that is not likely to pick up sharply raise the question of whether the turnaround – when it comes – will be strong enough to allow an upturn to be self-propelled. Even though there is little reason to doubt that a turnaround will take place, the strength and duration of the future upturn thus remain unclear. The effects on the international and Norwegian economy of a one year postponement of an upswing in the US were discussed in *Economic Survey* 4/2001.

EU countries

The cyclical downturn in the US spread to other industrialized countries in late autumn 2000, but with the exception of Japan they have so far generally continued to record some growth. Based on deviations from GDP trend, EU countries as a whole now appear to have passed a cyclical peak towards the end of the

Commodity prices on the world market 1990 - 2003

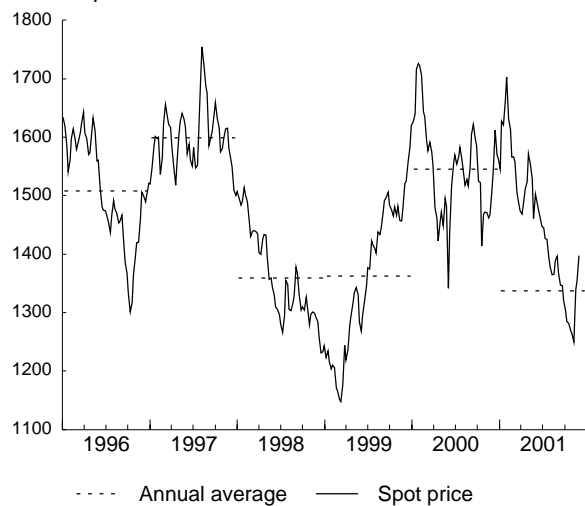
Dollar based indices. 1990 = 100



Sources: HWWA-Institut für Wirtschaftsforschung and AIECE.

Spot price aluminium. 1996 - 2001

Dollar per ton



Source: Norges Bank.

third quarter of 2000, a little faster in relation to the US than the average lag of a good two quarters over the past 30 years. Growth was particularly curbed in countries that traditionally have the strongest links to the US economy – albeit with the important exception of the UK – or to the ICT sector. Economic growth was more than halved in Germany, the Netherlands, Belgium, Denmark, Sweden and Ireland from 2000 to 2001, and declined to zero in Finland. So far, however, growth has remained at a higher level in countries like France, Italy, Spain and Greece.

With a recovery in the US economy, it is likely that EU countries will also experience a turnaround after a few quarters, i.e. in late summer 2002 at the latest. This turnaround is now serving as the basis for the projections of most forecasters. In the event, the cyclical downturn for EU countries will be moderate. This must partly be ascribed to the relatively weak euro, which has allowed European enterprises to counter the decline through a stronger competitive position. Admittedly, interest rates in the euro area have declined to a lesser extent than in the US, with a reduction from 4.75 to 3.25 per cent during 2001, but the importance of this should not be exaggerated as euro countries are generally less sensitive to changes in short money market rates. A more important factor is that price inflation is now slowing, so that bond yields are also being reduced.

High oil prices and the depreciation of the euro through 1999 and the first half of 2000 were important reasons for the higher rate of price inflation in euro countries in 2000 and 2001. However, inflation in these years was particularly high for countries that showed the strongest economic growth through the last half of the 1990s, particularly Greece, Ireland, the Netherlands, Portugal and Spain. With the exception of the Netherlands, these are countries that initially had noticeably lower income levels than the other

euro countries and where stronger growth reflected the development of a more efficient internationally exposed sector, partly as a result of successful increased integration into the European market. It is a known effect in economic theory that with fixed exchange rates such countries may record relatively high inflation because income growth in sharply expanding industries “spreads” to wage growth in other sectors of the economy, allowing employees in these sectors to benefit from economic growth. However, for these sectors, which primarily produce services that are sheltered from international competition, the result is higher prices.

At the moment, there is thus little reason to be concerned about the high rate of inflation in these countries other than the implications this has for overall inflation in the euro area: if the European Central Bank (ECB) is to maintain its objective of inflation of 0-2 per cent, inflation in other countries must be correspondingly lower. This factor may be the reason behind, for example, new French initiatives urging the ECB to permit slightly higher inflation than the level that has been targeted so far. Inflation is in any case expected to be within the target zone this year and next.

Trading partners

For 2002-2003, we have based our projections on the NIESR's February estimates for Norway's trading partners, which on the whole seem to correspond to Consensus expectations. This implies average GDP growth for trading partners that falls from 1.6 per cent in 2001 to 1.4 per cent this year, rising to 2.5 per cent in 2003. The estimate for 2003 is slightly lower than the Consensus projection. The rise in consumer prices is expected to slow from 2.3 per cent in 2001 to 1.5 per cent in 2002, edging up to 1.6 per cent in 2003. These projections are based on a mixture of private con-

sumption deflators and harmonized consumer price figures. Estimates based on ordinary CPI figures appear to be a few tenths higher.

Developments in the oil market

The spot price of Brent Blend averaged close to USD 25 per barrel in 2001, compared with a little more than USD 28 per barrel in 2000. The oil price fell from USD 28 per barrel to about USD 20 from mid-September 2001 to the beginning of October. At the end of January this year, the oil price was USD 19-20 per barrel.

The terrorist attacks in the US were the main reason behind the fall in oil prices in September, which resulted in reduced demand for aviation fuels. Even before the attacks many analysts had revised down their estimates for global economic growth, and therefore expected weaker developments in the demand for oil.

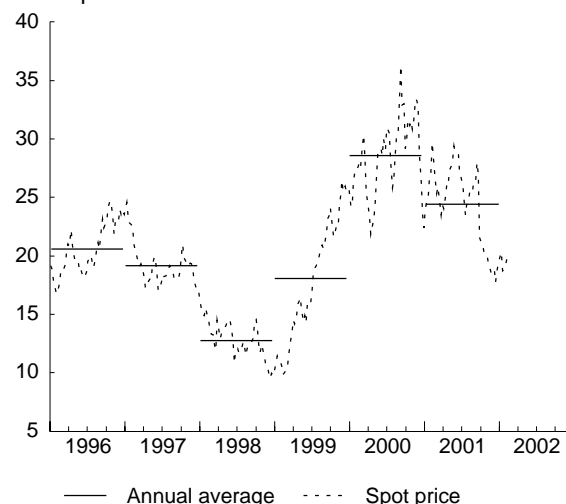
Following the terrorist attacks in the US, OPEC suspended its guideline which implies that if the oil price should remain outside the range USD 22-28 per barrel on average for more than 20 days, the cartel would adjust production to the level required to bring prices back to that range. In November 2001, OPEC signalled that if non-OPEC countries agreed to production cuts of altogether 0.5 million b/d, OPEC would reduce production by 1.5 million b/d. Since then, Russia, Norway, Mexico, Oman and Angola decided to reduce exports or production by 462 500 b/d, prompting OPEC to cut production by 1.5 million b/d from 1 January until end-June. With the latest reductions, OPEC has approved production cuts of altogether 5 million b/d the last 12 months. Previously, OPEC has succeeded in fulfilling about 80 per cent of its announced cuts.

In November 2001, the UN and Iraq signed a new oil-for-food agreement that will make it easier for the country to import spare parts and necessary equipment for the country's oil sector. Iraq's production capacity is approximately 2.8 million b/d. The country is not covered by OPEC's quota system, but it is uncertain to what extent it will succeed in increasing production as early as 2002.

The International Energy Agency (IEA) projects that total global demand for oil will increase by 0.6 million b/d in 2002 in relation to 2001. China and the Middle East are expected to account for most of the increase, whereas demand in North America and Europe is not expected to rise until the second half of the year after declining through the first six months of 2002. If the announced non-OPEC cuts are taken into account, it appears that the non-OPEC oil supply may increase by about 0.6 million b/d, primarily in Russia but also in Canada to some extent. If Iraq only manages to increase exports through the new agreement to a limited extent, it will mean that residual demand for

Spot price crude oil, Brent Blend

Dollar per barrel



Source: Norges Bank.

OPEC oil will decline slightly in 2002 compared with 2001.

Stocks of crude oil, and to some extent heating oil, are now higher than the average for this time of winter over the past five years. If OPEC maintains its production cuts until the end of the year, and the cartel continues to fulfil about 80 per cent of its announced cuts, global stocks of crude oil will be reduced somewhat for the year as a whole. On the basis of these assumptions, the oil price can be expected to remain at approximately the current level through the first six months and edge up through the second half of the year when most of the reduction in stocks will take place.

Norwegian economy

Developments in 2001

The slow growth that characterized the Norwegian economy in 2000 continued through 2001. According to preliminary national accounts figures, mainland GDP expanded by 1.0 per cent in 2001, against 1.8 per cent in 2000. However, the slower growth rate is ascribable to the unusually high level of precipitation and hydro-electric production in 2000. Excluding electricity, the rate of growth was about the same in both years. Norway's total GDP rose by 1.4 per cent in 2001, compared with 2.3 per cent in 2000.

Despite an increase in employment of 0.4 per cent in both 2000 and 2001, unemployment edged up, according to the Labour Force Survey (LFS), by 0.2 percentage point from 1999 to 2000 and by a further 0.2 percentage point, to 3.6 per cent, in 2001. There are signs of a dichotomy in the labour market, with a fall in manufacturing employment and a rise in employment in the public sector and industries that are sheltered from international competition. Wages per normal man-year rose by 4.9 per cent in 2001, compared with 4.3 per cent the previous year. It was the first time since 1998 that wage growth increased, indicating that some labour market segments have been tight despite a slight increase in general unemployment.

Extraordinary movements in electricity prices in 2001, with especially high prices through the summer half-year, contributed to pushing up the rise in the consumer price index (CPI) to a considerable extent. The overall CPI rose by 3.0 per cent, against 3.1 per cent the previous year. Substantial changes in indirect taxes contributed to a sharp rise in the rate of inflation in the first half of the year, but also to a slower rate in the second half of the year. At an annual basis, the changes in indirect taxes had a virtually neutral impact on inflation. The CPI adjusted for changes in real taxes and excluding energy prices (CPI-ATE) rose by 2.6 per cent last year.

Growth in real wages, measured as growth in wages per normal man-year in excess of consumer price inflation, thus came to 1.9 per cent last year, against 1.2 per cent in 2000. However, both household expenditure and gross debt increased more than income. As a whole, households were therefore more vulnerable to financial instability in the past year.

The guidelines for both monetary and fiscal policy were revised last year. Norges Bank (Central Bank of Norway) was instructed to orient monetary policy in such a way that inflation, excluding extraordinary, temporary disturbances and indirect tax changes, should be close to 2.5 per cent over time. This target implies that inflation in Norway will be slightly higher than inflation among our trading partners. In isolation, the consequence of this will be a moderate deterioration in Norway's competitiveness over time. It is in this way the authorities want to create room in the Norwegian economy for using the expected real return on the Petroleum Fund as called for in the new guidelines for fiscal policy. Norges Bank left its key rate unchanged through most of 2001. At the same time, inflation has declined, thereby resulting in an increase in real interest rates. The interest rate level in other countries has fallen, however, so that the differential between Norwegian and foreign interest rates widened in 2001. This may have contributed to the 4.6 per cent appreciation of the import-weighted krone exchange rate through last year. Both high real interest rates and the strong krone contributed to curbing the level of activity in the Norwegian economy.

Economic policy

In connection with the presentation of the Government's Long-Term Programme on 29 March 2001, new guidelines for economic policy were issued, allowing petroleum revenues to be gradually phased into the Norwegian economy. There was broad support for the new guidelines in the Storting. The

Demand impulses 1992-2001

Change in demand as a percentage of mainland GDP. Constant 1997-prices. Per cent

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Consumption in households and non-profit organizations	1.3	1.3	2.3	2.0	3.1	2.1	2.0	1.3	1.4	1.3
Mainland investment excl. general government	-0.6	-0.1	2.0	1.8	1.8	1.1	1.1	-0.5	0.6	-0.3
General government demand	1.6	0.2	0.4	0.2	0.8	1.2	1.1	0.8	0.0	0.2
Petroleum investment	0.7	1.0	-0.8	-1.0	0.2	1.0	1.8	-1.7	-1.1	-0.2
Traditional exports	0.9	0.5	2.0	0.8	1.7	1.5	0.6	0.6	0.4	0.6

Memorandum item¹ :

Mainland GDP, percentage growth from previous year	2.2	2.8	4.1	2.9	3.8	4.2	3.6	1.0	1.8	1.0
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¹ As some exports and all imports as well as petroleum production and shipping are excluded from the table, the demand impulses do not add up to GDP growth. Source: Statistics Norway.

Macroeconomic indicators 2000-2001

Growth from previous period unless otherwise noted. Per cent

	2000	2001	Seasonally adjusted			
			01.1	01.2	01.3	01.4
Demand and output						
Consumption in household and non-profit organizations	2.4	2.2	1.9	0.2	0.2	0.3
General government consumption	1.4	1.5	- 0.1	0.5	0.5	1.1
Gross fixed investment	- 1.1	- 5.9	3.6	- 6.6	- 2.4	11.3
- Mainland Norway	1.4	- 2.7	- 0.6	- 2.2	- 2.4	- 0.8
- Petroleum activities ¹	- 17.1	- 3.1	2.9	2.9	0.1	36.3
Final domestic demand from Mainland Norway ²	1.9	1.1	0.9	- 0.2	- 0.2	0.3
Exports	2.7	5.3	1.4	- 1.4	1.7	1.0
- Crude oil and natural gas	6.4	7.3	2.4	- 6.0	6.2	8.3
- Traditional goods	2.1	3.0	4.1	0.0	- 5.6	2.4
Imports	2.5	0.3	3.6	- 2.0	- 1.0	3.9
- Traditional goods	1.7	3.1	2.5	1.8	- 3.2	1.6
Gross domestic product	2.3	1.4	0.3	0.3	1.0	0.2
- Mainland Norway	1.8	1.0	0.5	0.5	0.2	0.2
Labour market³						
Man-hours worked	- 0.8	- 0.8	0.3	1.0	- 0.6	- 0.6
Employed persons	0.5	0.4	0.3	0.2	- 0.4	0.7
Labour force	0.8	0.5	0.2	0.1	- 0.2	0.8
Unemployment rate, level ⁴	3.4	3.6	3.5	3.4	3.6	3.9
Prices						
Consumer price index (CPI) ⁵	3.1	3.0	3.6	4.0	2.6	2.0
CPI adjusted for tax changes and excluding energy products (CPI-ATE) ⁵	..	2.6	2.8	2.6	2.4	2.6
Export prices, traditional goods	13.8	- 1.9	- 2.0	- 1.6	- 2.3	- 3.4
Import prices, traditional goods	6.0	1.1	2.8	- 1.7	- 3.9	- 0.9
Balance of payment						
Current balance, bill. NOK	203.6	217.7	62.5	56.3	56.5	42.3
Memorandum items (Unadjusted, level)						
Money market rate (3 month NIBOR)	6.8	7.2	7.4	7.5	7.3	6.8
Lending rate, private financial institutions	8.1	8.8	8.9	8.9	8.9	8.3
Crude oil price NOK ⁶	252.0	220.1	229.4	250.1	228.3	173.0
Importweighted krone exchange rate, 44 countries, 1997=100	103.6	100.3	102.2	100.8	99.6	98.6
NOK per ECU/euro	8.11	8.05	8.20	8.01	8.01	8.0

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

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

³ Figures for 2000 and 2001 are from national accounts. The quarterly figures are from Statistics Norway's Labour force survey (LFS), since the new quarterly national accounts series for employment are too short for seasonal adjustment.

⁴ According to Statistics Norway's labour force survey (LFS).

⁵ Percentage change from the same period the previous year.

⁶ Average spot price, Brent Blend.

Sources: Statistics Norway and Norges Bank.

guidelines state that fiscal policy, starting with the budget for 2002, shall be implemented in such a way that the structural, non-oil government budget deficit shall be approximately equal to the expected real return on the Petroleum Fund at the beginning of the fiscal year. It was also emphasized that fiscal policy should continue to contribute to stabilizing macro-economic developments with a view to ensuring stable, high capacity utilization and low unemployment. Whereas the Norwegian authorities have long traditions in the area of demand management through fiscal policy, there has previously been no explicit formal plan as to how a steadily rising Petroleum Fund shall benefit the Norwegian population.

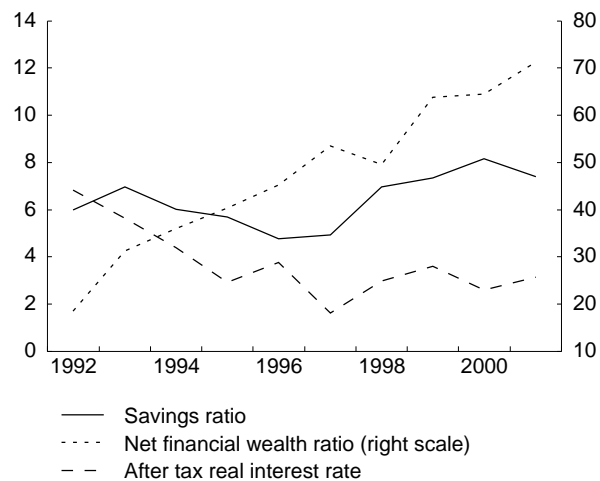
General government net lending is provisionally estimated at NOK 224.2 billion in 2001, compared with

NOK 209.3 billion the previous year. This is equivalent to 15.2 and 14.7 per cent respectively of GDP. The structural, non-oil government budget deficit, a measure of the effects of explicit fiscal policy decisions on economic activity (discretionary fiscal policy), is estimated at NOK 18.8 billion in 2001, or 1.8 per cent of mainland trend GDP (an estimate for GDP in a cyclically neutral situation). Since this is approximately on a par with the previous year (1.7 per cent in 2000), fiscal policy, measured in this way, was more or less cyclically neutral in 2001. In other words, fiscal policy has not made any particular contribution to pushing up or pushing down total demand in 2001 compared with the previous year.

The new guidelines for using petroleum revenues imply that the structural, non-oil government budget

Household financial indicators 1992-2001

Per cent



Source: Statistics Norway.

deficit for 2002 will increase to NOK 26.0 billion, or 2.3 per cent of trend GDP. This means that fiscal policy will generate a budgetary stimulus equivalent to 0.5 per cent of trend GDP.

In conjunction with the presentation of the new guidelines, Norges Bank received new instructions concerning its conduct of monetary policy. Formally, these changes implied that the objective of maintaining a stable exchange rate against European currencies was changed to an objective of keeping inflation, adjusted for extraordinary events, stable at around 2.5 per cent. However, since 1999 Norges Bank has made it clear that the best way to achieve a stable exchange rate against European currencies is to keep inflation stable at the European level. Hence, in reality, the changeover to an inflation target in monetary policy has taken place gradually over several years. Irrespective, the changeover to an inflation target means that both monetary policy and fiscal policy will contribute to stabilizing the economy in contrast to the former regime when the exchange rate objective could result in higher interest rates during downturns and interest rate reductions during upturns.

The inflation target of close to 2.5 per cent must be seen in connection with the guidelines for fiscal policy. By permitting slightly higher inflation than in the euro area, and probably also higher than the average among our trading partners, room is created for phasing in an increased use of petroleum revenues. Higher domestic inflation, combined with a stable exchange rate against trading partners' currencies, implies a loss of competitiveness and a freeing up of resources for sheltered industries and the public sector.

Since it takes time before a change in interest rates has an effect on the Norwegian economy, Norges Bank has emphasized that interest rates are set with a view to achieving the inflation target two years ahead. In

order to prevent the sluggish global economic situation from bringing inflation to less than 2.5 per cent two years ahead, the central bank's key rates were reduced by 0.5 percentage point in December last year. This was the first change in interest rates since the increase in rates in September 2000. Corresponding interest rates in the euro area were reduced by a total of 1.5 percentage point in 2001, which contributed to widening the interest rate differential in the money market from about 2.5 to 3.0 percentage points through 2001.

The decline in interest rates at the very end of 2001 could not prevent real interest rates from rising through last year inasmuch as the year-on-year rise in the consumer price index fell from 3.4 per cent in December 2000 to 2.1 per cent in December 2001. Viewed in this way, it may be said that the monetary policy tightening since 1999 has been continued. Developments in foreign exchange markets in 2001 contributed to curbing activity in the Norwegian economy further, in addition to the effect generated by higher real interest rates. Measured against the euro, the Norwegian krone appreciated by 3.2 per cent through 2001. The import-weighted krone exchange rate appreciated by as much as 4.6 per cent in the same period, particularly as a result of a sharp depreciation of the Swedish krona. Changes in the US dollar exchange rate against the Norwegian krone, which depreciated by only 1.8 per cent and pound sterling, which appreciated by 0.9 per cent, had the opposite effect. An appreciation of the Norwegian krone is assumed to have a tightening effect on the Norwegian economy as a result of deteriorating cost competitiveness for internationally exposed industries.

Total demand

According to preliminary accounts figures, mainland demand grew by 1.1 per cent last year, compared with 1.9 per cent in 2000. Most of the growth in 2000 reflects a carry-over from 1999, and seasonally adjusted figures show an increase through 2001. The table shows the growth impetus from various demand components since 1992. In 2001, total growth was primarily fuelled by household consumption, while investment in particular had the opposite effect. Compared with 2000, most of the decline in the rate of growth in total demand was due to the negative growth impetus from investment activity in the mainland economy.

Preliminary national accounts figures show that household consumption, measured at constant prices, rose by 2.2 per cent last year, against 2.4 per cent in 2000. In particular, slower growth in the consumption of services pushed down total consumption growth in 2001 compared with 2000. The consumption of services rose by 2.3 per cent last year, compared with 2.8 per cent in 2000. Goods consumption, which increased by 2.1 per cent in 2001 compared with 1.9 per cent in 2000, had the opposite effect.

Household real disposable income rose by 1.2 per cent last year, against 3.4 per cent in 2000. These developments were primarily due to changes in net property income. The fall in dividend payments, partly as a result of particularly large payments in 2000, the effect of the introduction of a tax on share dividends, and higher interest expenses were the main factors. Income from employment contributed to pushing up total income growth last year, and the contribution to growth was somewhat higher than in 2000. Preliminary figures for 2001 show that consumption expanded at a faster pace than income. The saving ratio was therefore reduced for the first time since 1996, from 8.2 per cent in 2000 to 7.4 per cent in 2001.

Particularly as a result of a 6.6 per cent increase in prices for existing dwellings, household real wealth rose by 9 per cent last year. Moreover, the high saving ratio and a general rise in the real value of net financial assets contributed to boosting real wealth. Total debt rose by 9.6 per cent in 2001, compared with 8.9 per cent in 2000. This is substantially higher than the growth in household income. Gross debt as a share of disposable income before interest expenses rose from 1.15 in 1999 to 1.18 in 2000, and further to 1.22 in 2001. If we let this be a measure of debt-servicing capacity, households' ability to service their debt has weakened in this period. By looking at gross debt as a share of housing wealth, we also obtain a picture of debt security. In 1998, households' gross debt came to 56.3 per cent of housing wealth. In 1999 and 2000, this share fell to 53.9 and 50.6 per cent respectively of housing wealth. Last year, however, debt rose at a faster pace than housing wealth, with the share rising to 51.2 per cent. In 2001, both households' debt servicing capacity and debt security, as reflected in these measures, deteriorated.

Gross investment in mainland Norway fell by 2.7 per cent last year after increasing by 1.4 per cent in 2000. There was a steady decline through last year. The weak trend through 2001 was primarily the result of a fall in investment in the production of goods outside the manufacturing sector and in private and public services. However, investment in manufacturing and mining as well as housing investment increased by about 8 per cent last year. Investment in the petroleum sector declined for the third consecutive year. The fall of 3.1 per cent is, however, related to the particularly high level of import-intensive investment in the first quarter of 2000.

The volume of traditional merchandise exports grew by 3.0 per cent in 2001, compared with 2.1 per cent in 2000. In 2001, exports were primarily boosted by very high growth in exports of manufactured goods, especially petrol, industrial chemicals and engineering products. The average rise in export prices was negative at 1.9 per cent, and as a result the value of traditional merchandise exports at current prices only rose

by 1.0 per cent. The volume of crude oil and natural gas exports expanded by 7.3 per cent in 2001, against 6.4 per cent the previous year. Due to a decline in the average price of these goods, however, oil and gas exports fell by 1.8 per cent at current prices. The volume of traditional merchandise imports increased by 3.1 per cent in 2001, against 1.7 per cent in 2000. High growth in imports of traditional goods thus contributed to reducing the demand for goods from Norwegian manufacturing.

Rain in 2000 pushed down GDP growth in 2001

Preliminary national accounts figures show that mainland GDP grew by 1.0 per cent last year, against 1.8 per cent in 2000. If electricity production is excluded, however, the growth rate in the mainland economy rose marginally in 2001 compared with the preceding year. Mainland GDP, excluding electricity production, increased by 1.4 per cent in 2001, compared with 1.3 per cent in 2000. Unusually high electricity production in 2000 was the main reason why value added in the electricity sector rose by as much as 16.8 per cent in 2000 before declining by 10.6 per cent in 2001.

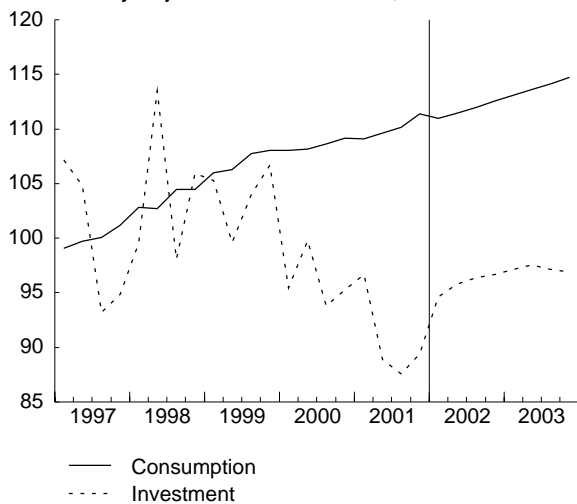
Continued stable labour market

According to preliminary national accounts figures, total employment rose by 0.4 per cent last year, the same as in 2000. In 2001, an increase in employment was primarily recorded in industries that are sheltered from international competition and the public sector. Employment increased most in the construction industry, other services and in the local government sector, all by 2.1 per cent. Manufacturing employment, including mining, fell for the third consecutive year, with a decline of 1.7 per cent last year. Since 1998, employment in manufacturing, including mining, has been reduced by 18 000, to 303 000 employees last year, a total decline of 5.6 per cent.

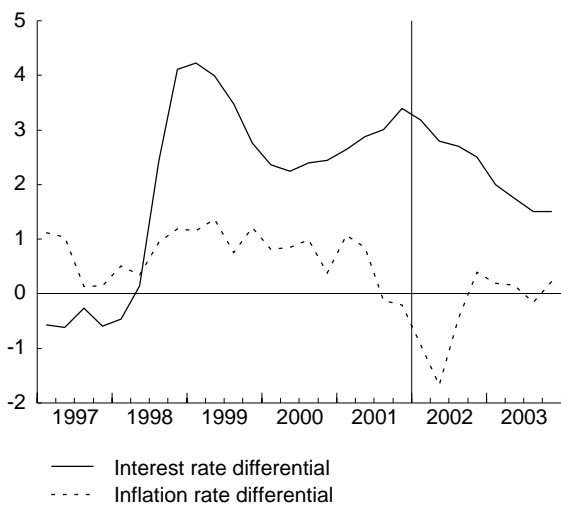
According to the Labour Force Survey (LFS), unemployment has risen slightly since the cyclical peak in 1998, when it came to 3.2 per cent of the labour force. Between 2000 and 2001, the number unemployed rose by 3 000, to 84 000, equivalent to 3.6 per cent of the labour force, compared with 3.4 per cent in 2000. This means that the labour force rose at a slightly faster pace than employment last year. The percentage of the working-age population (16 to 74 years) that is included in the labour force edged up from 73.4 per cent in 2000 to 73.5 per cent in 2001. Whereas labour force participation for men fell, an increase for women pushed up the figure for average labour force participation. The average participation rate for women was 69.2 per cent, compared with 77.7 per cent for men. Labour force participation has thus stabilized at an internationally very high level after having risen continuously since the cyclical trough in 1993.

General government

Seasonally adjusted volume indices, 1997=100



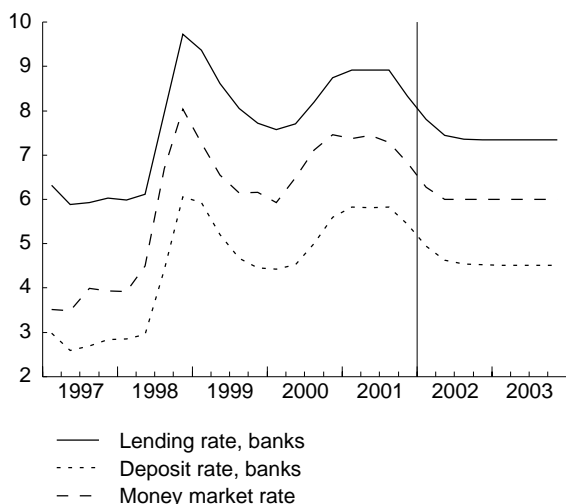
Source: Statistics Norway.

Interest rate and inflation differential between NOK, and the ECU/euro

Sources: Norges Bank and Statistics Norway.

Lending rate and deposit rate

Per cent



Sources: Norges Bank.

For the first time since 1998, wage growth per normal man-year increased last year, to 4.9 per cent, from 4.3 per cent in 2000 and 5.3 per cent in 1999. Labour costs per man-hour rose further, partly as a result of two new vacation days in 2001. In manufacturing industry, hourly labour costs increased by 5.5 per cent in 2001, compared with an estimated average of 4.0 per cent for Norway's trading partners. Following a period of lower wage growth in the first half of the 1990s, wage growth last year was higher than among our main trading partners for the fifth consecutive year. Measured in a common currency, the rise in hourly labour costs in Norwegian manufacturing was 4.7 per cent higher than among our trading partners last year.

Energy prices and changes in indirect taxes influenced price developments in 2001

The consumer price index increased by 3.0 per cent from 2000 and 2001, against 3.1 per cent the previous year. However, special factors influenced price developments through 2001. In the first half of 2001, increases in indirect taxes and higher electricity prices contributed to a year-on-year rise of 4.3 per cent in May, the highest level since December 1990. The year-on-year rise in the second half of the year was reduced, however, partly as a result of the halving of the VAT rate on food with effect from 1 July 2001 and modest changes in electricity prices. Norway's price inflation in the second half of 2001 was lower than the level in the EU for the first time since November 1996. The average rise in prices from 2000 to 2001 nevertheless ended up 0.3 percentage point above the comparable inflation rate in the EU. At an annual rate, the consumer price index, adjusted for changes in real taxes and excluding energy price (CPI-ATE) rose by 2.6 per cent in 2001.

Current account surplus equivalent to 14.8 per cent of GDP

The current account surplus amounted to NOK 217.7 billion in 2001, against NOK 203.6 billion in 2000. Trade in goods and services generated a surplus of NOK 238.1 billion last year, an improvement of NOK 8.0 billion. The terms of trade showed a clear deterioration last year, but growth in the volume of imports of only 0.3 per cent, compared with 3.5 per cent growth in the volume of exports, nevertheless contributed to a higher surplus. However, Norway's crude oil and natural gas exports fell by NOK 5.6 billion, to NOK 301.0 billion in 2001, compared with the previous year.

The deficit on the interest and transfers balance declined from NOK 26.5 billion in 2000 to NOK 20.4 billion last year. The decline primarily reflects higher interest income and share dividends from abroad and must be seen in connection with the accumulation of capital in the Government Petroleum Fund. However, property expenses abroad still exceed property

Main economic indicators 2001-2003. Accounts and forecasts

Percentage change from previous year unless otherwise noted

	Accounts 2001	Forecasts				
		2002			2003	
		SN	MoF	NB	SN	NB
Demand and output						
Consumption in households and non-profit organizations	2.2	3.0	2,7	2 3/4	2,7	2 3/4
General government consumption	1.5	1.7	1.5	2 1/4	2.0	2 1/2
Gross fixed investment	-5.9	0.8	0.5	-2	2.9	-3/4
Petroleum activities	-3.1	-3.8	-2.3	-5	11.5	-5
Mainland Norway	-2.7	-0.2	0.9	-1 1/2	0.8	1/4
Firms	-4.8	-3.0	-0.5	-4 1/2	-1.9	3/4
Housing	7.8	3.4	0.8	2	8.1	0
General government	-5.6	4.9	4.8	4 3/4	1.4	0
Demand from Mainland Norway ¹	1.1	2.1	..	2	2.2	2 1/4
Stockbuilding ²	-0.7	0.0	..	..	0.0	..
Exports	5.3	3.7	3.8	2 1/4	2.0	2 3/4
Crude oil and natural gas	7.3	5.4	8.3	6	0.4	2
Traditional goods	3.0	2.1	1.4	-1	2.0	3 1/2
Imports	0.3	3.7	1.9	1/4	4.0	3 1/4
Traditional goods	3.1	3.5	2.0	1/4	3.5	3 1/4
Gross domestic product	1.4	2.3	2.7	2 1/4	1.8	1 3/4
Mainland Norway	1.0	1.6	1.6	1 1/2	2.0	1 3/4
Labour market						
Employed persons	0.4	0.4	0.3	1/4	0.5	1/2
Unemployment rate (level)	3.6	3.8	3.6	3 1/2	3.8	3 1/2
Prices and wages						
Wages per standard man-year	4.9	4.3	4 1/4	5	3.7	5
Consumer price index (CPI)	3.0	1.1	1.5	1 1/2	1.9	2 1/2
CPI adjusted for tax changes and excluding energy products (CPI-ATE)	2.6	2.4	..	2	2.3	2 1/2
Export prices, traditional goods	-1.9	-3.1	..	-1 1/2	8.5	1/2
Import prices, traditional goods	1.1	-2.6	..	..	2.8	..
Housing prices	6.6	5.7	..	4	8.1	4
Balance of payment						
Current balance (bill. NOK)	217.7	170.9	159.4	170	168.0	170
Current balance (per cent of GDP)	14.8	11.6	..	11	11.1	11
Memorandum items:						
Household saving ratio (level)	7.4	9.3	8.2	8 1/2	9.9	8 1/2
Money market rate (level) ³	7.2	6.1	6.0	..	6.0	..
Lending rate, private financial institutions (level) ⁴	8.8	7.5	..	..	7.3	..
Crude oil price NOK (level) ⁵	220.1	174.4	185	177	178.7	177
Exports markets indicator	0.4	4.0	..	..	7.0	..
Importweighted krone exchange rate (44 countries) ^{3,6}	-3.2	-0.8	..	-1 1/4	0.5	0.0

¹ Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.² Change in stockbuilding. Per cent of GDP.³ NB technically assumes its rates to be constant through the forecast period.⁴ Households' borrowing rate in private financial institutions.⁵ Average spot price Brent Blend.⁶ Increasing index implies depreciation.

Sources: Statistics Norway (SN), Ministry of Finance, St.prp. nr 1 Tillegg nr. 4 2001 (MoF), Norges Bank, Inflasjonsrapport 3/2001 (NB).

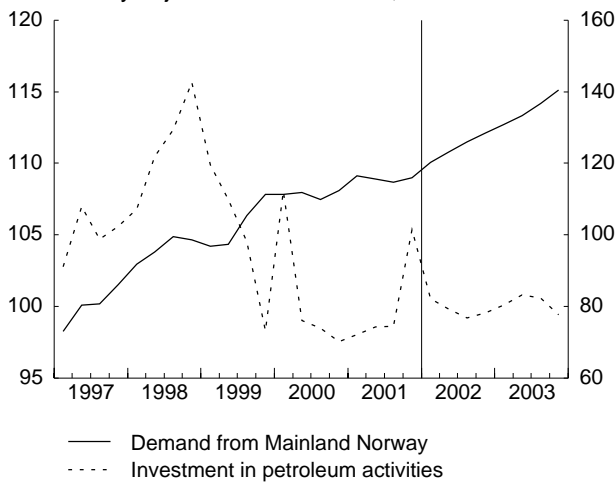
income from abroad. When this is seen in connection with Norway's substantial net foreign assets, it is important to take into account that interest rates in Norway are on average higher than abroad and that equities make up part of the Norwegian capital being accumulated abroad. In the capital account, price gains are registered as valuation changes and not as property income.

Outlook for the Norwegian economy in 2002 and 2003**Fiscal policy**

2002 is the first year in which the fiscal policy programme has been drawn up in line with the new fiscal policy guidelines, and the use of the expected real return on the Petroleum fund entails some underlying expansionary implications for fiscal policy. As in our previous report, the estimates for 2002 are based on the approved fiscal policy programme. General

Demand from Mainland Norway and investment in petroleum activities

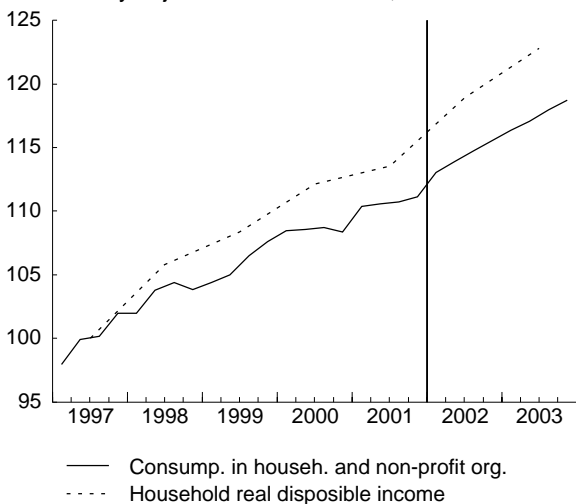
Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Income and consumption in households

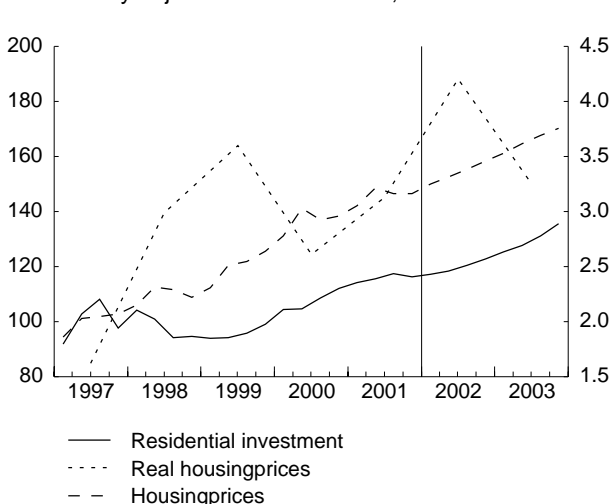
Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Residential investment and housing prices

Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

government expenditure on goods and services is expected to rise by about 2 per cent. The estimate for growth in investment is slightly higher than for expenditure on consumption. This growth in the use of resources in the general government sector is slightly lower than estimated underlying growth in the mainland economy. This is also an indication that the room for expansionary budgetary policy has been used to reduce direct and indirect taxes in 2002.

For 2003, the fiscal policy stance is maintained with approximately the same growth in expenditure on goods and services, but with slightly stronger growth in expenditure on consumption and little growth in investment in the general government sector. It is estimated that the elimination of the investment tax in the fourth quarter of this year, along with a reduction in other indirect taxes that influence consumer prices directly, will use up the additional budgetary scope for 2003 as provided by the new guidelines. Given our projections for developments in the Norwegian economy in the period ahead, there is little basis for a cyclically warranted fiscal stimulus in 2003.

In the national accounts, general government production is calculated on the basis of man-hours worked in the sector. Fewer working days due to an increase in vacation days in 2002 and public holidays will contribute to lower production growth in the general government sector in both 2002 and 2003.

Continued strong krone and slightly lower interest rates

The import-weighted krone exchange rate appreciated on average by 3.2 per cent from 2000 to 2001. The appreciation took place gradually between May 2000 and September 2001. In January 2002, the import-weighted krone exchange rate was 4.1 per cent stronger than one year earlier. Money market rates fell towards the end of last year, particularly in connection with Norges Bank's interest rate reduction in December. We expect the central bank's key rates to be reduced further during the first half of this year. The three-month money market rate is assumed to stabilize at 6 per cent from the summer and through 2003. This is slightly higher than the level we projected in our last report and is due to our current projection that growth in the Norwegian economy will be somewhat higher in 2003 than estimated earlier. Interest rates in the EU and the US are expected to be increased slightly towards the end of this year and in the course of 2003 as global activity levels gradually pick up. This implies that nominal (and real) interest rate differentials between Norway and other countries will narrow somewhat over the next few years.

It is assumed that the krone exchange rate will remain strong the next few years. The inflation rate in Norway is now close to the level abroad, and stable, high current account surpluses will contribute to stabilizing

the Norwegian krone. A narrowing interest rate differential is expected to result in a slightly weaker krone than the current level, primarily as a result of an appreciation of the euro against both the US dollar and the Norwegian krone. Our exchange rate projections are in line with what has been perceived as consensus estimates according to Consensus Forecasts.

New impetus from petroleum activities?

Oil production from the Norwegian shelf is expected to increase moderately from 2001 to 2002. This is because Norway will reduce its oil production in relation to planned production in 2002 in order to underpin attempts to stabilize the crude oil price. So far, it has been decided to cut production by 150 000 b/d in the first half of the year. To what extent this will be extended depends on developments in the oil market and the oil price through 2002. Our projections are based on the assumption that the oil price will remain at a moderate, albeit slightly rising, level throughout 2002 because it will take some time before an international recovery boosts demand for crude oil to the extent that crude oil stocks are reduced and the price increases. The average price for 2002 is estimated at USD 20 per barrel. A weaker dollar exchange rate against the Norwegian krone from now until the end of the projection period means that the oil price in krone terms will be about NOK 175 per barrel and approximately the same in 2003 as in 2002. In 2003, we have assumed an oil price of USD 21 per barrel. However, limitations in Norwegian production are not expected in 2003. Gas production is projected to increase by a good 7 per cent from 2001 to 2002 and 5 per cent in 2003.

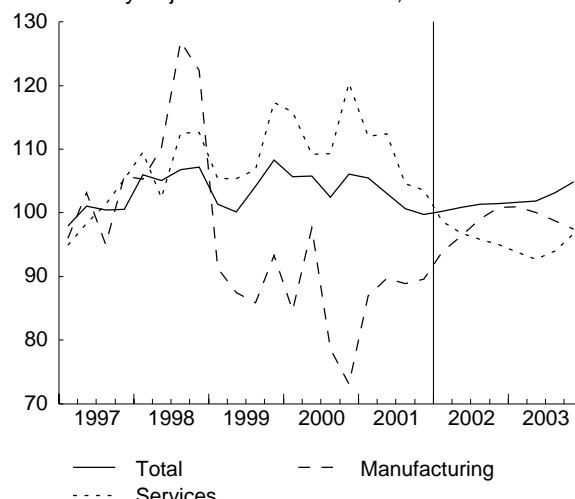
Gross investment in the petroleum sector showed a smaller reduction from 2000 to 2001 than was assumed in our previous report. This was primarily due to the import of a drilling rig in the fourth quarter of 2001, so that the impetus for the Norwegian economy was approximately as expected. It is projected that the demand impetus from investment for the Norwegian economy will increase slightly in 2002 due to a change in the composition of investment. For 2003, we are now projecting a substantial increase in investment in line with new estimates from the Petroleum Directorate. It is particularly investment in pipelines and onshore facilities that is expected to increase sharply in the period 2001 to 2003, while from 2002 to 2003 an increase in modifications of existing facilities and platforms is also expected. The estimates for 2002 are not significantly different from previously, whereas the estimate for 2003 has now been revised up appreciably compared with our last report.

Slightly higher consumption growth and higher household saving

As expected, consumption growth came to a good 2 per cent in 2001. Adjusted figures for household income both for 2000 and 2001 result in a noticeable

Investment, Mainland Norway

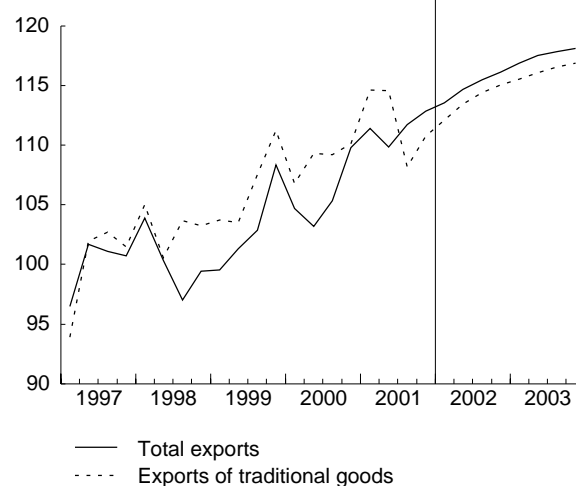
Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Exports

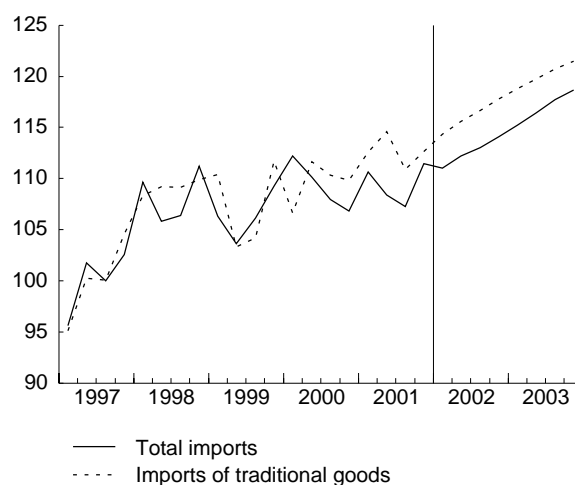
Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Imports

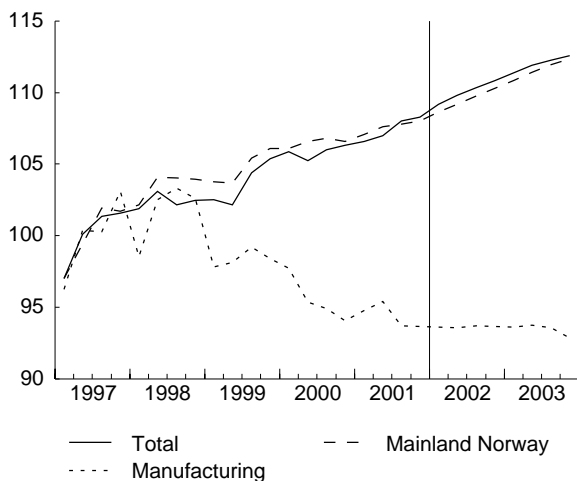
Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Gross domestic product

Seasonally adjusted volume indices, 1997=100



Source: Statistics Norway.

Productivity and output gap

Per cent



Source: Statistics Norway.

upward revision of the household saving ratio in 2000, but a downward revision in the estimate for 2001. Housing investment continued to rise appreciably, but levelled off through 2001.

Consumer prices are expected to show a very subdued rise from 2001 to 2002, primarily as a result of lower indirect taxes. Despite slightly lower wage growth in 2002 compared with last year, real wage growth and real disposable income will increase substantially this year. This will contribute to stimulating consumption growth. Higher income growth will also increase saving until households adapt their purchases to what is perceived as permanently higher income. Even though nominal interest rates are expected to be

lower in 2002 than in 2001, the real interest rate will nevertheless rise as a result of low price inflation. This will also boost household saving this year. All in all, these factors will contribute to a substantial increase in the saving ratio from 2001 to 2002.

As previously, consumption growth in 2003 is expected to be approximately the same as in 2002. A lower real interest rate and continued growth in disposable income will contribute to this. Somewhat stronger growth in the Norwegian economy and lower unemployment in 2003 than was estimated earlier are also expected to push up consumption growth. This compensates to some extent for our slightly higher estimate for the real interest rate in 2003 than projected earlier.

Housing investment, which rose by about 8 per cent in 2001, is projected to show a fairly moderate trend through 2002. The number of housing starts edged down through the second half of last year, while buildings under construction continued to increase, albeit at a slightly slower pace than earlier. This is the reason why investment growth came to a halt towards the end of 2001. High growth in household income and rising prices for existing dwellings imply that housing starts will increase again this year. Slightly lower nominal interest rates point to the same. We therefore assume that after exhibiting sluggish developments through the first quarters of 2002, housing investment will again increase, with annual growth picking up again in 2003. This entails a downward revision of housing investment in 2002 compared with our previous report.

Decline in mainland investment

Whereas manufacturing and housing investment expanded last year, investment in other mainland industries largely showed a decline. Combined with a fall in general government investment, this resulted in a decline in investment in the mainland economy as a whole in 2001. The decline was even somewhat stronger than we had envisaged earlier.

In 2002, manufacturing investment is expected to continue to rise in line with Statistics Norway's December investment intentions survey. The ongoing modernization of the aluminium industry is the main reason for the increase. It is also assumed that investment in the electricity sector will continue to expand in 2003. There is some uncertainty surrounding the scale of the increase because the construction start for any gas-fired power stations is unclear. In service industries, investment continued to fall through 2001, and this decline is projected to persist through 2002. The decline is expected to be reversed during 2003, not least as a result of the removal of the investment tax on 1 October 2002. However, growth is not expected to be substantial.

International downturn leads to low export growth in 2002

Even though it now appears that the cyclical trough has almost been reached in the US, the downturn is continuing in the euro area. However, we expect growth rates to pick up through this year and next and lay the basis for somewhat stronger growth in Norwegian exports. There are, however, some factors that are limiting the growth possibilities for traditional Norwegian exports. One factor is the deterioration in competitiveness that took place during the preceding cyclical upturn. The other factor, which is closely related to this, is the appreciation of the krone exchange rate through 2001. The sharp appreciation of the krone, partly reflecting the high level of interest rates in Norway, is weakening the price competitiveness of Norwegian enterprises. In addition, there are a number of extraordinary factors relating to exports of Norwegian fish products where there is uncertainty regarding market access in the EU. Against this background, exports are expected to show moderate growth in spite of an upturn abroad.

The global downturn in 2001 has had a strong impact on prices for a number of important Norwegian export goods. The terms of trade have weakened substantially, also when disregarding the fall in oil prices. This has resulted in declining profitability in the Norwegian manufacturing sector. Normally, prices for some Norwegian export goods increase sharply at the early stage of an international cyclical upturn. At present there are no clear signs of this being the case even if international prices for some commodities and semi-finished goods have stopped declining and may now be rebounding. The strong krone exchange rate will contribute to a continued fall in import prices over the next few quarters and in 2002 as a whole. As a result of this, the terms of trade for traditional goods are not expected to weaken further between 2001 and 2002. Including oil, however, the terms of trade will weaken because we have assumed that oil prices will be about 20 per cent lower in 2002 than in the previous year.

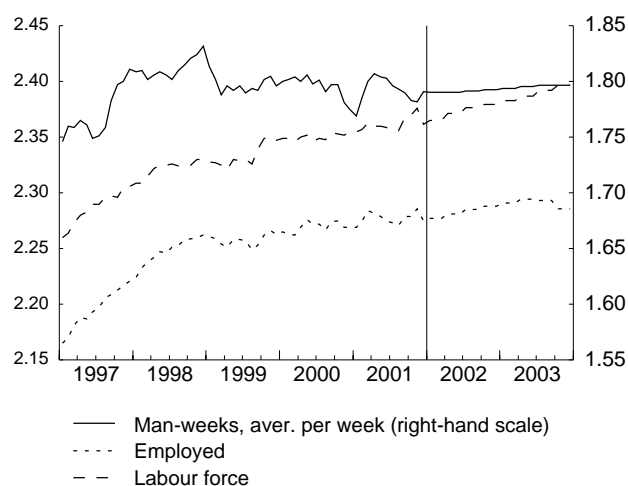
Higher domestic demand

With somewhat stronger growth in household consumption and a turnaround in gross capital formation, mainland demand will increase in the period ahead. A stronger contribution to growth from the oil sector will amplify this and lay the foundation for higher growth in mainland production. Our estimate for demand growth in 2002 is about the same as in our December report, while the estimate for 2003 has been revised upwards somewhat.

Higher GDP growth ahead

Weaker competitiveness is not only causing manufacturing industry to lose market share abroad, but also at home as import goods become cheaper, causing a shift in demand towards imports. The main picture is

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



Source: Statistics Norway.

Consumer price indices

Percentage growth from the same quarter previous year



Sources: Statistics Norway, OECD and Eurostat.

a decline in manufacturing output in 2002. Production growth shows a gradual turnaround later this year and through next year as a result of higher demand both abroad and at home, with production edging up again in 2003 as a whole. Manufacturing output is also expected to increase as a result of higher petroleum investment in 2003.

Industries other than manufacturing, which are generally more insulated against foreign competition, have fared relatively well in recent years. Evidence suggests that this trend will continue and improve further in 2003. Production growth in these industries is contributing to an overall increase in production in private mainland industries this year and next. The shift in fiscal policy, which among other things leads to higher demand for goods from these industries, is another contributory factor. Higher real household income is

fuelling consumption growth, which is important for production in service industries. In addition, the leveling off of the decline in investment in the mainland economy will in isolation make a positive contribution to output growth through 2002.

Moderate rise in unemployment

Unemployment edged up last year. There was a clear decline in average working hours as a result of the increase in vacation days in 2001. This has probably contributed to restraining the rise in unemployment somewhat. The increase in vacation days in 2002 will contribute to a continued decline in the number of man-hours worked, while the number of employed continues to rise. With a continued increase in the labour force, unemployment is likely to continue to edge up this year, but to a very limited extent. Labour market pressures have eased compared with the situation a few years ago, but regional and occupational imbalances still exist but are declining. The labour force participation rate has remained largely stable or risen slightly over the last years and is expected to show only minor changes in 2002 and 2003.

Somewhat stronger growth in production and demand in 2003 than previously assumed is now expected to lead to approximately unchanged unemployment in 2003 compared with the estimate for 2002. Against this background, the labour market will remain fairly tight if our analyses are correct. A stronger upturn in the Norwegian economy than the assumptions underlying our calculations may lead to a slight decline in unemployment between 2002 and 2003.

Low price inflation

The rate of increase in the consumer price index slowed markedly through the latter half of last year and price inflation is expected to slow further in the first half of this year. This partly reflects the elimination of the 12-month effect of the general VAT increase on 1 January 2001 and a reduction in some excise duties. In addition an expected more seasonally normal trend in electricity prices will push down price inflation in the first half of this year. As from July 2002, the annual rate of increase in consumer prices will jump up by about 1 percentage point as a result of the elimination of the halving of VAT on food at that time. Towards the end of this year, the direct effects of lower energy prices are expected to wane, bringing the 12-month rate of increase in consumer prices up to about the level prevailing towards the end of 2001. Adjusted for the contribution from changes in real taxes and energy prices (CPI-ATE), consumer price inflation is estimated at close to 2.5 per cent in 2002.

In 2003, consumer price inflation will be pushed down by the assumed reduction in indirect taxes from the beginning of next year, while energy prices will have a limited effect on consumer price inflation if

our assumptions hold. The removal of the investment tax in the fourth quarter of 2002 will have little impact on consumer prices, while investment prices and the GDP deflator will in isolation be reduced. All these changes in energy prices and indirect taxes will have little impact on CPI-ATE inflation, but indirectly this index will be pushed down somewhat by lower energy prices and indirect taxes because of the effects on the general rise in prices and wages.

Somewhat lower nominal wage growth, but higher real wages

Wages per normal man-year rose by 4.9 per cent in 2001, bringing real wage growth to 1.8 per cent. In addition, the number of vacation days was increased by two days. In 2002, average nominal wage growth is expected to be somewhat lower than in 2001 in spite of the main settlement taking place this year. There are three main reasons for this. First, general consumer price inflation is expected to be markedly lower. Normally, this pushes down wage growth. Second, not only is consumer price inflation expected to be subdued, but export prices for manufactures have fallen in 2001 and are expected to decline further in 2002 despite some increase through the year. This partly reflects in international cyclical developments, but also the appreciation of the krone exchange rate. This has resulted in a substantial weakening of manufacturing industry's profitability and will normally have an impact on wage growth in this sector. Third, labour market pressures have eased somewhat not only as a result of a small increase in unemployment but a decline in the number of vacancies.

There is some uncertainty as to whether the traditional wage determination mechanisms apply to the same extent as previously in Norway and hence whether weak wage growth in manufacturing will have consequences for wage developments in other industries. Demands for higher wages in parts of the public sector raise the question of whether the wage determination system has changed. It is difficult to find empirical support indicating that there has been a change in the structure of wage formation. But a change may of course occur in 2002. However, we assume that the main structure of wage formation is stable.

With our estimate for nominal wage growth, real wage growth will be 3.2 per cent in 2002. In addition, the last two vacation days will be introduced in 2002, bringing the introduction of the five-week holiday to completion. Measured per hour, real wage growth is estimated at 6-7 per cent between 2000 and 2002.

Wage growth in 2003 will be influenced by the fact that the wage settlement that year will not be a main settlement. Normally, this implies somewhat lower nominal increases. The profitability problems in manufacturing industry will gradually be alleviated by the projected improvement in the global economic

environment. However, this will probably affect wage drift through 2003 rather than the settlement itself. Continued low consumer price inflation implies that real wages will increase also in 2003 even with moderate pay increases. A subsequent gradual slowing of productivity growth will also exert downward pressure on wage growth.

Sizeable current account surpluses in spite of lower prices

The current account balance showed a surplus of a good NOK 217 billion in 2001. Lower export prices in 2002, particularly crude oil prices, will lead to a substantial reduction in the current account surplus, with an estimated NOK 70 billion decline in the value of exports. This will be partly offset by an increase in the volume of exports, but the total value of exports is still projected to show a marked fall between 2001 and 2002. Import prices are also expected to fall somewhat between 2001 and 2002, but the decline is expected to be considerably smaller than for exports. All in all, the foreign trade surplus is projected to decline by more than NOK 50 billion between 2001 and 2002. The current account surplus is expected to weaken by the same amount. Higher foreign transfers (net) weaken the interest and transfers balance, while higher capital income entails a strengthening. The capital accumulated in Government Petroleum Fund plays a role in this context. However, another factor is that the narrowing interest rate differential between Norway and other countries will make it less profitable for foreign investors to invest in Norway and more profitable to invest abroad.

The current account balance is expected to remain virtually unchanged from 2002 to 2003. The trade balance will weaken because the volume of imports is increasing at faster pace than the volume of exports while there are no substantial differences in the expected rise in prices. Crude oil prices are assumed to average USD 21 per barrel in 2003. Should oil prices turn out to be only one dollar higher, the current account balance will improve by more than NOK 10 billion. Therefore, it is difficult to provide an accurate estimate of the current account balance since this balance is so heavily dependent on an estimate as uncertain as the price of crude oil.

Substantial uncertainty, but small systematic forecasting errors

Statistics Norway presented its first set of quantified forecasts for the Norwegian economy in 1988, and since 1990 has with few exceptions published forecasts for two years ahead in February, June, September and December each year. In the following we provide an overall evaluation of these 14 years of forecasting activity. The evaluation is confined to the rate of increase in consumer prices (CPI), mainland GDP growth and unemployment as a percentage of the labour force (LFS). Our evaluation examines in

particular whether the forecasts have systematically deviated from preliminary national accounts figures, and the spread in the deviations. The analysis also seeks to provide an indication of the uncertainty associated with the forecasts for 2002 and 2003.

Unemployment and CPI figures are not revised after publication. However, there are often deviations between the preliminary GDP figures published in February the year following the accounting year and the final figures that are normally available two years later. The "final" figures may also be revised in connection with revisions of national accounting routines. There are four reasons why we use preliminary GDP figures in the accounts presented in February. First, there are no final accounts figures for the years following 1997. The estimates for these years must therefore be compared with preliminary figures. Second, the forecasts are prepared using preliminary, not final accounts figures for recent history. Third, the figures may not be comparable as a result of changes in the base year between the February accounts and subsequent accounts. Fourth, the main revision in 1995 included definitional changes, which meant that forecasts and final figures were not linked to the same variables.

How accurate have the forecasts been?

Figures 1, 2 and 3 show the average deviation between forecasts at different points in time and figures for growth in mainland GDP, the rise in the CPI and unemployment. The figures also provide an indication of the spread in the deviations in that they include three intervals around the average. These intervals are calculated using the historical spread, but do not show how many of the deviations actually lie within the intervals. The intervals are still chosen because by making a reasonable assumption that all deviations belong to a given statistical distribution (normal distribution), we can calculate the probability that future deviations will lie within the interval. Under this assumption the deviations between future estimates and accounts figures will remain within these intervals in respectively 50, 70 and 90 per cent of the cases.

On average, the forecasts for GDP growth two years ahead are 0.3 percentage point higher than actual growth, estimated using preliminary accounts figures. In the subsequent quarters, the forecasts have been on average 0.3, 0.2, 0.4 and 0.1 percentage point below actual growth. The last three forecasts have been more accurate. Average estimates for the rise in the CPI have been more accurate and are off the mark by no more than 0.2 percentage point. On average, the forecasts for unemployment are higher than the final figures at all the forecast points, albeit by no more than 0.3 percentage point. The average deviation is still within the error margins when the intervals by a solid margin include accounts figures. In the light of the wide spread in these forecasts and the relatively

Figure 1. Estimates for percentage change in mainland GDP. Deviations from preliminary accounts figures and spread

The intervals show 0.68, 1.04 and 1.65 standard deviations respectively

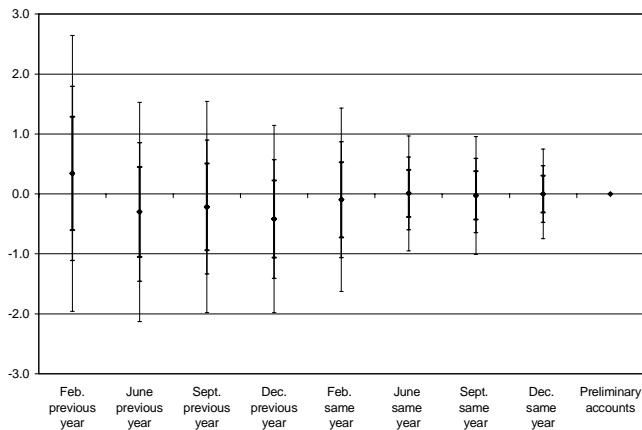


Figure 2. Estimates for percentage change in the CPI. Deviations from accounts figures and spread

The intervals show 0.68, 1.04 and 1.65 standard deviations respectively

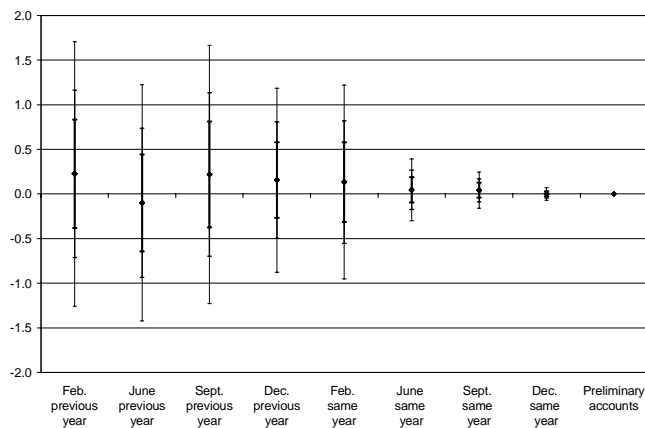
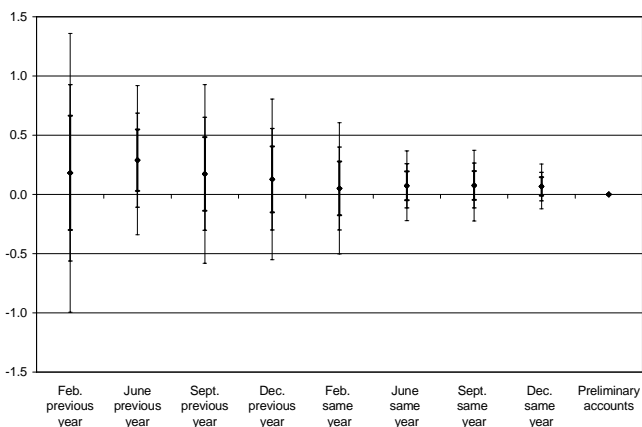


Figure 3. Estimates for percentage change ???. Deviations from accounts figures and spread

The intervals show 0.68, 1.04 and 1.65 standard deviations respectively



few observations in the analysis (between 9 and 14), it can be said that the forecasts for the three main variables only show small systematic errors.

The spread in the deviation between the growth projection for mainland GDP published in February of the year preceding the projection year and the preliminary accounts has been substantial. The forecasts in 1991 and 1993 were the least accurate, off by 2.6 and 1.8 percentage points respectively. Of the 12 forecasts published at that time 6 deviate from the preliminary figures by more than 1 percentage point. At the next time of publication, however, the difference between the forecasts and the accounts figures is substantially smaller, and one year prior to the publication of accounts figures only 4 out of the 14 forecasts were off the mark by more than 1 percentage point. In the last three reports prior to the publication of the preliminary accounts figures, most of the forecasts deviate by less than 0.5 percentage point.

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

The spread in the deviations between the forecasts for unemployment published in June the preceding year and the accounts figures show a marked decrease compared with the forecast published the previous quarter. The average absolute deviation is 0.6 percentage point in February of the preceding year compared with 0.4 percentage point for the forecast published in June of the same year. Thereafter, the spread widens somewhat again, followed by a gradual decline. The forecast error for unemployment is also reduced substantially for the last three forecasts prior to the publication of the accounts. Thereafter, there are no forecasts that deviate by more than 0.3 percentage point from the accounts figures.

The forecasts for 2002 and 2003 are uncertain

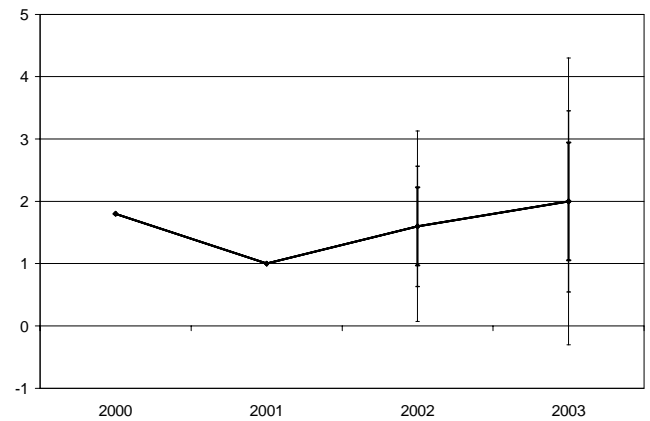
Figures 3, 4 and 5 provide an assessment of the uncertainty attached to the forecasts for 2002 and 2003 published in this report. Mainland GDP is projected to expand by 1.6 per cent in 2001 and 2.0 per cent in 2002. The analysis above shows that there is a 50 per cent probability that mainland GDP growth will range between 1.0 and 2.2 per cent in 2002 and between 1.1 and 2.9 per cent in 2003. There is a 70 per cent probability that the percentage growth will lie in the interval 0.6-2.6 in 2002 and 0.5-3.5 in 2003. An interval of 3.0 percentage points in 2002 and 4.6 percent-

age points in 2003 covers percentage growth with a probability of 90 per cent.

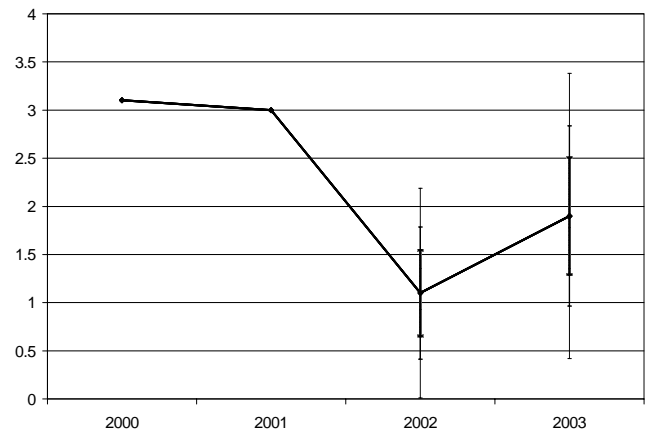
The rate of increase in the CPI was 3.0 per cent in 2001. CPI inflation is projected at 1.1 per cent in 2002 and 1.9 per cent in 2003. However, there is a 50 per cent probability that the forecasts for 2002 and 2003 will be off the mark by less than 0.4 and 0.6 percentage point respectively. There is a 70/90 per cent probability that we will be off the mark by an additional 0.3/0.7 percentage point in 2002 and 0.3/0.9 percentage point in 2003.

Unemployment is estimated at 3.8 per cent in both 2002 and 2003. While historical forecast errors imply that the forecast for 2002 is fairly accurate, there is considerable uncertainty associated with the forecast for 2003. For example, accounts figures will with a probability of 70 per cent be 0.4 percentage point below our forecast for 2002. However, in 2003 there is a 70 per cent probability that unemployment will lie in an interval of 0.8 percentage point above and below the estimate. The interval that covers the unemployment estimate for 2003 with 90 per cent probability ranges between 2.6 and 5.0, an interval of as much as 2.4 percentage points.

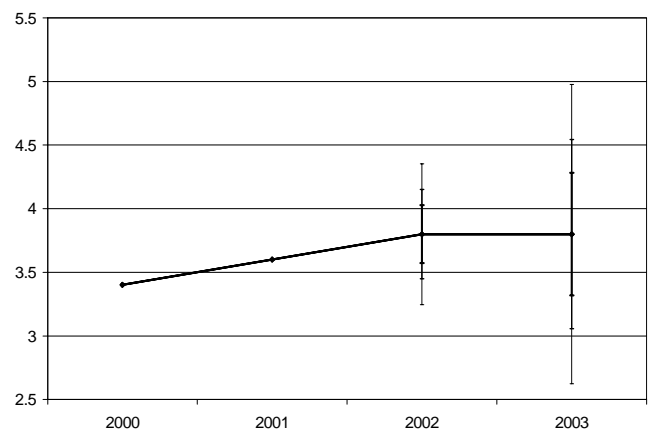
Figur 4. Estimates for percentage change in mainland GDP
The probability that the accounts figures will lie within the intervals is 50, 70 and 90 per cent respectively



Figur 5. Estimates for percentage change in the CPI
The probability that the accounts figures will lie within the intervals is 50, 70 and 90 per cent respectively



Figur 6. Estimates for percentage change ??
The probability that the accounts figures will lie within the intervals is 50, 70 and 90 per cent respectively



How accurate were Statistics Norway's forecasts for 2001?

Statistics Norway's Economic Surveys have for the past two years presented forecasts for macroeconomic developments in 2001 ten times. The first time was in September 1999. As usual, our analysis will be confined to the estimates from the last eight Economic Surveys, starting with Economic Survey (ES) 1/2000 in February 2000. Several of the Economic Surveys include alternative scenarios, but these are not included here. The table below shows changes in Statistics Norway's forecasts over time as a result of the incorporation of new information and new assumptions.

The forecasts presented two years ago underestimated the Norwegian interest rate level and price and wage inflation. However, real wage growth was fairly accurate. This resulted in an overestimation of domestic demand, not least consumption and investment growth, which in turn caused an overestimation of production growth. Oil prices were underestimated and hence the current account surplus was also too low. The next forecast in June, a good 1 ½ years ago, had incorporated important adjustments that would later provide good predictions.

First, the interest rate estimates were revised upwards markedly with accompanying downward adjustments of consumption and investment. Growth in petroleum investment was also revised downwards. A further downward adjustment occurred over the summer and the estimates from September 2000 were fairly accurate for many areas. The forecasts for GDP and demand were largely accurate. The decline in petroleum investment was overestimated, but the composition of petroleum investment may have contributed to fairly accurate estimates for the impulses to the Norwegian economy. The nominal picture was still underestimated. As usual, this is because the sizeable indirect tax changes in 2001 were first incorporated in ES 4/2000. In addition to this, both oil prices and electricity prices were clearly underestimated at that time, which resulted in an underestimation of consumer price and wage inflation. Towards the end of 2001, the forecasts were naturally influenced by new assumptions about global economic developments with the result being that GDP growth among our trading partners and market growth for Norwegian exports were revised downwards by a substantial margin.

Statistics Norway's forecasts for 2001

Growth rates in per cent

	ES1/00	ES2/00	ES3/00	ES4/00	ES1/01	ES2/01	ES3/01	ES4/01	ES1/02
Consumption in households and non-profit organizations	2.8	2.1	1.7	1.7	1.6	1.6	2.0	2.0	2.2
General government consumption	1.9	2.1	1.8	2.4	2.3	2.4	1.9	2.0	1.5
Gross fixed investment	2.3	-0.6	-2.2	-3.3	-1.7	-2.7	-4.8	-5.2	-5.9
Petroleum activities	0.3	-3.5	-10.8	-8.7	0.0	-1.8	-8.8	-8.2	-3.1
Mainland Norway	2.8	1.0	1.3	0.4	-0.8	-1.1	-1.0	-0.6	-2.7
Exports	4.5	5.8	4.8	4.9	4.0	4.3	5.0	4.3	5.3
Crude oil and natural gas	3.5	7.4	4.1	4.6	3.8	5.4	5.3	4.9	7.3
Traditional goods	4.7	4.6	5.5	3.3	2.3	4.0	4.7	2.8	3.0
Imports	4.6	3.7	3.4	3.0	2.6	1.7	0.8	-0.3	0.3
Traditional goods	5.7	4.0	5.9	3.7	2.4	3.8	4.1	3.3	3.1
GDP	2.6	2.5	1.5	1.6	1.6	1.4	1.6	1.4	1.4
Mainland GDP	2.3	1.7	1.2	1.0	1.1	1.0	1.2	1.1	1.0
Employed persons	0.2	0.4	0.7	0.4	0.6	0.6	0.6	0.2	0.4
Unemployment rate (level)	3.8	3.9	3.3	3.5	3.5	3.3	3.4	3.6	3.6
Wages per man-hour	3.5	4.0	4.0	4.1	4.3	4.6	4.6	4.5	4.9
Consumer price index	2.0	1.9	2.2	2.5	2.5	3.3	3.2	3.0	3.0
Export prices, traditional goods	1.8	-0.7	-1.2	1.0	1.9	2.4	-0.3	-1.8	-1.9
Import prices, traditional goods	1.3	-0.6	0.1	0.5	1.6	3.6	2.7	1.2	1.1
Money market rate (level)	5.3	6.6	7.1	7.1	7.1	7.3	7.2	7.3	7.2
Average borrowing rate (level)	7.5	8.4	9.1	8.9	8.9	9.2	9.0	8.7	8.8
Current balance, bill. NOK	145.0	151.0	165.0	160.0	170.0	214.0	208.0	212.0	217.7
Export market indicator	6.5	6.6	6.5	6.5	7.1	7.5	4.6	1.6	0.4
Crude oil price, NOK	160.0	165.0	193.0	215.0	205.0	236.0	233.0	221.0	220.0

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product

At fixed 1997- prices. Million kroner

	Unadjusted		Seasonally adjusted							
	2000	2001	00.1	00.2	00.3	00.4	01.1	01.2	01.3	01.4
Final consumption exp. of housh. and NPISHs	563 628	575 832	141 072	141 199	141 341	140 910	143 539	143 782	144 012	144 509
Household final consumption expenditure	537 524	549 237	134 524	134 680	134 788	134 427	136 867	137 134	137 337	137 908
Goods	300 716	307 015	75 828	75 779	75 514	74 419	76 377	76 589	76 558	77 568
Services	228 097	233 342	56 491	56 799	57 144	57 670	58 133	58 242	58 492	58 477
Direct purchases abroad by resident househ.	24 438	24 505	6 168	6 058	6 091	6 134	6 195	6 177	6 210	5 864
Direct purchases by non-residents	-15 727	-15 626	-3 963	-3 957	-3 960	-3 796	-3 837	-3 874	-3 923	-4 001
Final consumption exp. of NPISHs	26 103	26 595	6 548	6 519	6 554	6 483	6 672	6 647	6 675	6 601
Final consump. exp. of general government	237 296	240 765	59 071	59 124	59 405	59 684	59 647	59 941	60 243	60 907
Final consump. exp. of central government	93 204	93 824	23 267	23 158	23 311	23 463	23 378	23 300	23 477	23 563
Central government, civilian	69 820	71 169	17 444	17 282	17 467	17 623	17 765	17 646	17 790	17 864
Central government, defence	23 385	22 655	5 823	5 876	5 844	5 841	5 613	5 655	5 686	5 700
Final consump. exp. of local government	144 092	146 941	35 804	35 966	36 094	36 221	36 269	36 640	36 767	37 343
Gross fixed capital formation	253 099	238 281	69 546	63 951	59 987	59 676	61 820	57 711	56 337	62 710
Petroleum activities	51 791	50 211	17 470	11 858	11 498	10 929	11 245	11 573	11 587	15 791
Ocean transport	15 890	7 730	5 402	5 359	3 245	1 884	3 989	596	306	2 839
Mainland Norway	185 418	180 340	46 674	46 733	45 244	46 863	46 585	45 542	44 443	44 080
Mainland Norway ex. general government	149 110	146 059	37 624	37 270	36 351	37 833	37 418	37 117	36 141	35 604
Manufacturing and mining	14 782	15 961	3 791	4 371	3 522	3 275	3 896	4 014	3 979	4 013
Production of other goods	17 475	15 298	4 507	4 771	4 388	3 811	4 148	3 555	3 905	3 632
Dwellings	32 670	35 233	7 934	7 954	8 249	8 514	8 684	8 782	8 932	8 834
Other services	84 182	79 566	21 392	20 174	20 192	22 233	20 690	20 765	19 325	19 125
General government	36 308	34 280	9 049	9 463	8 893	9 030	9 167	8 424	8 302	8 476
Changes in stocks and stat. discrepancies	31 094	23 379	5 784	9 212	10 356	5 749	3 452	7 739	8 367	4 046
Gross capital formation	284 193	261 660	75 331	73 163	70 343	65 426	65 272	65 450	64 704	66 755
Final domestic use of goods and services	1085117	1078256	275 473	273 485	271 090	266 019	268 458	269 172	268 959	272 171
Final demand from Mainland Norway	986 342	996 936	246 816	247 056	245 991	247 457	249 771	249 264	248 698	249 496
Final demand from general government	273 605	275 045	68 120	68 587	68 298	68 714	68 814	68 365	68 545	69 383
Total exports	474 425	499 358	117 286	115 613	118 030	123 040	124 810	123 082	125 175	126 471
Traditional goods	184 228	189 664	45 203	46 283	46 221	46 617	48 516	48 496	45 789	46 893
Crude oil and natural gas	167 800	180 077	42 261	40 035	41 348	43 795	44 826	42 156	44 774	48 475
Ships and oil platforms	9 744	9 779	1 516	1 857	3 289	3 082	1 772	2 890	4 095	1 023
Services	112 653	119 837	28 306	27 438	27 172	29 546	29 696	29 540	30 517	30 080
Total use of goods and services	1559542	1577614	392 759	389 098	389 120	389 059	393 268	392 254	394 134	398 642
Total imports	399 014	400 343	102 588	100 689	98 646	97 649	101 123	99 090	98 057	101 857
Traditional goods	260 989	268 977	63 638	66 608	65 828	65 517	67 152	68 363	66 157	67 192
Crude oil	948	950	133	48	384	383	219	211	203	317
Ships and oil platforms	25 152	12 688	10 829	6 517	5 126	2 675	3 821	1 093	2 809	4 967
Services	111 924	117 727	27 989	27 516	27 308	29 073	29 931	29 424	28 888	29 380
Gross domestic product	1160528	1177271	290 171	288 409	290 473	291 411	292 145	293 164	296 077	296 785
Mainland Norway (market prices)	951 744	960 856	236 949	238 063	238 570	238 098	239 171	240 355	240 791	241 288
Petroleum activities and ocean transport	208 785	216 414	53 222	50 346	51 903	53 313	52 973	52 809	55 287	55 497
Mainland Norway (basic prices)	830 676	841 328	206 988	207 629	208 070	207 666	209 649	210 399	210 426	211 303
Mainland Norway ex. general government	654 998	663 575	163 342	163 856	164 037	163 446	165 487	166 079	165 923	166 557
Manufacturing and mining	117 804	116 390	30 077	29 348	29 208	28 943	29 173	29 360	28 834	28 828
Production of other goods	93 306	89 862	23 164	23 607	23 630	22 808	22 699	22 155	22 217	22 998
Service industries	443 889	457 323	110 102	110 900	111 199	111 695	113 615	114 564	114 871	114 731
General government	175 678	177 753	43 646	43 773	44 033	44 220	44 162	44 320	44 503	44 745
Correction items	121 068	119 528	29 961	30 434	30 501	30 431	29 523	29 956	30 365	29 985

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product

At fixed 1997- prices. Percentage volume change from previous period

	Unadjusted		Seasonally adjusted							
	2000	2001	00.1	00.2	00.3	00.4	01.1	01.2	01.3	01.4
Final consumption exp. of households and NPISHs	2.4	2.2	0.8	0.1	0.1	-0.3	1.9	0.2	0.2	0.3
Household final consumption expenditure	2.5	2.2	0.9	0.1	0.1	-0.3	1.8	0.2	0.1	0.4
Goods	1.9	2.1	1.0	-0.1	-0.4	-1.4	2.6	0.3	0.0	1.3
Services	2.8	2.3	0.5	0.5	0.6	0.9	0.8	0.2	0.4	0.0
Direct purchases abroad by resident households	3.8	0.3	4.8	-1.8	0.5	0.7	1.0	-0.3	0.5	-5.6
Direct purchases by non-residents	-1.0	-0.6	4.3	-0.1	0.1	-4.2	1.1	1.0	1.3	2.0
Final consumption exp. of NPISHs	0.3	1.9	-0.3	-0.4	0.5	-1.1	2.9	-0.4	0.4	-1.1
Final consump. exp. of general government	1.4	1.5	0.0	0.1	0.5	0.5	-0.1	0.5	0.5	1.1
Final consump. exp. of central government	0.9	0.7	0.2	-0.5	0.7	0.7	-0.4	-0.3	0.8	0.4
Central government. civilian	2.6	1.9	1.7	-0.9	1.1	0.9	0.8	-0.7	0.8	0.4
Central government. defence	-4.0	-3.1	-4.1	0.9	-0.5	-0.1	-3.9	0.8	0.6	0.2
Final consump. exp. of local government	1.7	2.0	-0.1	0.5	0.4	0.4	0.1	1.0	0.3	1.6
Gross fixed capital formation	-1.1	-5.9	12.5	-8.0	-6.2	-0.5	3.6	-6.6	-2.4	11.3
Petroleum activities	-17.1	-3.1	53.1	-32.1	-3.0	-4.9	2.9	2.9	0.1	36.3
Ocean transport	50.2	-51.4	106.9	-0.8	-39.4	-41.9	111.7	-85.1	-48.6	826.5
Mainland Norway	1.4	-2.7	-2.4	0.1	-3.2	3.6	-0.6	-2.2	-2.4	-0.8
Mainland Norway ex. general government	3.9	-2.0	-0.2	-0.9	-2.5	4.1	-1.1	-0.8	-2.6	-1.5
Manufacturing and mining	-8.1	8.0	-9.3	15.3	-19.4	-7.0	19.0	3.0	-0.9	0.8
Production of other goods	-2.6	-12.5	4.6	5.9	-8.0	-13.2	8.8	-14.3	9.8	-7.0
Dwellings	12.2	7.8	5.3	0.3	3.7	3.2	2.0	1.1	1.7	-1.1
Other services	4.8	-5.5	-1.3	-5.7	0.1	10.1	-6.9	0.4	-6.9	-1.0
General government	-7.9	-5.6	-10.6	4.6	-6.0	1.5	1.5	-8.1	-1.4	2.1
Changes in stocks and stat. discrepancies	45.2	-24.8	-10.1	59.3	12.4	-44.5	-40.0	124.2	8.1	-51.7
Gross capital formation	2.5	-7.9	10.3	-2.9	-3.9	-7.0	-0.2	0.3	-1.1	3.2
Final domestic use of goods and services	2.2	-0.6	3.1	-0.7	-0.9	-1.9	0.9	0.3	-0.1	1.2
Final demand from Mainland Norway	1.9	1.1	0.0	0.1	-0.4	0.6	0.9	-0.2	-0.2	0.3
Final demand from general government	0.1	0.5	-1.6	0.7	-0.4	0.6	0.1	-0.7	0.3	1.2
Total exports	2.7	5.3	-3.4	-1.4	2.1	4.2	1.4	-1.4	1.7	1.0
Traditional goods	2.1	3.0	-4.0	2.4	-0.1	0.9	4.1	0.0	-5.6	2.4
Crude oil and natural gas	6.4	7.3	0.2	-5.3	3.3	5.9	2.4	-6.0	6.2	8.3
Ships and oil platforms	-37.1	0.4	-63.5	22.5	77.1	-6.3	-42.5	63.1	41.7	-75.0
Services	4.0	6.4	1.2	-3.1	-1.0	8.7	0.5	-0.5	3.3	-1.4
Total use of goods and services	2.3	1.2	1.1	-0.9	0.0	0.0	1.1	-0.3	0.5	1.1
Total imports	2.5	0.3	2.7	-1.9	-2.0	-1.0	3.6	-2.0	-1.0	3.9
Traditional goods	1.7	3.1	-4.5	4.7	-1.2	-0.5	2.5	1.8	-3.2	1.6
Crude oil	-51.4	0.2	-73.3	-63.8	702.0	-0.2	-42.8	-3.8	-4	56.7
Ships and oil platforms	17.5	-49.6	95.1	-39.8	-21.3	-47.8	42.8	-71.4	157.1	76.8
Services	2.6	5.2	3.1	-1.7	-0.8	6.5	3.0	-1.7	-1.8	1.7
Gross domestic product	2.3	1.4	0.5	-0.6	0.7	0.3	0.3	0.3	1.0	0.2
Mainland Norway (market prices)	1.8	1.0	0.0	0.5	0.2	-0.2	0.5	0.5	0.2	0.2
Petroleum activities and ocean transport	4.4	3.7	2.7	-5.4	3.1	2.7	-0.6	-0.3	4.7	0.4
Mainland Norway (basic prices)	2.1	1.3	0.6	0.3	0.2	-0.2	1.0	0.4	0.0	0.4
Mainland Norway ex. general government	2.4	1.3	0.9	0.3	0.1	-0.4	1.2	0.4	-0.1	0.4
Manufacturing and mining	-2.6	-1.2	-0.7	-2.4	-0.5	-0.9	0.8	0.6	-1.8	0.0
Production of other goods	6.2	-3.7	4.9	1.9	0.1	-3.5	-0.5	-2.4	0.3	3.5
Service industries	3.1	3.0	0.6	0.7	0.3	0.4	1.7	0.8	0.3	-0.1
General government	0.9	1.2	-0.4	0.3	0.6	0.4	-0.1	0.4	0.4	0.5
Correction items	0.0	-1.3	-4.3	1.6	0.2	-0.2	-3.0	1.5	1.4	-1.3

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product. Price indices

	Unadjusted		Seasonally adjusted							
	2000	2001	00.1	00.2	00.3	00.4	01.1	01.2	01.3	01.4
1997=100										
Final consumption exp. of households and NPISHs	107.9	110.5	106.1	107.6	108.6	109.3	109.4	111.2	110.7	111.2
Final consumption exp. of general government	114.2	122.2	111.1	113.2	115.7	116.8	119.6	120.5	121.7	126.9
Gross fixed capital formation	111.4	117.3	107.2	110.8	112.9	115.3	116.8	117.2	117.8	117.6
Mainland Norway	111.2	116.2	108.4	110.7	112.2	113.3	116.3	115.8	116.0	117.0
Final domestic use of goods and services	110.0	114.4	109.0	110.0	109.1	111.3	115.4	114.8	112.5	115.7
Final demand from Mainland Norway	110.0	114.4	107.7	109.5	111.0	111.8	113.1	114.3	114.3	116.0
Total exports	139.9	136.2	126.6	135.2	147.6	149.8	141.2	143.5	136.7	123.3
Traditional goods	115.1	113.0	109.9	115.2	116.6	118.8	116.4	114.6	111.9	108.1
Total use of goods and services	119.1	121.3	114.3	117.5	120.7	123.5	123.6	123.8	120.2	118.1
Total imports	108.6	110.4	104.4	107.9	110.2	111.7	113.1	112.2	109.0	107.8
Traditional goods	105.1	106.3	103.5	103.5	105.6	107.2	110.1	108.3	104.1	103.2
Gross domestic product	122.7	125.0	117.7	120.8	124.3	127.4	127.2	127.8	123.9	121.7
Mainland Norway (market prices)	110.8	115.3	108.3	110.5	111.0	113.1	114.0	114.5	114.9	117.7
Percentage volume change from previous period										
Final consumption exp. of households and NPISHs	3.1	2.5	0.6	1.5	0.9	0.6	0.1	1.6	-0.4	0.4
Final consumption exp. of general government	4.9	7.0	0.9	1.9	2.2	0.9	2.4	0.8	1.0	4.3
Gross fixed capital formation	5.5	5.3	-0.4	3.4	2.0	2.1	1.3	0.3	0.5	-0.2
Mainland Norway	4.9	4.5	0.4	2.1	1.4	1.0	2.6	-0.4	0.2	0.8
Final domestic use of goods and services	3.9	4.0	1.9	0.9	-0.9	2.0	3.7	-0.5	-2.0	2.8
Final demand from Mainland Norway	3.9	4.0	0.6	1.7	1.3	0.8	1.1	1.0	0.0	1.5
Total exports	38.5	-2.6	11.2	6.8	9.2	1.5	-5.7	1.6	-4.8	-9.8
Traditional goods	13.8	-1.9	5.6	4.8	1.2	2.0	-2.0	-1.6	-2.3	-3.4
Total use of goods and services	14.1	1.9	4.7	2.8	2.8	2.2	0.1	0.2	-2.9	-1.7
Total imports	7.5	1.6	1.6	3.4	2.1	1.3	1.3	-0.8	-2.9	-1.1
Traditional goods	6.0	1.1	2.3	0.1	2.0	1.4	2.8	-1.7	-3.9	-0.9
Gross domestic product	16.3	1.9	5.7	2.6	2.9	2.5	-0.1	0.4	-3.0	-1.8
Mainland Norway (market prices)	3.7	4.0	0.1	2.0	0.4	1.9	0.7	0.5	0.3	2.4

Source: Statistics Norway.

Technical comments on the quarterly figures

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.

Base year and chain linking of the data: In the quarterly national accounts (QNA) all volume measures are currently calculated at constant 1997 prices using weights from that year. The choice of base year influences the constant price figures and thus the annual rates of change in volume (growth rates). For the sake of comparison, all tables present growth rates with 1997 as the base year (common year of recalculation). The recalculation of prices is carried out at the sectoral level of the quarterly national accounts.

Revision of national accounts figures

Statistics Norway is in the process of revising national accounts figures. The revision is less extensive than the main revision that was carried out in the mid-1990s. The main purpose of the current revision is to incorporate new information about developments in service industries for the last half of the 1990s. Several divisions of Statistics Norway are participating in the revision by providing quality assurance and preparing the underlying data for the national accounts.

Since 1995 Statistics Norway has published new structural statistics for several industries. Changes in the statistics for the construction industry, distributive trades, business services and transport are so extensive that this information cannot be incorporated on a regular basis in the national accounts. In the work on the revision of the figures, a coordinated and concentrated effort is being made to use the new statistics with a view to improving the national accounts industry figures for production, value added, labour costs, employment, etc.

Other new statistics are also available for recent years and are being used in the revision work. Some examples are

profit margin surveys for 1996 and 1998 and new accounts statistics for private non-financial enterprises for 1999. New price indices (e.g. producer prices for capital goods and export and import prices) will be used for constant price estimates in the national accounts.

The revision also includes the incorporation of new classifications for consumption in the household sector, non-profit organizations and the general government sector. The new classifications are based on international recommendations. Other classifications in the national accounts will remain virtually unchanged.

There are no new statistical sources for the years prior to 1995 that were not used in the main revision. In order to avoid breaks in numerical series around 1995, the national accounts must be revised at current and constant prices also for the first half of the 1990s. The results of the revision of the figures will be published in June 2002, including the publication of new final figures for real accounts and institutional accounts for the years 1991-1999 and preliminary figures for 2000 and 2001.

CPI adjusted for tax changes and excluding energy products

Per Espen Lilleås

In 2001, Statistics Norway published three new indicators derived from the Consumer Price Index (CPI). The publishing of these indicators was partially inspired by the mandate given to Norway's central bank, Norges Bank, to define monetary policy in relation to an inflation target. The growth in the CPI All-item Index is not necessarily the most relevant and meaningful measure. CPI adjusted for certain factors, for example changes in indirect taxes, can give essential additional information about the more general movements of price growth. This article provides documentation of which adjustments are made in the three derived CPI series, the grounds for carrying out these derivations as well as the assumptions that the adjustments are built upon.

Introduction

The Consumer Price Index (CPI) is an economic measure derived from prices on a selected sample of goods and services. Occasionally the price development on a limited number of goods will completely dominate CPI development and thereby impair the indexes' informational value concerning the more general price development. This happened in 1999 and 2000 when there was a particularly steep price increases on oil related products in addition to considerable changes in electricity prices. These changes contributed to the decision by Statistics Norway in the fall of 2000 to publish a Consumer Price Index excluding energy goods (CPI-AE).

On March 29, 2001, Norges Bank received a new mandate for monetary policy, where the operational target is annual growth in consumer prices at 2.5 per cent over time. The regulations also specify some effects related to price growth whose influence must be discounted when the central bank assesses the monetary policy. As groundwork for their annual assessment of the results for monetary policy, the central bank will emphasise the development of an indicator for consumer price growth that has been corrected for changes in taxes and energy prices, see Norges Bank (2001).

On October 10, 2001, Statistics Norway published, one series for consumer price growth adjusted for real changes in taxes (CPI-AT) and another series in which the consumer price growth is adjusted for both real changes in taxes and energy prices (CPI-ATE). In this paper's first section, the relationship between the

monetary policy regulations and the Statistics Norway adjusted series is explained. In the second section, the principles behind the removal of tax change effects in CPI-AT are discussed. The approach to handle energy goods in CPI-AE is described in the third section. The fourth section explains how the real effects from tax changes and energy prices are incorporated into the indicator CPI-ATE. Finally, the paper's conclusion gives a summary of how CPI and the derived indicators have developed in the time up to October 2001.

New regulations for monetary policy

In the spring 2001, Norges Bank was given new guidelines for the monetary policy. In the regulations presented March 29th, the central bank was instructed to apply the instruments of monetary policy to establish stable and low inflation. The operational target is a annual growth in consumer prices that over time is near 2.5 per cent. There are however some circumstances which the central bank is not to incorporate into their monetary policy decisions:

"In general, the direct effects on consumer prices resulting from changes in interest rates, taxes, excise duties and extraordinary, temporary disturbances shall not be taken into account."

Ministry of Finance (2001).

The regulations therefore go a long way towards defining a basis for a separate indicator that will be a guide for the exercise of monetary policy. As such, this indicator can be used to further the monetary policy's ability to fulfil the goals of the operational target. Nevertheless the wording 'extraordinary, temporary disturbances' gives significant room for interpreting which specific factors should be adjusted for in the formulated consumer price growth, and also how one should measure such direct effects. Even how those effects are handled in relation to changes in interest

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rate levels and taxes and excise duties, are far from obvious.

In the first of Norges Bank's inflation reports after the new regulations were established, the bank presented their interpretations of which direct effects the consumer price growth should be adjusted for. With reference to preliminary analysis, the bank estimated that changes in interest rates would normally have a negligible direct effect on CPI growth. This lack of effect is connected to the fact that interest does not enter directly into the housing cost component nor other components in the Norwegian Consumer Price Index. On the other hand, the central bank does want to adjust for the direct effects of changes in energy prices. In the last years, large changes in the energy prices have made it complicated to assess general price growth tendencies. Lastly, the bank decided that they would adjust for the direct effects on the Consumer Price Index due to tax changes.

There is no steadfast answer to how one should distinguish between special and general price changes. One objection to permanently adjusting for the direct effects of energy price changes is that not all of these changes can be regarded as of 'extraordinary, temporary' character. A simple interpretation of the regulations is that it does not give room to remove any other price effects on a permanent basis than those that come from changes in interest, taxes and excise duties. However, if one looks at the variation in energy prices in relation to the average for the remaining goods and services in CPI in the last two years, one can reasonably say that the development of these prices is of 'extraordinary, temporary' character.

After the alterations to the monetary policy, Statistics Norway developed an indicator for the Consumer Price Index purged of the direct effect of real tax changes (CPI-AT). The adjustments that are made in the indicator CPI-AT were then combined with the earlier derived CPI-AE into one indicator where the Consumer Price Index is accordingly adjusted for real changes in both taxes and energy prices.

In the data on which the Consumer Price Index is based there is no explicit information on taxes. Calculation of the effects from tax changes on CPI is built therefore upon a line of assumptions.

Taxes and Duties in the Consumer Price Index

The regulations state that all direct effects on the consumer prices by tax changes should be removed from the monetary policy's consumer price measure. In this case Statistics Norway interprets direct effects as real changes in taxes and duties which are directly added to consumer goods and services; not tax and duty changes that first have an effect through prices on contribution factors or other products then later are to be added onto the retail prices on consumer goods

Table 1. Taxes, which are adjusted in CPI-AT

Value added tax	Tax on Mineral products
Tax on Spirit, wine and beer	Tax on Chocolate and sweets
Tax on Tobacco	Tax on Non-alcoholic drinks
Tax on Petrol	Tax on Sugar
Tax on Autodiesel fuel	Tax on Air Travel
Tax on Marine motors	Tax on Tapes
Consumer tax on electricity	Tax on Radio and television materials

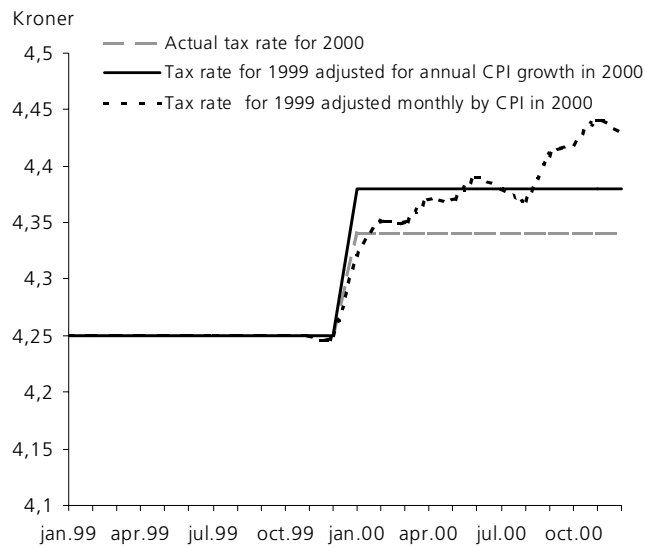
Source: Statistics Norway.

and services. This interpretation implies that large portions of the total tax and duty system are not relevant for such adjustments. Even after this clarification, there are unclear challenges connected with identifying the effects that real changes in the actual taxes and duties have on consumer prices.

The Consumer Price Index is based on a sample of goods and services that covers a broad spectrum but is far from encompassing all goods and services. The sample is designed to be a representative list of goods and services for the private consumer, and can fulfil that purpose without covering all taxable products. This means that the measured consumer price growth does not necessarily detect the effects of all types of tax and duty changes tied to consumption. A comprehensive survey of taxes and duties in connection with the development of the CPI-AT indicator shows, however, that the most significant taxable products are represented in the Consumer Price Index goods sample.

Table 1 gives an overview of which taxes are adjusted for in the CPI-AT. The CPI-AT selection criteria are defined as taxes which can be directly connected to the measured prices on goods and services in the CPI sample. In addition to the taxes that are listed in the table, tax changes on motor vehicles should also have been adjusted. The term 'motor vehicles' refers to cars and motorcycles. The excise duties on cars and motorcycles are determined from a defined list of characteristics (for example, horsepower is one determining characteristic). These characteristics are not incorporated into the current data collection process for CPI at Statistics Norway. The intention is then to change the data collection procedure such that changes in duties based on such characteristics can be adjusted for in the future. There are, however, grounds to believe that the real tax changes on motor vehicles has had little meaning for consumer price growth during the previous three years.

The Consumer Price Index is based upon retail prices where all taxes and excise duties are included in the retail price. Changes in tax rates do not imply an automatic price change on that tax-included product. The competitive market situation can cause merchants of a product to accept a reduction in profit margins instead of adding the entire tax increase onto the product price. There are also examples of the opposite

Figur 1. Adjusted tax rates for petrol

Source: Statistics Norway.

occurring when tax increases are over-compensated in the prices. In addition, early announcements of tax changes can lead to price adjustments before the new tax rate is actually in force. Unfortunately the data available for CPI gives few pieces of information to detail further such relations. For practical reasons, it has therefore been assumed in CPI estimations that a tax change leads to full and immediate effect in the retail prices.

Except for the value added tax and taxes on radio and television materials, the taxes in Table 1 are taxes with a set tax amount per item or volume, independent of retail price. That such a tax is actually unchanged implies that the tax rate must be adjusted in line with the general price increase. The taxes are generally changed only once annually, most often with effects from the beginning of the year. The inflation adjustment for excise duties is based on the annual growth in CPI. As a result, the taxes in the calculation of monthly CPI-AT are adjusted with the CPI growth such that they, for the year, grow in alignment with the yearly growth in CPI. Figure 1 shows an example of how the price adjustments for the taxes are carried out. In this example the petrol tax in 1999 is examined and during which the tax was 4,25 NOK per litre. In 2000, the tax was actually adjusted upwards to 4,34 NOK with the expectation that the annual growth in CPI would be 2,1 per cent. The expectation in the end, underestimated the actual price growth (3,1 per cent) in 2000, implying that petrol taxes actually decreased in proportion from 1999 to 2000. The dotted line in Figure 1 shows the adjusted tax that is included in the calculations of CPI-AT in the individual months of 2000. The fluctuations reflect the monthly variations in the Consumer Price Index for 2000 in relation to the average index for 1999.

The value added tax and a special excise duty on radio and television materials are value taxes that require a slightly different method of price adjustment calculation in the CPI-AT than the price independent duties. Value added taxes are a last addition into the consumer price, whereas other taxes are included in the base price. The value added amount is calculated on the basis of the adjusted, price-independent excise duties. This is to avoid the situation where real changes in the price-independent taxes influence the value added tax. The effect of real changes in the value taxes, that is to say the percentage change, is adjusted out completely in the CPI-AT.

Energy Goods

In the fall of 2000, Statistics Norway began to publish a Consumer Price Index without energy goods. This decision was based primarily upon the strong fluctuations in petrol, paraffin and heating oil prices experienced from the end of 1999 and throughout 2000. Significant swings in the electricity prices throughout earlier experiences were additional reasons for publishing this new indicator. The prices on the products that were removed represented a substantial portion of the variation in the All-item index and as a result were problematic in the illumination of the more general price development.

Technically the calculation of CPI-AE is carried out in the same manner as the calculation of the ordinary Consumer Price Index. The only difference is that the price material and the weight to energy goods are taken out. The weight of all that we have designated as energy products, amounts to 7,75 per cent of the current Consumer Price Index. In CPI-AE, the weights for the remaining goods and services of the CPI are scaled such that they continue to add up to 100 per cent. This gives the same result as if all energy goods are assigned a price development equivalent to the average of the remaining goods and services in CPI. Table 2 gives an overview of the energy goods that are removed in the calculation of CPI-AE. These energy goods are listed with their appropriate weights in the usual Consumer Price Indexes' goods and services sample.

CPI-AE has been calculated back to 1995 and is published on the index level with one decimal place together with a year-to-year growth series.

The Consumer Price Index adjusted for taxes and energy prices

The CPI-ATE indicator is built upon the main components of CPI-AE and CPI-AT. Basically the indicator uses the same calculation approach as for CPI-AT, but the price material and the weights on energy goods presented in Table 2 are removed first. When the energy products are taken out, the taxes that are added on to these products will no longer have a direct influence on these calculations. Nevertheless the changes

Table 2. Energy goods in the CPI. Weights 1999-2002, per thousand

	August 1999- July 2000	August 2000- July 2001	August 2001- July 2002
Electricity, gas and other fuels	44.4	41.9	40.2
- Electricity			
- Liquid fuels			
- Solid fuels			
- Heat energy			
Fuels, lubricants, pers.trans.equipment	36.2	34.3	35.1
- Engine oil			
- Unleaded petrol, 98 oktan, self-service			
- Petrol, 98 oktan R, self-service			
- Unleaded petrol, 95 oktan, self-service			
Autodiesel fuel	0.7	0.6	0.6
Engine oil	0.3	0.3	0.3
Petrol	1.4	1.3	1.3
Total weights of energy products	83	78.4	77.5

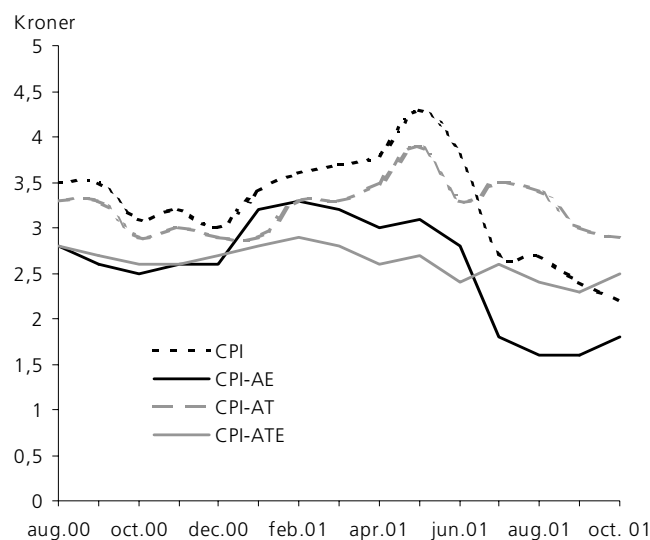
Source: Statistics Norway.

in energy taxes will indirectly influence this indicator. As it is the CPI is used as the adjustment's base, so tax changes on energy products will influence CPI. The direct effect that real tax changes have on CPI growth is equal to the difference between the year-to-year growth in CPI and the year-to-year growth in CPI-AT. Accordingly, the direct effect of price changes on energy goods is defined as the difference between the year-to-year growth in CPI and CPI-AE. Due to heavy taxes on energy goods, the total tax contribution to consumer price growth cannot be derived from the difference between CPI-AE and CPI-ATE.

The tax system is regularly adapted causing the list over which taxes are included in the calculations of CPI-AT and CPI-ATE to potentially vary over time. Revised taxes or eventual new taxes will be taken into the calculations on the condition that these can be connected to the price material in CPI. The same principle can be applied if new energy products should come into or fall out of the CPI goods sample. This means that the contents in CPI-ATE will be able to be changed without being interpreted as disruption to the series. The changes will be documented such that information on the adjustments undertaken is fully available with every publication.

The price growth up to and into 2001

Figure 2 shows the development in the different indicators from August of 1999 until October of 2001. The year-to-year growth in CPI for October 2001 was 2,2 per cent. The tax changes pulled the CPI growth in October down 0,7 percentage points, while the growth in energy prices pulled the CPI growth up 0,4 percentage points. This resulted in a year-to-year growth in CPI-ATE equal to 2,5 per cent.

Figur 2. The Consumer Price Index Year-to-year change

Source: Statistics Norway.

From the figure, it is clearly evident that much of the variation in CPI from August 2000 until October 2001 can be attributed to changes in taxes and energy prices. It should be noted that the year-to-year growth shows much less variation in CPI-ATE than in the three other series. Up to October 2001, the year-to-year growth in CPI-ATE has swung in the narrower margin of 2,3 to 2,9 per cent, while the corresponding time period for CPI is 2,2 to 4,3 per cent.

Up to October 2001, the CPI stands at 3,2 per cent over the same period from last year. CPI without energy goods has not on the other hand increased more than 2,5 per cent. Tax changes increased the price growth in the first half of 2001, but have in the last half contributed to reducing the growth in CPI. By far, most of the tax contribution can be attributed to the extensive changes in the value added tax effective from 1 January and then 1 July 2001. The annual growth as of October 2001 was at 2,6 per cent in CPI-ATE.

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Discussion Papers

Knut Einar Rosendahl: **Cost-effective environmental policy: Implications of induced technological change.** DP no. 314, 2002. 38 pages.

Cost-effective environmental policy generally requires that all emission sources are faced with the same tax. In this paper I discuss how the existence of induced technological change may alter this result, if at least some of the effect is external to the firm. Focusing on learning by doing effects in abatement activities, it is shown that emission sources with external learning effects should be faced with a higher tax than emission sources with only autonomous technological change. By using simple numerical simulations, it is further investigated to what degree a cost-effective climate policy differs from a free quota market, under various assumptions about learning effects, diffusion of technology and environmental targets. The results indicate that optimal taxes may be significantly higher in the industrial world than in the developing world. Moreover, the industrial world's share of global abatement may be much higher in a cost-effective solution than in a free quota market. The global cost savings of a fully flexible implementation of the Kyoto Protocol are further questioned, as potential spillover effects of technological growth in the industrial world are not internalised in the market.

Geir Haakon Bjertnæs: **Optimal Combinations of Income Tax and Subsidies for Education.** DP no. 313, 2001. 22 pages.

Nielsen and Sørensen (1997) find that progressive taxation of labour income is optimal when capital income is taxed. This paper shows that their main result still holds when introducing endogenous choice of occupation, individuals with non-pecuniary preferences for one type of occupation, and tuition fees into the model, provided the subsidy rate for tuition in the high skill occupation is not too low. However, a new result in this paper state that efficiency can be reached when labour income tax is proportional and capital income is taxed, provided that the rates of sub-

sidies for tuition are lower than the labour income tax rate.

Reprints

Lars Østby: **Why Analyzing Immigrants? Ethical and Empirical Aspects**

Reprints no. 213, 2002. 19 pages.

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Reprint from Social Indicators Research, Vol. 56, No. 2, 2001, 145-178.

Documents

Erling Røed Larsen: **Bridging the Gap between Micro and Macro: Interdependence, Contagious Beliefs and Consumer Confidence.**

Documents 2001/15. 11 pages.

The correspondence between your and my beliefs is surprisingly hard to model, yet it is of great importance to understand phenomena of interconnected behavior such as fashion and fads, diffusion of ideas, financial contagion, consumer confidence, and stock market crashes. The world faces an economic climate of faster connectivity, and channels for contagion multiply. Individuals are increasingly interrelated. Identifying the channels and understanding how they work are adamant. Understanding macro outcomes of micro interaction requires tools we do not yet have: models of semi-rational individuals acting upon signals from others and rules-of-thumb. In this article I discuss how computer simulation with simple, plausible algorithms describing consumer behavior can be used to obtain insights into the link between individ-

ual choices and aggregate outcomes. I discuss several approaches and put them together in a common framework with pointers to the relevant literature. In particular, I describe one attempt at capturing individual heuristic action rules in micro and its lessons on geometry and information penetration, and argue that economists need to cooperate with psychologists and sociologists when they model motivation and network structures. Modeling interdependence and belief contagion will challenge the neoclassical orthodoxy, but there are gains of relevance to be reaped from the sacrifice of algebraic rigor.

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