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Editor: Svein Gjedrem
Editorial Officers: Helle Snellingen and Janet Aagenæs
Coordinator: Beverley Wahl

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Communications regarding the Economic Bulletin should be addressed to:

Norges Bank
Information Department
P.O. Box 1179 Sentrum
N-0107 Oslo, Norway
Telex: 56 71 369 nbank n
Telefax: +47 22 316 410
Telephone: +47 22 316 000
E mail: central.bank@norges-bank.no
Internet: <http://www.norges-bank.no>

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.. Data not available
... Data not yet available
- Nil
0 } Less than half the final digit shown
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Norges Bank has announced that in future the Bank will normally make an extensive evaluation of monetary policy once a month. The Bank has published the dates for the Executive Board's main monetary policy meetings. The Bank will, as far as possible, clarify which factors we consider when decisions are taken. The purpose is to reduce the risk for market participants and avoid unnecessary speculation.

Norges Bank sets the interest rates on banks' loans and deposits in the central bank and thereby influences the level of interest rates in Norway. The objective of monetary policy, as stipulated by the authorities, is stability in the krone exchange rate against European currencies. Since the beginning of the year Norges Bank has interpreted the concept "European currencies" as the euro. However, the Bank does not have instruments to fine-tune the exchange rate. In the orientation of instruments, the Bank emphasises the fundamental conditions for exchange rate stability. Price and cost inflation must, therefore, be brought down to the corresponding aim in the euro area. At the same time, monetary policy is oriented with a view to avoiding deflationary recessions, as this would undermine confidence in the krone.

Norges Bank presents its evaluations of economic developments in the Inflation Report. We use a technical assumption concerning future interest rate developments, which is primarily based on market expectations, as indicated by forward rates. The projections indicate a path for the Norwegian economy given that interest rates move in line with these expectations. If the projections show balanced economic developments, they may support current interest rate expectations.

However, if the projections show an abrupt turnaround in the economy, with low and falling price and cost inflation, market participants may have grounds for revising their interest rate expectations. In such a situation, it would be natural for Norges Bank to reduce interest rates more rapidly than assumed in the projections. Similarly, a reduction in interest rates may be postponed if the projections show relatively high price and cost inflation in the years ahead.

Norges Bank seeks to avoid undue uncertainty concerning interest rate determination by presenting its evaluations and projections in inflation reports and other documents. The Bank's analysis is based on assumptions concerning the exchange rate, fiscal policy, international developments, oil prices and a number of other variables. Any significant deviations from these assumptions will lead to developments that differ from our current projections. The same may apply if it should become clear that the historical relationships underlying the analysis have changed. In its conduct of monetary policy, Norges Bank must take into account the effects of any deviations from the assumptions. This may in turn lead to interest rate developments that are not in line with market expectations.

Market participants' expectations form the basis for their activity in money and foreign exchange markets. However, Norges Bank cannot be bound by market expectations, but must base monetary policy measures on its professional assessment of the outlook for the economy. In its analyses and statements, the Bank will seek to explain the background for its decisions.

Svein Gjedrem

NORGES BANK'S INFLATION REPORT

Pursuant to the Norges Bank Act, the central bank shall be the executive and advisory body for monetary, credit and exchange rate policy. The projections in the Inflation Report provide a basis for the Bank's conduct of monetary policy. The monetary policy conducted by Norges Bank shall be aimed at maintaining a stable krone exchange rate against European currencies. There are two fundamental conditions that must be fulfilled to achieve this. First, price and cost inflation must over time not exceed the corresponding aim for inflation in the euro area. Second, monetary policy must not generate deflation through a recession.

The Inflation Report provides a survey of developments in prices and factors that influence price and cost inflation. It contains an assessment of the outlook for the Norwegian economy and Norges Bank's evaluation of the outlook for price inflation for the next two years. The December Inflation Report includes a longer time horizon and highlights the challenges to the Norwegian economy over a period of 4-5 years. The Governor summarises Norges Bank's assessment in the leader.

1 SUMMARY

2 RECENT DEVELOPMENTS

- 2.1 Price and wage developments
- 2.2 Interest rates, the exchange rate and monetary conditions
- 2.3 The cyclical situation

3 NORGES BANK'S INFLATION PROJECTIONS

- 3.1 The inflation outlook the next two years
- 3.2 Inflation expectations
- 3.3 The risks to the inflation outlook

Boxes:

- *The effect of higher oil prices on consumer price inflation*
- *Reduced uncertainty concerning the exchange rate*

4 ECONOMIC DEVELOPMENTS

- 4.1 Main features
- 4.2 The international environment and the balance of payments
- 4.3 Domestic demand
- 4.4 The labour market

Box:

- *House prices*

The cut-off date for the Inflation Report was
16 June 1999

1 SUMMARY

Norges Bank projects that consumer price inflation will gradually slow and in the course of next year approach the inflation rate aimed at by the euro area. The annual rise in consumer prices is projected at 2¼% in 1999, 2% in 2000, and 1¾% in 2001. The projections for 2000 and 2001 have been revised upwards by a quarter percentage point compared with the March Inflation Report, reflecting a moderate upward adjustment of wage growth the next two years and slightly higher import prices. The underlying rise in prices, excluding changes in electricity prices and indirect taxes, is expected to increase by 0.1 percentage point more than the consumer price index this year. For subsequent years, underlying price inflation is expected to shadow the overall rise in consumer prices.

Growth in the Norwegian economy is now slowing, with clear evidence of a contraction in business fixed investment, primarily in manufacturing and the petroleum sector. Low product prices, high pay increases and weak productivity growth have squeezed profits in many enterprises. Mainland business investment is expected to continue to fall, and employment in manufacturing and the construction industry is declining.

So far this year, however, house prices and household consumption have exhibited a sharp rise. Furthermore, there are signs of continued growth in the local government sector. Pressures in sectors that are not exposed to international competition are still substantial. On balance, the estimates for growth in domestic demand have been revised upwards somewhat compared with the March report. Mainland GDP growth is estimated at ¾% in 1999, ¼% in 2000 and 1¼% in 2001. The turnaround in the labour market is expected to be moderate, with unemployment projected to approach the 1996 level in 2001.

The scale of the turnaround in the economy is uncertain. Continued high growth in domestic demand may intensify pressures in parts of the labour market. This may result in stronger inflationary impulses and higher wage growth than indicated by our current estimates. Import prices may also rise by a greater margin than expected if the world economy rapidly picks up again. On the other hand, the turnaround in the business sector may be more pronounced than expected. If prices for Norwegian export goods remain low, continued weak profitability in the enterprise sector may amplify the decline in investment and increase labour shedding.

As in previous reports, the projections in this report are based on the technical assumption that interest rates remain

unchanged over the next six months and then decline in line with market expectations, as measured by forward rates. It is assumed that the krone exchange rate will remain stable against European currencies.

2 RECENT DEVELOPMENTS

Chart 2.1 *Consumer prices (CPI). Total and excluding indirect taxes and electricity prices. 12-month rise. Per cent*

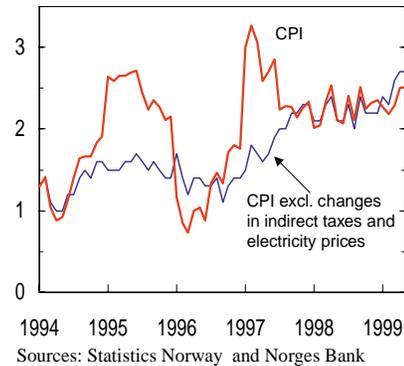


Chart 2.2 *Consumer prices, all items and by supplier sector. 12-month rise. Per cent*

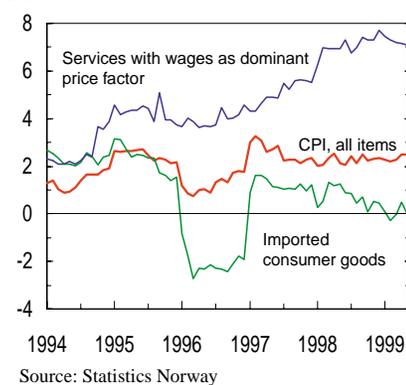
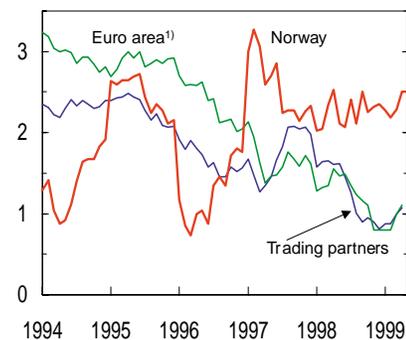


Chart 2.3 *Consumer prices in Norway and abroad. 12-month rise. Per cent*



¹⁾ Price rise in euro countries measured by the harmonised index of consumer prices.

Sources: Statistics Norway, Eurostat and the OECD

2.1 Price and wage developments

Price inflation in line with projections

In recent months price inflation has edged up, approximately in line with projections in the March Inflation Report. In May, the year-on-year rise in the consumer price index was 2.5%, see Chart 2.1. Electricity prices have continued to fall. The underlying rise in prices, excluding changes in electricity prices and indirect taxes, has been higher than the rise in the consumer price index since the beginning of the year. In May, the underlying rise in prices was 2.7%.

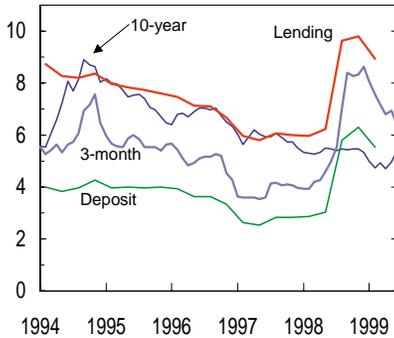
Service prices continue to push up price inflation, primarily reflecting the fairly sharp rise in the sub-index for house rents in March. Other service prices are still increasing, albeit at a slightly slower pace in recent months (Chart 2.2).

The contribution from domestically produced goods has also been slightly higher since April. Petrol prices have risen at a faster pace than the rise in oil prices would imply, reflecting higher margins. The year-on-year rise in prices for imported consumer goods remained unchanged in May.

The rise in prices among Norway's traditional trading partners was 1.1% in April (Chart 2.3) and the rise in prices in euro countries was also 1.1% in April, measured by the Harmonised Index of Consumer Prices (HICP). Price inflation in euro countries has edged up through the spring, primarily as a result of higher energy prices. The HICP showed a rise in prices in Norway of 2.2% in May. The planned common broadening of the coverage of the HICP is expected to bring price inflation in Norway, measured by this index, to the level of the normal CPI. The broadening of the coverage will probably not influence HICP inflation in euro countries.

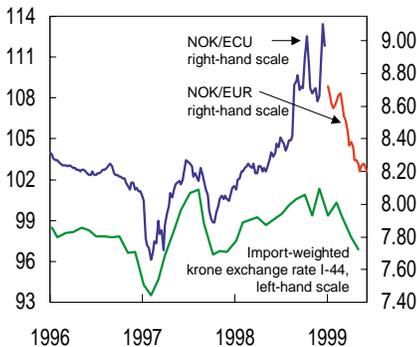
The wage settlements appear to have resulted in lower wage growth than projected in the March Inflation Report. The negotiations between the main employees' and employers' organisations gave a pay increase of NOK 1.20 to employees with an income of less than 95% of the average industrial worker's pay. This will contribute about 0.3 percentage point to total annual wage growth, which comes in addition to a carry-over of about 3%. In distributive trades, the contribution from the pay increases to annual wage growth is about 1 percentage point. This sector had a wage carry-over into 1999 of about 2%. Negotiations in the public sector also resulted in moderate pay increases. The pay increase in the local government sector will not be effective until December of this year, and will thus have little effect on wage growth in 1999. The

Chart 2.4 Interest rate movements in Norway. Banks' average deposit and lending rates. 3-month Euro-krone interest rate and 10-year government bond yield



Source: Norges Bank

Chart 2.5 The NOK/ECU and NOK/EUR exchange rates and import-weighted krone exchange rate against 44 countries (January 1995=100)



Sources: Norges Bank and Datastream

substantial carry-over of 4½% implies, however, relatively high annual wage growth in the local government sector.

2.2 Interest rates, the exchange rate and monetary conditions

Short rates down and stronger krone exchange rate

Since the March Inflation Report Norges Bank has reduced its key rates by 1 percentage point. Since the beginning of the year Norges Bank has reduced key rates on four occasions by a total of 2 percentage points. The European Central Bank has lowered its interest rate on the main refinancing operations by half a percentage point in this period.

The three-month money market rate has fallen by 0.4 percentage point since the March report (Chart 2.4) with the nominal rate down to 6.4% on 16 June. Developments in the market for FRAs (forward rate agreements) indicate that market expectations of a sharp drop in interest rates this year have subsided compared with three months ago. Implied forward rates are also higher than in March.

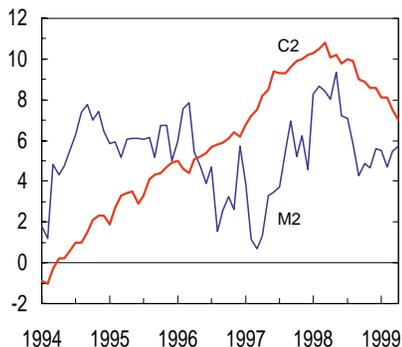
The differential between three-month rates for NOK and the euro was 3.7 percentage points on 16 June. It appears that market participants do not expect the interest rate differential against euro countries to narrow as quickly as expected in March.

In the bond market, yields fell in the first half of April. The yield on ten-year government bonds was 4.7% in mid-April. Since the beginning of May bond yields have risen substantially, and the ten-year yield was 5.4% on 16 June. The increase since May reflects higher bond yields internationally, but the differential between yields on Norwegian and German ten-year government bonds has widened somewhat and is now about 1.0 percentage point. However, this differential is influenced by the considerably higher level of short-term rates in Norway compared with Germany. The differential between forward rates ten years ahead, which are not influenced by this, is about half a percentage point. The price expectations implied by the forward rate curve are discussed further in section 3.2.

The krone exchange rate against the euro has appreciated further since the March report, from about NOK 8.50 in mid-March to a little less than 8.20 in mid-June (Chart 2.5). The appreciation of the krone reflects the depreciation of the euro against USD and the rise in oil prices of USD 3 in the same period.

Whereas the krone appreciated against the euro and the Swedish krona since the March report, it has remained virtually unchanged against pound sterling. The krone has depreciated somewhat against the US dollar and Asian currencies. Measured by the effective import-weighted exchange rate against 44 countries, the krone was 2.5% stronger in May than

Chart 2.6 *M2 and C2. 12-month rise.*
Per cent



Source: Norges Bank

in March. Euro countries have a weighting of 38% of this broadened index.

Credit growth continues to slow

Twelve-month growth in domestic credit (C2) has slowed over the last year, from a peak of almost 11% in March 1998 to 7% in April this year (Chart 2.6). The high credit growth in 1998 primarily reflected the sharp expansion in fixed investment. The growth in corporate borrowing has been substantially higher than that of households. In recent months, however, this difference has narrowed, which underlines the contraction in investment and continued robust growth in household consumption. Foreign currency loans from domestic sources showed a sharp rise in the second half of 1998. The shift towards foreign currency loans must be seen in connection with Norges Bank's interest rate increases of a total of 4.5 percentage points last year, which made such loans more attractive. In recent months, however, the growth in foreign currency loans has levelled off. Foreign currency loans were primarily raised by enterprises.

Twelve-month growth in the money supply (M2) was about 8% in the first half of 1998, but fell markedly over the summer. Since October 1998, twelve-month growth has hovered around 5%.

2.3 The cyclical situation

High consumption growth, but stagnation in manufacturing

Activity in the Norwegian economy is now slackening. However, the picture is mixed. While there is clear evidence of a turnaround in business investment, private and public consumption are still expanding.

Household consumption has picked up after exhibiting a sluggish trend towards the end of last year. Retail sales rose by 4.3% in volume terms in the first four months of this year compared with the same period one year earlier. New car sales have been low so far this year, probably reflecting relatively high interest rates and the substantial replacement of the vehicle stock in recent years. Household purchases of cars, as measured in the quarterly national accounts, increased appreciably in the first quarter, however. This follows from the technical assumption in the national accounts that passenger cars are sold by enterprises to households after three years. The increase therefore reflects the high level of car sales in 1996. This assumption implies, in isolation, a contribution of 0.4 percentage point to private consumption growth. In the accounts, the transfer of cars to households is matched by a comparable decline in enterprises' gross investment.

Households seem to be fairly optimistic with regard to their own personal finances and the country's economy. In May, Økonomisk Rapport's consumer confidence indicator increased sharply and is now close to the level prevailing before the increases in interest rates last summer.

House prices rose sharply in the first quarter after falling in the last half of 1998. According to ECON's figures, prices for resale homes rose by 6% compared with the same quarter one year earlier, whereas figures from Statistics Norway showed a rise of close to 8% in the same period. Figures from Exact and OBOS show that house prices in Oslo continued to rise in April and May. Developments in house prices are discussed in a separate box.

The main factor behind the turnaround in the economy is the contraction in investment. The second-quarter investment intentions survey for manufacturing industry indicates a sharp fall in investment in 1999 and next year. Substantial inventories in a number of manufacturing sectors and slumping new orders further underline the weak trend in manufacturing investment this year. This is supported by the pronounced fall in imports of inputs and machinery.

Housing starts appeared to be very low in January and February. It is difficult to interpret these figures, however, as there is a substantial lag between actual and registered starts. Statistics Norway has suspended publication of these statistics until further notice.

Manufacturing production began to increase again in February after falling during most of the second half of 1998. The manufacturing production index increased by a seasonally adjusted 0.8% up to end-April. According to Statistics Norway's general business tendency survey for the first quarter, an increasing number of business leaders report that weaker demand and stronger competition on the domestic market are the primary factors behind the poorer production outlook.

The quarterly national accounts show that traditional merchandise exports remained virtually unchanged between the fourth quarter of 1998 and the first quarter of 1999. Export prices have shown a pronounced fall so far this year, but there have been some signs of an increase in spot prices for metals in recent months.

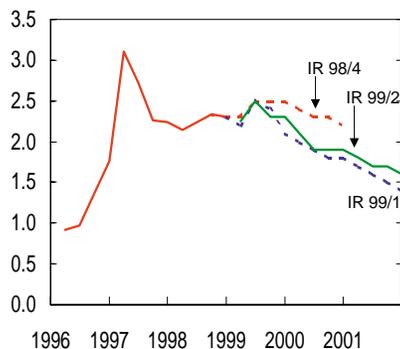
Statistics Norway's Labour Force Survey (LFS) for the first quarter confirms that employment is stagnating. Adjusted for seasonal variations, employment fell by 6 000 between the fourth quarter of 1998 and the first quarter of 1999, primarily in the manufacturing sector. On the other hand, the health and social sector has recorded a considerable increase in employment.

Registered unemployment, adjusted for seasonal variations, has remained fairly stable so far this year. According to the Directorate of Labour, the increase in placements in short-term

positions in the health and education sector has contributed to keeping unemployment at a low level. In mid-June the number of registered unemployed stood at a little more than 55 000, ie at about the same level as one year earlier. New notifications of vacancies are falling for most occupational groups, particularly in manufacturing and construction, while there is still substantial demand for labour in the public sector.

3 NORGES BANK'S INFLATION PROJECTIONS

Chart 3.1 *Current and earlier projections for consumer price inflation. 12-month rise. Per cent*



Sources: Statistics Norway and Norges Bank

3.1 The inflation outlook the next two years

Norges Bank projects price inflation at 2¼% in 1999, 2% in 2000, and 1¾% in 2001. The price projections for 2000 and 2001 have been revised upwards by a quarter percentage point compared with the March report (Chart 3.1).

The upward revision is partly due to the somewhat higher forecast for aggregate demand in 1999 and the two following years. Furthermore, import prices have contributed to the higher projection for consumer prices in the period ahead. In the March Inflation Report, the krone was expected to appreciate towards the end of the year, contributing to a marked fall in import prices next year. The appreciation has occurred earlier than assumed, which in isolation pushes up the projection for consumer price inflation next year. In addition, international producer prices are now expected to pick up at a somewhat faster pace.

The underlying rise in prices, excluding electricity prices and indirect taxes, is projected to be 0.1 percentage point higher than total consumer price inflation this year. For subsequent years, the underlying rise in consumer prices is expected to shadow the rise in the total CPI.

Table 3.1 *Technical assumptions*

	1999	2000	2001
3-month money market interest rate (annual average) ¹⁾	6.6	5.0	4.9
Exchange rate measured against euro ²⁾	8.4	8.3	8.3
Real rise in gov't spending	1¾	2	2
Oil price NOK/barrel ³⁾	105	113	113

¹⁾ Interest rates are assumed to remain unchanged for six months and then fall in line with market expectations as reflected in forward rates.

²⁾ The exchange rate is assumed to be NOK 8.3 per euro from Q3. This corresponds to approx. the average for the past three months

³⁾ The oil price is assumed to be USD 14.50 per barrel from Q3.

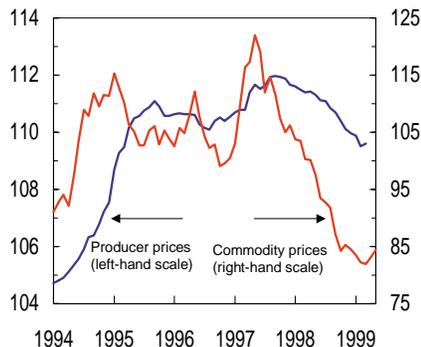
Interest rate and exchange rate assumptions

Table 3.1 shows the key technical assumptions concerning monetary and fiscal policy. Short-term interest rates are assumed to remain unchanged for a six-month period and then move in line with market expectations, as reflected in forward rates in June. This implies a narrowing of the differential against European rates from the current level of about 4 percentage points to about 1 percentage point at the end of 2001. The krone exchange rate is assumed to be NOK 8.30 against the euro, which approximately corresponds to the average exchange rate over the last three months. Measured by the effective import-weighted exchange rate, the exchange rate assumption implies an appreciation of 1¼% in 1999 and ½% in 2000.

Rise in international producer prices next year

Oil prices have shown a sharp recovery in recent months and are now at about the same level as at the beginning of last year. The rise in oil prices is primarily ascribable to the increased willingness of OPEC countries to observe produc-

Chart 3.2 *Commodity prices, all items, measured in SDRs, and trading partners' producer prices. 1990 = 100*



Sources: OECD, *The Economist* and Norges Bank

Table 3.2 *Consumer prices. Percentage change from previous year*

	1998	1999	2000
US	1.6	2	2¼
Japan	0.6	-½	-¼
Germany	0.9	¾	1½
France	0.7	¾	1¼
UK	2.7	2¼	2½
Sweden	0.4	½	1¼
Finland	1.4	1	1¾
Denmark	1.8	2	2
Norway's trading partners ¹⁾	1.3	1¼	1½
Euro area ²⁾	1.2	1	1½

¹⁾ Weighted by competitiveness weights

²⁾ Eurostat weights (country's share of euro area's consumption)

Sources: OECD and Norges Bank

tion quotas compared with the previous agreement, and some reduction in oil stocks since the end of last year.

Spot prices for aluminium also showed a sharp rise in the period, but have since edged back. The international economic environment points to a subdued rise in total demand for commodities and energy this year. It is therefore assumed that commodity prices, excluding oil, will stabilise in the short run and edge up next year. The price for crude oil is put at USD 14.50 a barrel, which is about the same as the average of the last three months.

Producer prices among trading partners have continued to fall (Chart 3.2). In the first quarter prices were 1.6% below the level one year earlier, and the effect of the fall in commodity prices has probably not been fully exhausted. Producer prices are therefore expected to decline by ¾% in 1999 and increase by ¾% next year. The rise in consumer prices is also likely to be somewhat higher as the effect of higher oil prices feeds through. Consumer price inflation among trading partners is still expected to remain below 2% throughout the projection period (Table 3.2).

Import prices are projected to fall by ¾% in 1999 and rise by ¼% next year. The estimate for import prices in NOK has been adjusted downwards for 1999 and upwards for 2000 compared with the March report. This must be seen against the background of the faster-than-expected appreciation of the krone compared with the technical assumption in March.

Gradual moderation in wage growth the next few years

Annual wage growth is projected at 4¾% in 1999, ie lower than the March estimate. The main reason for the downward adjustment is that the wage settlements resulted in somewhat lower pay increases than expected. There is some uncertainty associated with wage drift through the year. The projection for annual wage growth this year is based on wage drift in line with the level last year. Wage drift may remain high if the labour market continues to be tight, particularly in the sheltered sector of the economy.

Wage growth is still expected to edge down in 2000 and 2001, although the estimates have been revised upwards somewhat compared with the March report. The projections for wage growth in the period ahead are based on the historical information on wage formation as embodied in the RIMINI model. Labour market pressures are a significant factor for wage growth. It appears that the model overpredicts wage growth this year. Experience shows that low pay increases one year will to some extent be compensated for in subsequent years. On the basis of a neutral use of the RIMINI model, wage growth is estimated at 4% in 2000 and 3¾% in 2001.

The effect of higher oil prices on consumer price inflation

Since 1997 falling oil prices have contributed to lower price inflation among trading partners. Oil prices have increased by 50% since the beginning of 1999. Earlier, higher oil prices have often been followed by rising consumer price inflation.

Higher oil prices have a direct impact on consumer prices as a result of increased prices for petroleum products that are included in the CPI. The feed-through from higher crude oil prices to petroleum product prices varies across countries. In countries with proportional or low taxes on petroleum products, the effect will generally be greater than in countries with high volume taxes. Developments in profit margins for the production and distribution of petroleum products will also have an impact. In addition, the weighting of petroleum products in the CPI varies among countries.

An increase in oil prices will also have indirect effects on consumer prices. Oil and petroleum products represent important factor inputs in the production of different goods. Rising price inflation as a result of an increase in oil prices may also prove to be self-reinforcing.

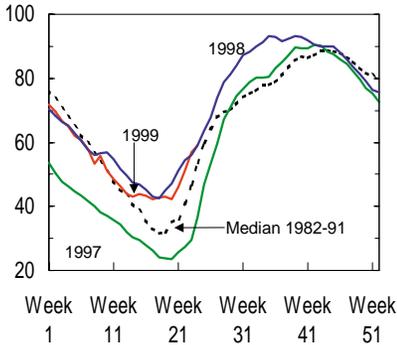
In Norway and Sweden petroleum products account for about 4% of the CPI. The increase in petroleum product prices therefore has to be fairly substantial before the total CPI shows a significant increase. In the US and the euro area this component accounts for a larger share. For example, evidence suggests that electricity prices in the US and several euro countries are heavily influenced by oil prices.

The level of taxes on petroleum products weakens the relationship between oil prices and the CPI. It is only in the US that these taxes do not constitute a substantial element in the consumer price. In European countries volume taxes account for a large share of the retail petrol price, which is the most important oil component in the CPI. As a result, the effect of changes in oil prices on the retail price is fairly modest. Total taxes account for about 75-90% of the retail price. This implies that the petrol price from the refinery must increase by 40-100% for the retail price to increase by 10%.

The rise in crude oil prices this year primarily reflects expectations that OPEC's supply-side measures will be effective, and at the same time prices for other commodities have not risen by the same margin. The Bank of England estimates that the 20% rise in oil prices in March will only have a limited impact in the UK. In the US, JP Morgan estimates that a rise in oil prices of USD 1 a barrel contributes to a 1% increase in energy prices. The rise in oil prices this spring will then have contributed to increasing the CPI in the US by about 6%.

Petrol prices in Norway have increased by about 3.9% so far this year. This alone has pushed up consumer price inflation by 0.16 percentage point. The increase partly reflects higher oil prices, but is probably also influenced by the end to the petrol price war of last year. As taxes account for about 80% of the current petrol price, a rise in the price of crude oil is likely to have a moderate effect on consumer price inflation in Norway. The effects on consumer price inflation will therefore primarily operate through indirect channels, such as a possible increase in prices for imported goods.

Chart 3.3 *Water reservoir levels.*
Weekly figures



Source: Statistics Norway

Table 3.3 *Various institutions' projections for consumer price inflation in Norway in 1999 and 2000¹⁾.*
Percentage change from previous year

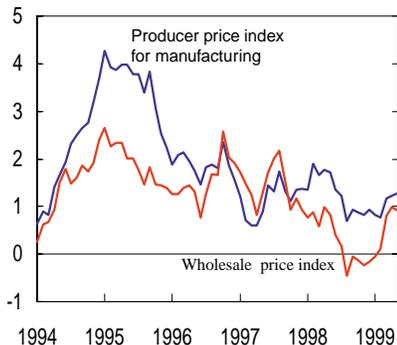
	1999	2000
Ministry of Finance	2.4	2.0
Statistics Norway	2.5	2.1
OECD ²⁾	2.6	2.3
IMF	2.3	2.5
Consensus Forecasts ³⁾		
Highest estimate	2.5	2.4
Average	2.4	2.1
Lowest estimate	2.3	2.0

1) Latest official projections from the various institutions.

2) Consumption deflator

3) June 1999

Chart 3.4 *Wholesale and producer prices. 12-month rise. Per cent*



Source: Statistics Norway

House rents push up inflation this year

The sub-index for house rents increased by 2.1% in March compared with the previous three-month period. This was the highest quarterly rise recorded since the beginning of the 1990s. The house rent index, which accounts for 13% of the CPI, was 3.1% higher in March than one year earlier. According to Statistics Norway, the main reasons behind this sharp rise in the index are higher interest expenses and the marked increase in local government taxes. Fees for local government household services rose by 9.4% in the year to January 1999. The fees increase must be seen in the light of the sharp growth in wages in the local government sector last year. In view of the marked increase in the first quarter, house rents are now expected to rise at a somewhat faster pace than the CPI this year, thereby pushing up price inflation. In the years ahead, house rents may have a dampening impact on the CPI as interest rates are assumed to fall.

Electricity prices will contribute to reducing inflation again this year

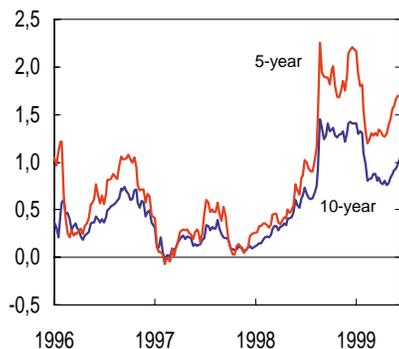
Electricity prices have fallen by a slightly greater margin than assumed in the March report. The drop in electricity prices has been fairly substantial in spite of virtually unchanged reservoir levels compared with one year earlier (Chart 3.3). It appears that the price effects of increased competition in the power market have been stronger than expected. Electricity prices will probably contribute to reducing consumer price inflation by an estimated 0.1 percentage point this year, but the contribution is slightly weaker than last year. Towards the end of 1999 and later in the projection period electricity prices are not projected to make any substantial contribution to the CPI.

3.2 Inflation expectations

Consensus Forecast's May projections for the Norwegian economy show that a selection of market observers expect consumer prices to rise by an average 2.4% in 1999 and 2.1% in 2000 (Table 3.3). The forecasts have been revised downwards since March, but are still slightly higher than Norges Bank's projections. The same observers expect a somewhat less pronounced turnaround in the economy than indicated by our projections. The average estimate for GDP growth in the mainland economy is 0.9% in 2000.

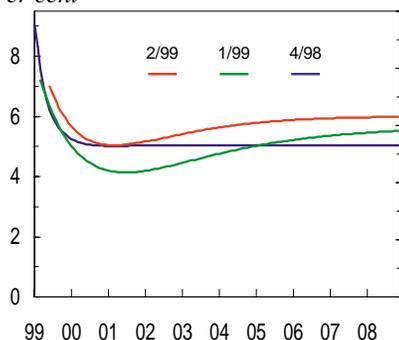
Producer and wholesale price developments can provide an indication of the future rise in consumer prices. Producer prices reflect the low level of commodity prices. Producer prices in manufacturing rose by 1.3% in May compared with one year earlier (Chart 3.4). The wholesale price index has edged up in recent months, albeit moderately. In May these prices were 0.9% higher than in the same month one year earlier.

Chart 3.5 Yield differential, NOK - DEM, for 5- and 10-year government bonds. Effective yields. Weekly figures (Week 1 1996 - Week 22 1999)



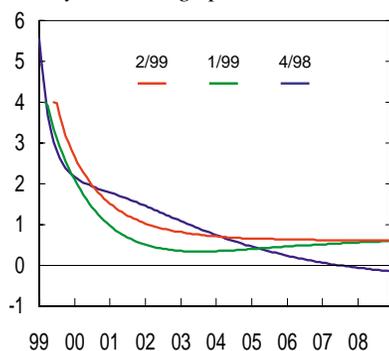
Source: Norges Bank

Chart 3.6 Implied Norwegian forward rates. Expected short-term rates. Per cent



Source: Norges Bank

Chart 3.7 Differential between expected short-term rate in Norway and Germany. Percentage points



Source: Norges Bank

Information about market participants' price and interest rate expectations is also provided by the yield curve in money and bond markets. Observed interest rates cannot, however, be directly interpreted as expected interest rates because the yield on a ten-year bond depends on expected short rates during the entire ten-year period until the bond matures. Chart 3.5 shows the yield differential between Norwegian and German ten-year government bonds. The relatively wide differential the past year primarily reflects the substantial difference between short rates in Norway and Germany.

This effect is eliminated by calculating implied forward rates. The forward rate curve in Chart 3.6 is to some extent an estimate of expected developments in short-term rates. The chart shows that forward rates have risen since the March report. The increase in forward rates the next few years probably reflects expectations of further interest rate reductions at a later stage than previously assumed. This may point to market expectations of slightly improved prospects for the Norwegian economy in the years ahead compared with three months ago.

Chart 3.7 shows that the change in Norwegian forward rates is also reflected in a change in the forward rate differential against German rates. Compared with the March report, the interest rate differential is expected to remain higher in the years ahead. It is unlikely that a higher risk premium is behind the wider forward rate differential. The estimated volatility of the exchange rate indicates that the krone is expected to show smaller fluctuations against the euro than in the March report, (see separate box). In isolation, this implies a lower risk premium on NOK.

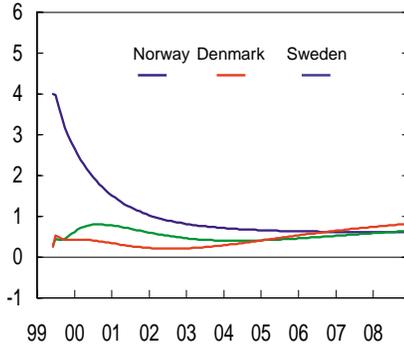
The forward rate differential against Germany is approaching the level in March in the long term. Chart 3.7 shows that the estimated forward rate differential ten years ahead is unchanged at about 0.5 percentage point. Adjusted for risk premia, this may suggest that market participants expect about the same rise in prices in Norway as in euro countries in the long term.

Chart 3.8 shows a comparison of Scandinavian forward rate differentials against Germany. The chart illustrates that interest rates in Sweden and Denmark are now lower than in Norway, but that this difference will narrow over time. In the long term Norway has about the same forward rate differential as Sweden and Denmark.

3.3 The risks to the inflation outlook

The projections in this report indicate that consumer price inflation will be reduced to 2% next year and gradually approach the inflation rate aimed at by euro countries. The estimates are deemed to represent the most likely path, given key assumptions concerning interest rates, the exchange rate and fiscal policy. However, there is considerable uncertainty associated with the estimates. Normally, the risks to the outlook

Chart 3.8 Forward rate differentials against Germany. 16 June 1999. Percentage points



Source: Norges Bank

are fairly symmetrical. This implies that the probability of a significantly different outcome is almost evenly distributed on the upside and downside. In some cases, however, the risks may be asymmetrical. This section takes a closer look at the risks that are considered to be of particular importance to price developments.

Uncertainty associated with domestic price components

The domestic components of the consumer price index are heavily influenced by wage developments. In the baseline scenario, wage growth slows through 1999 and next year, primarily reflecting reduced profitability in parts of the business sector and declining demand for labour. The scale and the timing of the turnaround are uncertain, however.

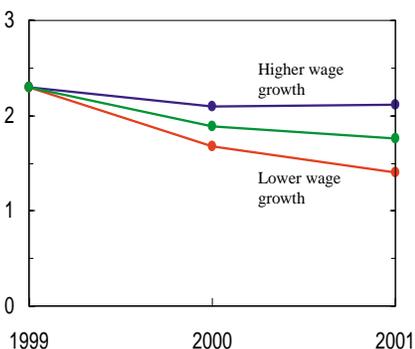
The uncertainty associated with the wage estimate is partly related to developments in domestic demand. The household saving ratio is expected to fall this year. Demographic conditions and the experience of the end-1980s suggest an unchanged or rising saving ratio. On the other hand, in recent years the household sector has accumulated considerable financial reserves that can be used to sustain some growth in consumption in spite of lower income growth. This may result in a steeper fall in the saving ratio than projected.

It has previously proved difficult to capture changes in corporate investment behaviour in response to cyclical turn-arounds. Although, historically, investment has often shown sudden and substantial shifts, this is rarely fully reflected in the estimates based on econometric models.

Developments in public expenditure are of significance to developments in the labour market and thereby wage growth. The estimates are based on the assumption of a neutral fiscal stance in the years ahead.

Chart 3.9 illustrates the effect of a 1 percentage point change in wage growth on consumer price inflation in 2000 and 2001 compared with the baseline scenario. The chart shows that this will result in a change in price inflation of 0.2 percentage point in 2000 and 0.4 percentage point in 2001.

Chart 3.9 Average annual consumer price inflation with wage growth in 2000 and 2001 one percentage point higher and lower than in the baseline scenario.

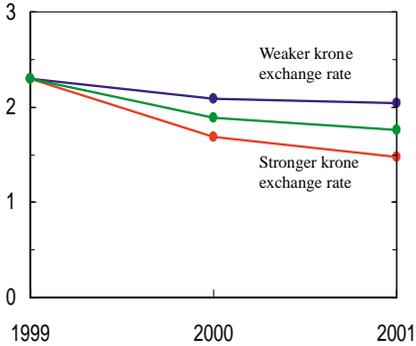


Source: Norges Bank

Uncertainty associated with import prices

In recent reports we have emphasised that the rise in prices for imported consumer goods has generally been lower than expected the last two years, and this has had a dampening effect on overall price inflation. Prices for a number of commodities are now near the trough recorded in 1986 and 1992-1993. The experience of these periods indicates that commodity prices and international producer prices may rise quickly and by a fairly substantial margin if growth in the world economy rapidly picks up again. If this occurs, the rise in Norwegian import prices

Chart 3.10 Average annual consumer price inflation with exchange rate from Q1 2000 2.5% stronger and weaker than in the baseline scenario



Source: Norges Bank

may be higher than we have assumed. We have already seen a sharp rise in oil prices and some rise in metal prices.

On the other hand, an increase in the global supply may be an important factor behind the drop in commodity prices rather than sluggish demand in the wake of the Asian crisis. The supply has increased as a result of technological advances. This may have resulted in a sustained fall in commodity prices. A turnaround in the US economy would probably also have a negative effect on commodity prices. On balance, however, the probability of a sharp rise in commodity prices, excluding oil, is considered to be greater than a comparable fall.

The appreciation of the krone in recent months will contribute to pushing down the rise in prices for imported goods in NOK through the remainder of the year. Over the last year the exchange rate has fluctuated more widely than earlier in the 1990s. This has contributed to changes in imported price inflation from one year to the next. Chart 3.10 illustrates the price effects of a 2.5% change in the exchange rate from the first quarter of 2000. A change of 2.5% in the exchange rate will change price inflation by 0.2 percentage point in 2000 and 0.3 percentage point in 2001.

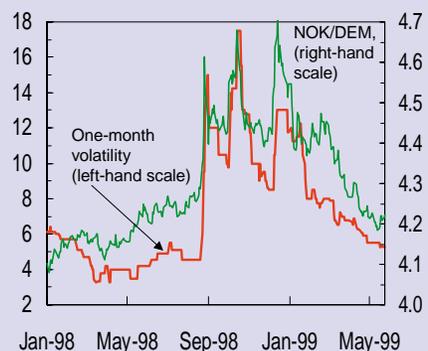
It is possible that models based on historical relationships overestimate the effect of changes in the exchange rate on import prices. When importers take into account that the exchange rate has fluctuated more widely than previously, they may allow fluctuations in the exchange rate to affect margins in the short term. In that case, short-term fluctuations in the exchange rate may have a smaller impact on consumer prices than previously.

Reduced uncertainty concerning the exchange rate

Analyses of currency option prices allow us to quantify how market participants evaluate the uncertainty associated with future exchange rate changes and any asymmetry in the uncertainty.

Both put and call options are found in the foreign exchange market. A call option in currency is a contract that confers on one party the right, but not the obligation, to buy the currency at a fixed price or at a designated future date. As payment for this right, a price must be paid to the option writer. The option writer is under the obligation to sell the currency if the buyer wishes to exercise his right to buy. A put option in currency is a contract whereby the buyer of the option has the contractual right, but not the obligation, to

Chart 1. Percentage change in one-month implied volatility and changes in NOK/DEM. A higher value denotes a weaker krone exchange rate



Sources: Citibank and Norges Bank

sell the currency at a fixed price.

The price of a currency option increases in step with the uncertainty concerning future exchange rate movements. In the market, the price of currency options is quoted in terms of their implied volatility, which reflects market participants' estimates of the uncertainty (measured by standard deviation) of the exchange rate. Chart 1 shows developments in one-month implied volatility and changes in the krone exchange rate against DEM. One-month implied volatility reflects market uncertainty concerning the exchange rate one month ahead.

As illustrated, the exchange rate covaries with implied volatility. One-month implied volatility rose sharply towards the end of August 1998, coinciding with the onset of international financial turbulence following the financial collapse in Russia. The uncertainty peaked in the second half of October 1998. Up to the end of May this year the implied volatility of the krone exchange rate showed a marked decrease.

By combining various currency options, market operators can hedge against different types of outcomes. For example, if market participants perceive a sharp depreciation of the exchange rate to be more likely than a

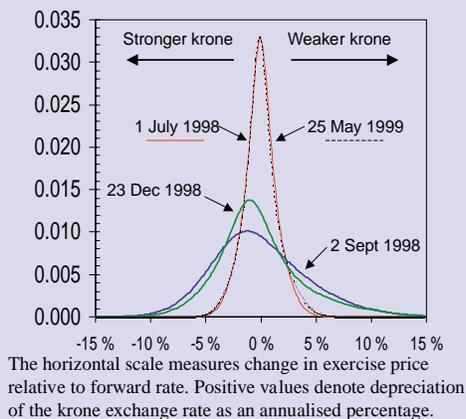
comparable appreciation, the call option tends to have a higher price than a corresponding put option. On the basis of the prices for various currency options, we can calculate the implied probability distribution for the krone exchange rate.

Chart 2 shows the estimated probability distributions for the Norwegian krone on various days in 1998 and in 1999. The vertical axis in the chart measures the density of the probability distribution. The horizontal axis measures the changes in the exchange rate in relation to the forward rate. As illustrated in the chart, the probability distribution at the beginning of July 1998 was relatively narrow and symmetrical. This indicates that market participants perceived the uncertainty as fairly limited, and the probability of an appreciation or a depreciation was considered to be virtually the same.

During the autumn of last year there was considerable turbulence in the foreign exchange market. The chart shows that the uncertainty concerning the exchange rate intensified, with the probability distribution becoming flatter. This means that market participants considered significant changes in the exchange rate to be increasingly probable. Furthermore, the probability distribution became skewed, with a long tail towards the right. This means that on 2 September and 23 December market participants believed that the probability of a substantial depreciation of the krone was greater than a comparable appreciation, measured in relation to the forward rate for NOK. This may be one of the reasons why the foreign exchange market demanded a high risk premium, measured by the interest rate differential against DEM, in order to maintain their krone positions.

So far this year, both the volatility and skewness of expectations concerning future changes in the krone exchange rate have declined substantially. We see that the probability distribution on 25 May 1999 is virtually the same as the distribution on 1 July last year. The uncertainty concerning the krone exchange rate was therefore about the same as it was before the depreciation of the krone in autumn 1998.

Chart 2. *Implied probability functions for NOK/DEM*



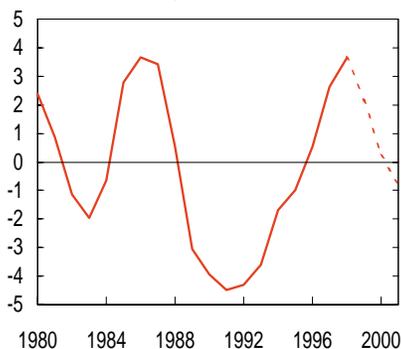
Sources: Citibank and Norges Bank

Table 4.1 Key aggregates for Norway, 1999-2001. Percentage change from previous year unless otherwise indicated

	1999	2000	2001
Mainland demand	¾	1	1½
Private	3	2	½
consumption	1¾	2¼	2
Public	-7	-3¾	2
consumption			-¼
Fixed investment			
Traditional	1¾	3¾	6½
exports	-¼	0	4
Traditional imports	1¼	3	1½
Mainland GDP	¾	¼	1¼
Employment	¼	-¾	-½
Unemployment, LFS	3½	4	4½
Consumer prices	2¼	2	3¼
Annual wages	4¾	4	3¾

Source: Norges Bank

Chart 4.1 Output gap. Differential between actual and trend GDP for mainland Norway. Per cent



Source: Norges Bank

4.1 Main features

Following six years of expansion the Norwegian economy is now experiencing a period of sluggish growth. Mainland GDP is forecast to increase by ¾% in 1999, ¼% in 2000, and 1¼% in 2001. Since the March report, the estimate for GDP growth has been adjusted upwards by half a percentage point for these three years. In 1998, mainland GDP growth was substantially higher than the trend rate of growth, as was the case towards the end of the previous upturn in the 1980s (Chart 4.1). Slower growth rates this year and next will bring the economy closely in line with the trend level. However, we do not expect a deep recession with substantial slack as was the case around 1990.

Continued solid growth in household consumption will contribute to moderating the cyclical turnaround this year. The brisk rise in house prices is contributing to sustaining the increase in housing wealth, and experience indicates that this results in higher consumption. Moreover, it would appear that households are fairly optimistic with regard to the outlook for their own financial situation, partly reflecting expectations of lower interest rates the next few years. Consumption is projected to expand by about 2% annually, in pace with the growth in household income. The saving ratio will thus remain relatively stable from 1999 to 2001 after moving down this year.

The main factor behind lower economic growth is the contraction in fixed investment, which is being driven by weaker profitability in the business sector. A sharp rise in domestic costs and low international commodity prices are having a negative impact on profitability in many manufacturing enterprises. This will be amplified by a sharp fall in petroleum investment, which is having negative spillover effects on mainland suppliers. Mainland business fixed investment is expected to fall by 8½% in 1999 and by a further 7½% in 2000.

Employment growth has stagnated this year, although there are wide variations among industries. Employment in manufacturing and construction has started to fall, and is expected to continue declining next year. Growth in public and private consumption, on the other hand, will probably continue to push up the demand for labour in the local government sector, service industries and distributive trades.

During the expansion in the 1990s the supply of labour has shown substantial growth, with labour force participation rates

at an historically high level at the end of 1998. Of the increase in employment, around two of three persons have come from the labour force. The flexibility in the supply of labour is expected to be high even when economic activity slows. For example, it is likely that many workers from Finland and Sweden will return to their home country as growth picks up in these countries. The experience of the recession around 1990 also suggests that enrolment in higher education varies in response to cyclical conditions. A moderate decline in employment in the years ahead will therefore result in a levelling off in the labour force, which will restrain the rise in unemployment. Unemployment is projected to rise moderately, from 3½% in 1999 to 4½% in 2001.

During the last years of the cyclical upturn, productivity growth has been low, particularly in manufacturing. This primarily reflected the high level of activity. Productivity growth is also assumed to be fairly low this year. In line with previous experience, productivity is expected to pick up to a more normal level again in the years ahead, which will contribute to restraining the rise in production costs and consumer prices.

4.2 The international environment and the balance of payments

The outlook for the international economy remains broadly unchanged in relation to the March report. There is evidence of some growth in production in several of the crisis-hit countries in Asia. GDP growth in the US is set to remain at the same level as last year, reflecting the brisk growth in domestic demand in the first six months. Domestic demand growth is expected to slow in the second half of 1999, which will lead to considerably slower GDP growth next year. However, there is substantial uncertainty associated with these developments. The US economy has continued to expand over the last 3-4 years without signs of higher price and cost inflation. This situation may continue although capacity constraints or lower private demand could result in a sharper reduction in growth than we have assumed.

The situation in Europe is mixed. Countries such as Ireland, Spain, Portugal and Finland are experiencing a sharp expansion, whereas sluggish trends in exports and domestic demand in Germany and Italy are restraining growth in the region this year. Domestic demand is expected to pick up in these countries next year. In spite of unexpectedly high growth in the first quarter in Japan, GDP is estimated to fall both in 1999 and 2000. Overall growth among trading partners is estimated to slow in 1999, but pick up next year.

Table 4.2 *GDP estimates. Percentage change from previous year*

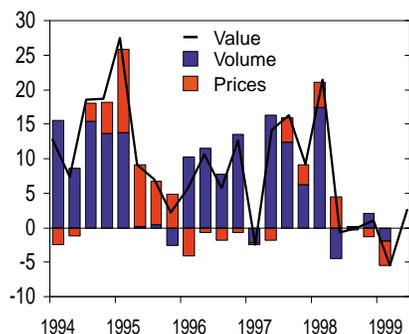
	1998	1999	2000
US	3.9	3¼	2¼
Japan	-2.8	-¼	-¾
Germany	2.3	1½	2½
France	3.2	2¼	2½
UK	2.1	¾	1 ¾
Sweden	2.6	2½	3
Finland	4.7	3¼	3½
Denmark	2.9	1½	2
Norway's trading partners ¹⁾	2.7	2	2¼
Euro area ²⁾	2.8	2	2½

¹⁾ Weighted by export weights

²⁾ Weighted by the IMF's GDP weights corrected for purchasing power

Sources: OECD and Norges Bank

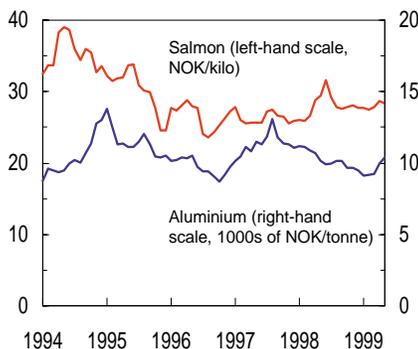
Chart 4.2 Traditional merchandise exports according to External Trade Statistics. Volume, price and value. % rise on same quarter previous year



The last observation for rise in value is average value so far in Q2 compared with the same period last year.

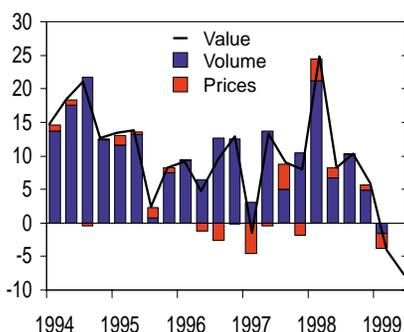
Source: Statistics Norway

Chart 4.3 Prices for aluminium and salmon. In NOK



Sources: Statistics Norway and the *Financial Times*

Chart 4.4 Traditional merchandise imports according to External Trade Statistics. Volume, price and value. % rise on same quarter previous year



The last observation for rise in value is average value so far in Q2 compared with the same period last year.

Source: Statistics Norway

Developments in recent months indicate that profitability in the Norwegian export industry is feeling the pressure of high domestic costs and low prices as a result of the contagion effects of the Asian crisis. In the year to the first quarter of 1999 the volume of traditional merchandise exports declined by 2.0% (Chart 4.2). According to Statistics Norway's general business tendency survey, new foreign orders are expected to show some improvement after a weaker-than-expected trend in the first quarter. With the prospect of slower growth among our trading partners, traditional merchandise exports will move on a sluggish trend in 1999 and 2000, with slightly weaker growth this year than projected in the March report. As international growth picks up and domestic cost inflation edges down, traditional merchandise exports are expected to show stronger growth.

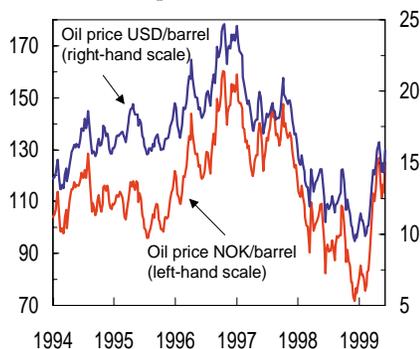
According to the quarterly national accounts, prices for traditional export goods fell by 3.5% in the year to the first quarter of 1999. The drop in prices partly reflects the sharp decline in commodity prices since August 1997. Some lag for commodity prices will influence export prices for the raw material component of exports from the mainland also in 1999. However, prices for a number of important export goods, such as aluminium, have increased since March (Chart 4.3). In view of the developments in production capacity and demand, prices are not expected to show a further rise this year, but to stabilise at the current level. The annual average for commodity prices will be slightly lower than last year. Processed export goods are therefore set to show a very moderate price rise.

On balance, prices for traditional export goods are expected to decline by 2½% in 1999, ie a slightly sharper fall in prices than projected in the March report. The levelling off in commodity prices, excluding oil, and signs of a rebound nevertheless indicate that the trough has been passed. The outlook for these prices has therefore been revised upwards in this report. Commodity prices, excluding oil, are expected to edge up next year, resulting in a more positive trend for export prices.

The value of traditional merchandise imports fell by 5.5% in the first five months of 1999 compared with the same period one year earlier. Imports of consumer goods, excluding passenger cars, continue to expand, whereas imports of typical capital goods, such as machinery and inputs, have fallen. For the year as a whole, the volume of traditional merchandise imports is expected to decline by ¼%. Imports are projected to remain virtually unchanged next year, partly reflecting the continued fall in investment. Import growth is expected to pick up from 2001.

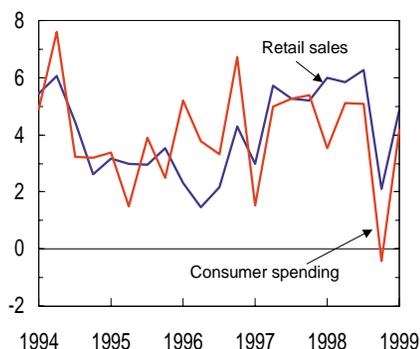
Oil prices are assumed to be USD 14.50 a barrel from the second half of this year to the end of the projection period. Norwegian production is estimated to rise by about 5% in

Chart 4.5 Oil prices in NOK and USD



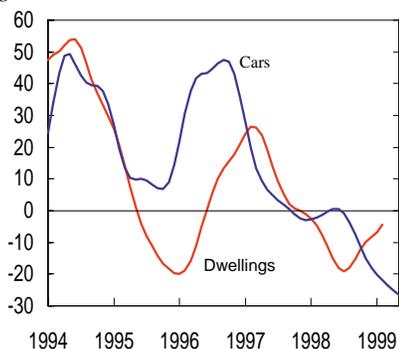
Source: Norges Bank

Chart 4.6 Consumer spending and retail sales. Per cent



Source: Statistics Norway

Chart 4.7 New car registrations and housing starts. Smoothed. 12-month growth. Per cent



Source: Statistics Norway

1999 and at a much faster pace next year. The sharp increase next year reflects the start-up of production in several large fields in the second half of 1999, which will then be producing at full capacity. The higher oil price estimate implies that the current account will show a small surplus this year. In subsequent years the rise in oil production will contribute to a further increase in the current account surplus.

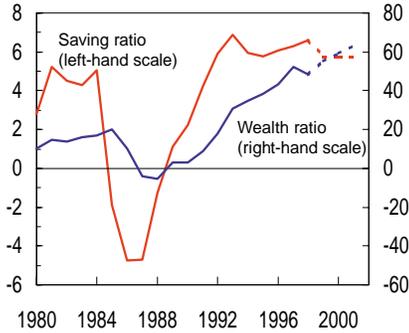
4.3 Domestic demand

Consumption contributes to moderating the cyclical downturn

Retail sales rose substantially in the first quarter after falling at the end of 1998. In the period to end-April retail sales were 4.3% higher than in the same period in 1998. However, in the first five months of 1999 new car sales declined by over 15% compared with the same period one year earlier (Chart 4.7). The low car sales probably reflect relatively high interest rates, since car purchases are often financed with short-term credit. At the same time, sales of private cars have been high in recent years, reducing the need for households to replace cars. According to the national accounts, however, household spending on cars increased sharply in the first quarter. This is because of the technical assumption in the national accounts that cars registered in the business sector are sold to households after three years. The rise in the first quarter reflects the sharp increase in sales of new cars in 1996. This accounting practice has the effect of pushing up growth in consumption by about 0.4 percentage point in 1999, with a corresponding reduction in enterprises' investment.

Household income growth appears to be somewhat lower in 1999 than previously estimated, mainly as a result of lower wage growth. In isolation, this will reduce growth in consumption. On the other hand, the estimate for house prices has been revised upwards. Experience indicates that higher house prices will push up household consumption. Growth in household financial wealth was relatively weak in 1998. Turbulence in international financial markets and interest rate increases in autumn 1998 led to a substantial fall in the market value of securities. As a percentage of disposable income, net assets declined from over 54% at end-1997 to just over 50% at end-1998. So far in 1999, the Oslo Stock Exchange all-share index has risen by over 25%, indicating that households may again record valuation gains in 1999. The consumer confidence indicator in Økonomisk Rapport shows that households are very optimistic about the outlook for their own financial situation. Against this background, the estimate for growth in private consumption has been revised upwards to 3% for the current year. The household saving ratio is estimated to fall from 6.6% in 1998 to 5¼% in 1999 (Chart 4.8).

Chart 4.8 Household saving and net financial assets. Percentage of disposable income



Sources: Statistics Norway and Norges Bank

Household income growth is projected to be moderate in 2000 and 2001. Lower wage growth and a decline in employment will depress growth in disposable income. The effect on disposable income, however, will be curbed by a decline in net debt expenses as a result of lower interest rates. Households had net interest-bearing debt, when insurance claims are excluded, of around NOK 300 billion at end-1998. Lower interest rates will thus have a positive direct effect on household income. Growth in consumption is projected at around 2% in 2000 and 2001, in line with real growth in household income. The household saving ratio is therefore expected to remain stable during these two years.

Prices for resale homes pick up again

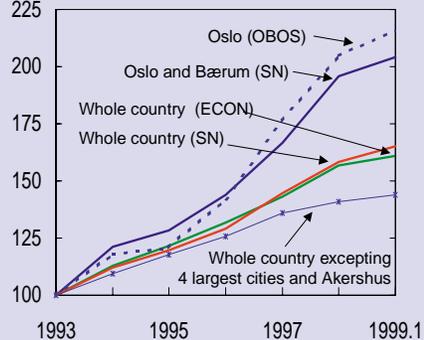
In the first quarter of 1999, resale home prices rose again after falling through the second half of 1998. The increase has been higher than expected. Figures from ECON and the Norwegian Association of Real Estate Agents indicate a 6% rise compared with the first quarter of 1998, whereas figures from Statistics Norway showed a rise of almost 8% in the same period. House price statistics for Oslo in the period to end-May show a continued rise in prices. House prices are expected to continue to rise in the second quarter, with prices increasing by an average 8% from 1998 to 1999. The reasons for the sharp rise in house prices are discussed in a separate box.

In 2000, the rise in house prices is expected to be curbed by lower household income growth. A further drop in interest rates will have the opposite effect. House prices are projected to increase by just over 2% next year and ¼% in 2001. At the end of 2001, house prices, adjusted for consumer price

House prices

Prices for resale homes have risen sharply since 1993. Following the pronounced increase in bank lending rates through 1998, resale home prices edged down in the second half of the year but have since moved up again. Preliminary figures from Statistics Norway indicate wide regional variations. Whereas house prices rose by an average 2.7% from the fourth quarter of 1998 to the first quarter of 1999, house prices increased by 4.6% in Stavanger, Bergen and Trondheim, and 3.8% in Oslo and Bærum. The price index for OBOS cooperative dwellings in Oslo showed an average rise of as much as 8% on the previous quarter. In the year to the first quarter of 1999, resale home prices rose by a total of 7.8%

Chart 1. Price indices for existing dwellings. Annual figures and Q1 1999. 1993=100



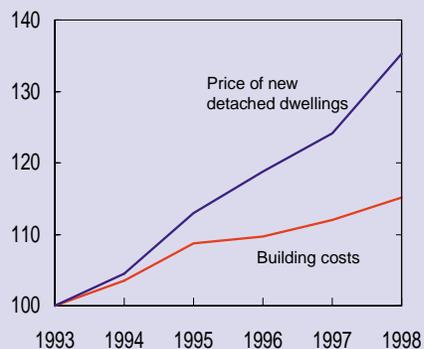
Sources: Statistics Norway, ECON, OBOS and Norges Bank

according to Statistics Norway's index, and by 6% according to ECON's price index.

The sharp rise in house prices in recent years largely reflects developments in the real economy, especially high household income growth. The wide variations in the rise in house prices in Oslo and other parts of the country indicate that migration patterns and supply-side conditions in the housing market can help to explain part of the rise in prices in the largest urban areas. The figures available do not indicate that the rise in prices is due to excessive lending growth. Household borrowing has been in line with income growth.

- Growth in household income has been high as a result of several years of sharp employment growth and substantial increases in real wages. The financial position of households is solid after many years with high savings in financial assets. As a result, the household sector is less vulnerable to interest rate increases. The strong income growth may also explain most of the growth in loans to households. The total growth in credit to the household sector was nearly on a par with the growth in disposable income both in 1997 and 1998. Total household debt as a percentage of disposable income is still at a very low level compared with the early 1990s. It would therefore appear that the rise in house prices has not been fuelled by developments in the credit market.
- In recent years migration to the largest urban areas has been substantial, increasing the demand for housing in the largest cities. Between 1993 and the first quarter of 1999 net in-migration to Oslo came to about 20 000. Net in-migration to Akershus was approximately the same during this period. Migration to the largest urban areas is probably the main factor behind the wide differences in the rise in house prices in Oslo and other parts of the country.
- Supply-side factors in the housing market account for a share of the rise in house prices. In the 1990s residential construction has been fairly subdued compared with previous years. This may be ascribable to the substantial

Chart 2. Price index for new detached dwellings and building cost index for detached dwellings. 1993=100

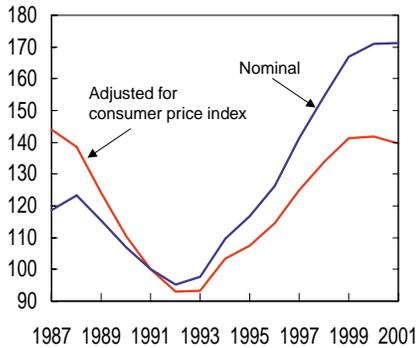


Sources: Statistics Norway and Norges Bank

pressures in the construction industry, partly as a result of the large public works projects. This is also reflected in the price index for new detached dwellings, which shows a rise of 35% between 1993 and 1998. This has increased the construction costs for new dwellings, with prices for new houses remaining substantially higher than resale home prices. The building cost index has shown a smaller rise, which may indicate higher profit margins in the construction industry. This is probably ascribable to the very low level of profit margins in the early 1990s. A shortage of sites may be one reason for the low level of housing construction, particularly in Oslo. In addition, the new Building and Planning Act has sharpened building requirements and led to delays in processing building applications. This may have amplified the pressure in the resale home market.

- The increase in interest rates last year did not curb the rise in house prices to the extent we had expected. This may be because households perceived the rise in rates in the second half of last year to be transitory. As house purchases represent a long-term investment, expectations of future interest rates will probably have a greater influence than actual interest rates. On the other hand, the estimates in this report suggest expectations of lower income growth in the years ahead, which should have a dampening impact on the rise in house prices.

Chart 4.9 Resale home prices. Nominal and adjusted for the consumer price index. 1991=100



Sources: Statistics Norway, ECON and Norges Bank

inflation, will be approximately 2½% below the peak level in 1987 (Chart 4.9).

Housing investment expected to increase in the years ahead

Housing investment dropped by 6% compared with the first quarter of 1998 and housing starts were at a very low level in the first two months of 1999. There is a large and growing lag between actual and registered starts. It is likely, however, that the low number of housing starts reflects the interest rate increases last autumn. The order backlog for dwellings increased markedly at the end of 1998, and is expected to be followed by higher starts later in 1999. Total housing investment is projected to fall by about 5% this year, with housing starts estimated at about 18 500.

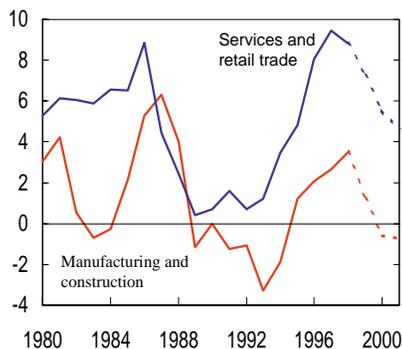
One reason for the low level of residential construction in recent years may have been limited available capacity in the construction industry. The completion of large public building projects will free up resources in the period ahead. Residential construction is also likely to be stimulated by the sharp rise in resale home prices. Housing construction is expected to pick up in the years ahead, rising to just under 20 000 dwellings in 2001. This is on a par with the average for the 1990s.

Sharp fall in business investment in 1999

Enterprises are expected to face lower earnings and higher costs in 1999 and 2000, contributing to a sharp fall in mainland fixed investment. The projected decline in investment must be viewed in connection with the strong growth in investment in the early 1990s. The investment intentions survey for the second quarter indicates a decline of over 20% in manufacturing investment. According to Statistics Norway's general business tendency survey for the first quarter, an increasing number of business leaders now report that weaker demand and intensified competition in the domestic market are the main factors for the poorer production outlook. The need for further capacity expansion has thus been eliminated. Commercial building starts have already declined, and in the first two months of the year were some 18% lower than in the same period in 1998.

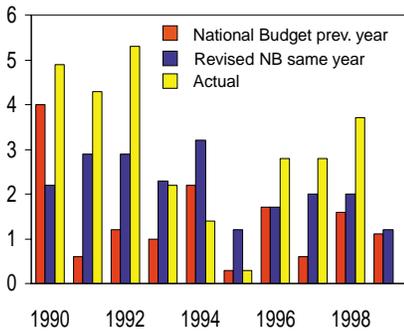
Mainland business fixed investment is estimated to fall by about 8½% this year and 7½% in 2000. This means that fixed investment as a share of value added in manufacturing and construction will be reduced to the level at the end of the 1980s (Chart 4.10). The investment rate in distributive trades and services is expected to move down towards the average for the last 20 years. The uncertainty associated with developments in the Norwegian economy over the next few years makes it difficult to estimate the scale of the decline in investment.

Chart 4.10 Net fixed investment rate. Investment less capital consumption as a percentage of value added



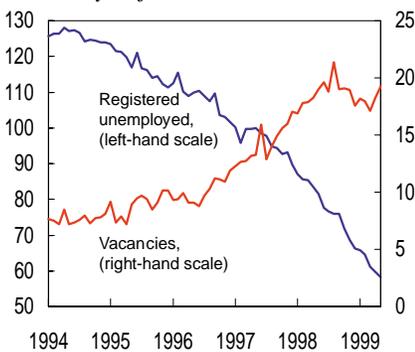
Sources: Statistics Norway and Norges Bank

Chart 4.11 Public consumption. Estimated and actual growth. Real percentage growth



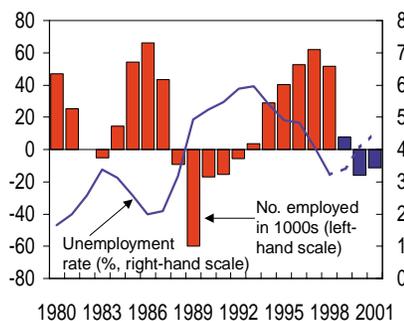
Source: Ministry of Finance

Chart 4.12 Number of registered unemployed and vacancies, in 1000s. Seasonally adjusted



Source: Directorate of Labour

Chart 4.13 Change in numbers employed from previous year. LFS unemployment rate



Sources: Statistics Norway and Norges Bank

Higher public consumption in 1999

Real underlying growth in central government budget expenditure was just under 2% in 1998, which was higher than estimated in the budget adopted in autumn 1997. Local government expenditure was also higher than estimated at the end of 1997. The high pay increases in the spring 1998 wage settlement resulted in both strong growth in direct wage expenditure and substantially higher local government pension premiums.

The Revised National Budget for 1999 entails a fiscal policy that is less tight than previously assumed. The tightening is now estimated at 0.4% of mainland GDP, measured by the non-oil, cyclically adjusted indicator net of interest payments, compared with 0.8% in the budget adopted in autumn 1998. About 0.1 percentage point of the change is due to a change in the method of calculation. Real spending growth in the budget has been revised upwards from 1¼% to 1½%.

In recent years there has been a tendency to underestimate growth in public consumption, even well into the year. In 1998, for example, growth in public consumption was revised to 3.7%, while as recently as in the National Budget for 1999 last autumn, this growth was estimated at 2.4%. Chart 4.11 compares estimates of public consumption at various times with the actual figures. Public consumption for the current year is also likely to be revised upwards. New notifications of vacancies in the health and education sector indicate strong demand for labour in the local government sector this year. If the local government sector is planning to meet the demand for municipal services based on expectations of continued strong growth in revenues, this trend may continue.

In the baseline scenario, the estimate for general government consumption in 1999 has been revised upwards to 1¼% at constant prices, while general government gross fixed investment is expected to decline by 4% from 1998 to 1999. Overall growth in general government expenditure has been revised upwards to about 1¼% in this report.

General government expenditure is projected to expand by about 2% over the next few years, on a par with trend mainland GDP growth.

4.4 The labour market

Reduced pressure in the labour market

Registered unemployment - adjusted for seasonal variations - has been relatively stable so far this year. In mid-June over 55 000 unemployed, corresponding to 2.4% of the labour force, were registered at employment offices. The public sector has accounted for a substantial share of the increase in employment this spring. According to the Directorate of Labour, this is partly attributable to increased placements in

short-term positions, particularly in the health and education sectors.

Seasonally adjusted LFS unemployment increased slightly from the fourth quarter of 1998 to the first quarter of 1999. Fewer new notifications of vacancies, particularly in technical occupations, construction and manufacturing also indicate that unemployment may increase somewhat through the year. Against this background, LFS unemployment is projected at 3½%, ie the same as in the March report. Experience shows that the labour force varies in response to cyclical conditions. A levelling off of the labour force is expected to restrain the rise in unemployment to some extent in the years ahead. Unemployment is projected to reach around 4% in 2000 and 4½% in 2001.

It was pointed out in the March report that developments in the labour market this year and next will be characterised by lower demand for labour. It now looks as though the strong growth in employment we have seen in recent years is coming to a halt. LFS figures from Statistics Norway for the first quarter show that there are signs of a slight decline in employment. Seasonally adjusted employment fell by 6 000, or 0.3%, from the fourth quarter of 1998 to the first quarter of 1999.

There are wide variations between different labour market segments, however. Whereas employment in manufacturing and construction is declining, demand for labour in service industries, particularly in health and education, remains buoyant. Overall, employment is projected to expand by ¼% in 1999. Since the level of employment at the beginning of the year was higher than in 1998, this estimate implies approximately unchanged overall employment through the year. Next year, employment is expected to fall by close to ¾%, ie the same estimate as in the previous report.

The strong growth in the labour force is tapering off. Adjusted for seasonal variations, the labour force remained roughly unchanged from the fourth quarter of 1998 to the first quarter of 1999. Following several years of strong growth in the labour force, there is probably little potential for a further increase in the supply of labour. Labour market reforms such as early retirement schemes, the competence reform and cash grants to families with small children are factors that may, in isolation, point to a reduced labour supply in the years ahead. In addition, declining demand for labour may contribute to a levelling off of the labour force over the next two years. There are many workers from other Nordic countries in the construction sector, service industries and the health sector. Lower employment growth in Norway may prompt a number of these workers to return to their home countries. All in all, we expect the labour force to increase by ½ % in 1999, or approximately 10 000, but to remain unchanged in 2000.

MAIN MACROECONOMIC AGGREGATES

	<i>NOKbn</i> <i>(1996 prices)</i>		<i>Percentage change from</i> <i>previous year, unless</i> <i>otherwise indicated</i>		
	1998	1998	1999	2000	2001
Real economy					
Private consumption	524.2	3.1	3	2	2
Public consumption	220.5	3.7	1¾	2¼	2
Total gross investment	269.0	8.1	-7½	-9¼	-¼
- Petroleum activities	74.6	25.7	-12	-25	0
- Mainland Norway	183.5	2.4	-7	-3¾	-¼
Enterprises	115.6	2.8	-8½	-7½	-2½
Dwellings	29.3	-0.6	-5¼	2¼	4¼
Gen. government	38.7	3.4	-4	2	2
Mainland demand ¹⁾	928.1	3.1	¾	1	1½
Exports	440.2	0.5	3	9	4
- Crude oil and natural gas	153.9	-3.8	4¾	18½	2¼
- Traditional goods	174.0	3.4	1¾	3¾	6½
Imports	399.9	9.1	-¼	0	4
- Traditional goods	264.3	9.6	-¼	0	4
GDP	1082.5	2.1	1¼	3	1½
- Mainland Norway	898.3	3.3	¾	¼	1¼
Labour market					
Employment		2.3	¼	-¾	-½
Labour force, LFS		1.4	¼	0	0
Unemployment, LFS		3.2	3½	4	4½
Prices and wages					
Consumer prices		2.3	2¼	2	1¾
Annual wages		6.3	4¾	4	3¾
Import prices, traditional goods		1.3	-¾	¼	1
Export prices, traditional goods		1.0	-2½	2¾	2½
Crude oil price, NOK (constant 1999 prices)		96	105	113	113
External account²⁾					
Trade surplus, NOKbn (level)		2.5	18	67	76
Current account surplus, NOKbn (level)		-16.3	1	51	62
Current account surplus, % of GDP		-1.5	0	4¼	5
Memorandum					
Household saving ratio		6.6	5¾	5¾	5¾

1) Private and public consumption and mainland gross fixed investment

2) Current prices

Sources: Statistics Norway, the Technical Reporting Committee on Income Settlements and Norges Bank

¹⁾The cut-off date for this report was 16 June.

1 SUMMARY

The central banks of Sweden, the UK, Denmark and Canada and the ECB have lowered their key rates since the March Economic Bulletin. The ECB lowered its repo rate by 50 basis points to 2.5%. The euro has weakened by close to 7% against the US dollar.

The Norwegian krone has appreciated by 3.8% to NOK 8.17 against the euro. The exchange rate has ranged between NOK 8.17 and 8.48.

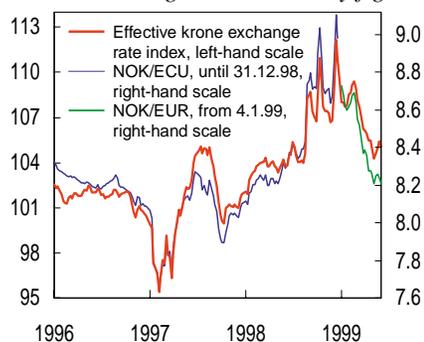
In view of the prospect of slower growth in the Norwegian economy and hence lower price and cost inflation, which are expected to improve the foundation for a stable exchange rate, Norges Bank lowered its key rates on two occasions, 23 April and 16 June, by a total of 1.0 percentage point. This has resulted in a fall in money market rates since the March report, with the money market indicator moving down by 0.5 percentage point to 7.1%. The yield curve in the money market is still declining, but is substantially flatter. At mid-June, the three-month interest rate differential against the euro was 3.7 percentage points.

Norwegian government bond yields have risen by about 0.5 percentage point on average since the March report. The yield curve in the bond market is slightly upward sloping.

Bank interest rates were reduced from the end of the fourth quarter of 1998 to the end of the first quarter of 1999. The interest margin narrowed somewhat as lending rates declined slightly more than deposit rates. Lending rates were also lowered in life insurance and mortgage companies, but were raised in state lending institutions.

Credit growth has continued to slow, to an annual rate of 7.0% in the period to end-April. Money supply growth (M2) increased from 5.5% to 5.7% from end-January to end-April.

Chart 2.1 Krone exchange rate measured by ECU/EUR and the manufacturing industry's effective krone exchange rate. A descending curve denotes a stronger krone. Weekly figures



Source: Norges Bank

Table 2.1 Transactions relating to Norges Bank's exchange market transactions¹⁾ In billions of NOK

<i>A. Norges Bank's net sales of currency to banks</i>	1998 ²⁾	1999 ³⁾
1. Spot	11	-4.8
2. Forward	0	3.7
<i>Used by banks to provide cover (offsets):</i>		
<i>B. Foreign⁴⁾</i>	10	-9.8
1. Spot	-15	-0.6
2. Forward	25	-9.3
<i>C. Norwegian sectors, non-bank⁴⁾</i>		
1. Spot	-13	-9.1
2. Forward	20	7.7
3. Increase	-18	-6.6
<i>D. Other</i>	14	16.8
<i>Memorandum item: Norges Bank's international reserves</i>		
	142	155.2 ⁵⁾

¹⁾For further details, see Table 48 in the statistical annex.

²⁾Based on figures from the Bank's statistics.

³⁾Weeks 1-21.

⁴⁾Positive figures denote foreign exchange sales from banks. Negative figures denote purchases.

⁵⁾End-May.

Source: Norges Bank

2 FOREIGN EXCHANGE AND MONEY MARKETS AND NORGES BANK'S OPERATIONS

2.1 Foreign exchange market

The krone has appreciated by 3.8% against the euro since the last report. The krone exchange rate against the euro fluctuated between NOK 8.17 (16 June) and NOK 8.48 (18 March). The krone appreciated fairly steadily to mid-May, then weakened slightly before rebounding.

The strengthening of the krone against the euro may partly be seen in conjunction with a sharp increase in oil prices in the period up to the beginning of May and a weakening of the euro against the US dollar.

Table 2.1 shows movements in banks' total foreign currency transactions in 1998 and so far in 1999. Norges Bank purchased foreign currency from banks equivalent to NOK 1.0bn this year to 4 June. These purchases must be seen in connection with the accumulation of capital in the Government Petroleum Fund. Norwegian banks have made spot currency purchases from the foreign sector equivalent to NOK 0.6bn and forward purchases from the foreign sector equivalent to NOK 9.3bn. Banks' spot currency purchases can partly be seen in connection with sales of VPS-registered bonds (bonds registered with the Norwegian Central Securities Depository) to the foreign sector, which has increased its VPS-registered bond holdings by NOK 12.4bn. The foreign sector reduced its holdings of VPS-registered equities by NOK 9.1bn.

Banks' trading with Norwegian sectors shows spot currency purchases of NOK 9.1bn and forward currency sales of NOK 7.7bn. The banks also increased their net currency claims on Norwegian customers by NOK 6.6bn.

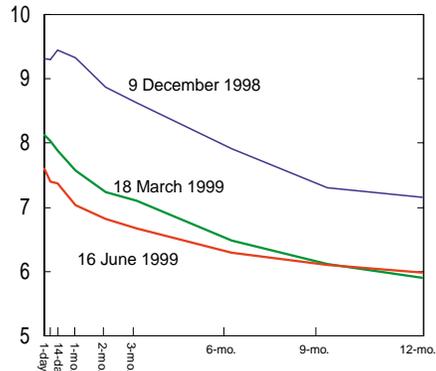
Norges Bank's international reserves amounted to the equivalent of NOK 155.2bn at end-May 1999, and the value of the Government Petroleum Fund came to NOK 167.5bn.

2.2 The money market and Norges Bank's operations

Interest rates

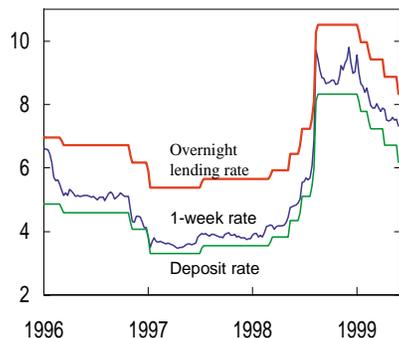
Money market rates have declined since the March report. This is in large part due to the overall reduction of 1.0 percentage point in Norges Bank's key rates on 26 April and 16 June. Norges Bank lowered its deposit and lending rates by 0.5 percentage point on both occasions in view of the prospect of slower growth in the Norwegian economy, and hence lower price and cost inflation. The deposit rate and lending rate are now 6.0% and 8.0% respectively.

Chart 2.2 Yield curves for Norway. Effective money market rates



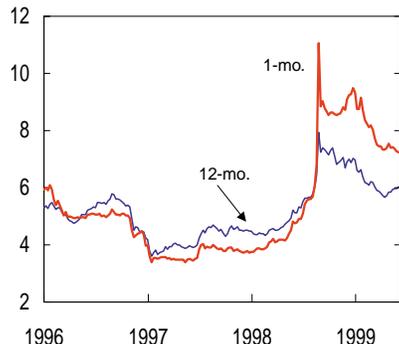
Source: Norges Bank

Chart 2.3 Short-term money market rates. Effective rates. Weekly figures



Source: Norges Bank

Chart 2.4 One- and twelve-month money market rates. Effective rates. Weekly figures



Source: Norges Bank

The money market indicator (an arithmetic average of effective euro rates with maturities of one week to three months) has fallen 0.5 percentage point to 7.1%. The money market yield curve is still downward sloping, but has flattened out considerably. At 16 June, the interest rate differential against the euro for three-month maturities was 3.7 percentage points, ie approximately the same as reported in the March report.

Money market liquidity

Norges Bank influences money market rates by using its key rates to set a corridor for interest rates, ie banks' interest rates on sight deposits in Norges Bank (deposit rate) and the interest rate on overnight loans to banks (overnight lending rate). Norges Bank influences interest rates in the money market within this interval through the supply and withdrawal of krone liquidity. Norges Bank also counters seasonal variations in banks' liquidity associated with government incoming and outgoing payments through the Bank's liquidity policy instruments.

In March, the liquidity surplus in the money market was on average NOK 6.3bn.

In the second half of March, Norges Bank repurchased F-deposits for a small amount, while the Bank supplied liquidity through two repurchase agreements at a rate of 7.05% and through two F-loans at a rate of 7.55%.

In April, the liquidity surplus in the money market was on average NOK 8.5bn. Liquidity was tight before Norges Bank supplied liquidity, particularly in the latter half of the month. Liquidity was withdrawn through an F-deposit at a rate of 7.23%. Liquidity was supplied through 7 repurchase agreements at rates between 6.55% and 7.05%, and through 7 F-loans at rates between 7.15% and 7.55%. In order to promote banks' increased use of repurchase agreements rather than unsecured credit until 1 September, from which time F-loans will be collateralised, the mark-up on F-loans relative to repurchase agreements was raised from 50 to 60 basis points.

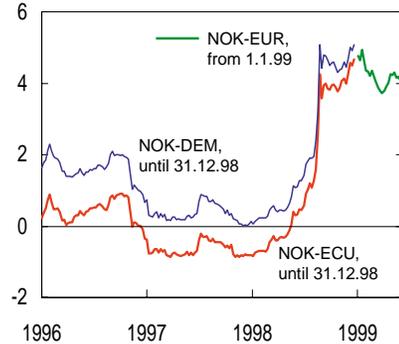
In May, the liquidity surplus in the money market was on average NOK 8.6bn. Liquidity was tight before Norges Bank supplied liquidity through 5 repurchase agreements at a rate of 6.55% and 5 F-loans at a rate of 7.15%. Norges Bank also supplied liquidity through currency swaps on two occasions at a rate of 6.70%. In mid-May, liquidity was mopped up through an F-deposit at a rate of 6.70%.

Certificate market

Treasury bills are issued to finance central government activity, but issues are also adjusted to changes in liquidity in

Chart 2.5 Interest rate differentials for 3-month effective money market rates.

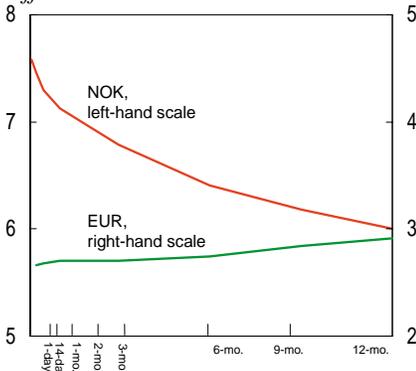
Weekly figures



Source: Norges Bank

Chart 2.6 Money Market yield curves for NOK and EUR.

Effective rates on 16 June 1999



Source: Norges Bank

Table 2.2 Central bank financing

	1999				
	Jan.	Feb.	Mar.	Apr.	May.
Daily average (NOKbn)	9.8	1.3	-5.9	3.6	11.3
Of which:					
Overnight loans	0.2	0.0	0.0	0.1	0.0
Fixed-rate deposits/loans	4.2	-0.5	-6.4	1.0	2.2
Other financing	5.5	1.7	0.5	2.5	9.0
Overnight borrowing facility, NOKbn	10.2	11.4	10.2	10.6	10.2
Banks' sight deposits with Norges Bank	6.3	6.7	6.3	8.5	8.6
Fixed rate deposit rate(average), per cent	8.32	7.66	7.44	7.23	6.70
Fixed-rate lending rate (average), per cent	8.45	7.95	7.46	7.32	7.15

Source: Norges Bank

the money market. In recent years, a Treasury bill has normally been issued each month, following a pattern whereby a new twelve-month bill is issued every quarter. The four existing loans are increased in the intervening months so that there are four outstanding issues covering various maturities of up to one year.

On 12 April, NOK 2bn of Treasury bill SS58, with maturity on 15 March 2000, was auctioned at a weighted average interest rate of 5.14%. On 3 May, NOK 2bn of Treasury bill SS58 was auctioned at a weighted average interest rate of 5.36%.

Commercial and savings banks, as well as insurance companies, are the major investors in Treasury bills. They accounted for nearly 64% of total nominal outstanding holdings of NOK 26.5bn at the end of the first quarter of 1999. Other major investors during this period include non-financial enterprises at just under 14%, the foreign sector at about 11% and Norges Bank and state lending institutions at over 9%.

Turnover in certificates on the Oslo Stock Exchange came to nearly NOK 67bn to end-May. Treasury bills accounted for approximately NOK 55bn of this turnover, ie a good 82%.

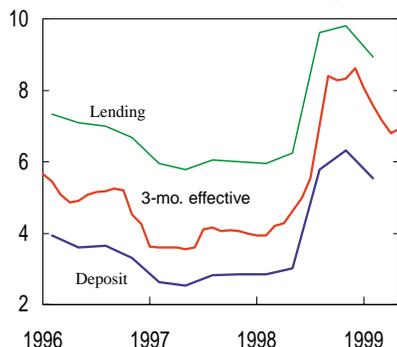
2.3 Interest rate trends in financial institutions

Banks' lending and deposit rates were reduced from the fourth quarter of 1998 to the first quarter of 1999, with lending rates declining slightly more than deposit rates, thereby reducing the interest margin. State lending institutions raised their lending rates, while mortgage companies and life insurance companies lowered rates.

Banks' lending rates (excluding non-accrual loans) moved down by 0.9 percentage point from the end of the fourth quarter of 1998 to 8.9% at the end of the first quarter of 1999. Deposit rates were reduced by 0.8 percentage point in the first quarter of 1999 to 5.5%. As a result, the spread between lending and deposit rates narrowed by 0.1 percentage point to 3.4 percentage points at the end of the first quarter this year.

Life insurance companies lowered their lending rates by 0.8 percentage point to 7.5% at the end of the first quarter. Lending rates in mortgage companies were reduced by 0.5 percentage point to 7.2%. State lending institutions raised lending rates by 1.0 percentage point to 5.8% at the end of the first quarter of 1999. The increase in state lending institutions' lending rates should be viewed against the background of higher interest rates for Treasury bills and government bonds during this period.

Chart 2.7 Banks' deposit and lending rates (quarterly figures) and 3-month money market rates (monthly figures)



Source: Norges Bank

2.4 Profit trends in financial institutions

Commercial banks' ordinary operating profit after tax and losses for the first quarter of 1999 amounted to NOK 1 986m, equivalent to 1.30% of average total assets (ATA). This represents an increase compared with the first quarter of 1998.

Savings banks' ordinary operating profit after tax and losses for the first quarter of 1999 amounted to NOK 1 969m, equivalent to 1.90% of ATA. This is also an improvement on the first quarter of 1998. For both bank groups, the improvement is due to a combination of higher net interest income, an increase in other operating income and reduced costs relative to ATA.

Table 2.3 Gross issues of certificates by issuer sector.¹⁾ In billions of NOK

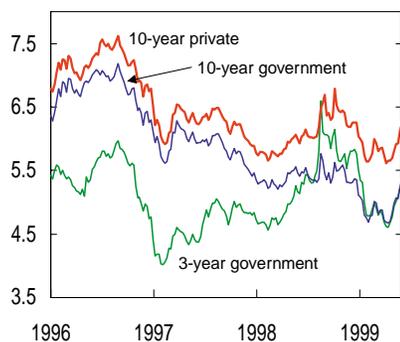
	1997	1998	Jan - Apr	
			1998	1999
Treasury bills	92.5	48.0	14.0	15.5
Bank certificates (CD)	102.5	108.3	32.5	41.2
Notes issued by				
Mortgage companies	20.1	18.8	6.6	9.1
Private companies	84.5	82.4	29.3	20.1
Finance companies	4.6	6.8	1.4	2.7
Foreign notes in NOK	0	0.1	0	0.3
Total	304.2	264.4	83.9	88.9

¹⁾Table 18 in the statistical annex shows the distribution of VPS-registered certificates by issuer sector.

Source: Norges Bank

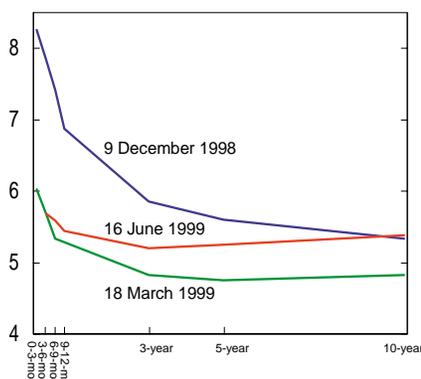
3 CAPITAL MARKETS

Chart 3.1 Yields on government and private bonds. Weekly figures



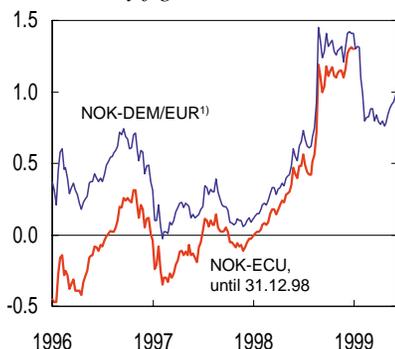
Source: Norges Bank

Chart 3.2 Yield curves for Norway. Effective Treasury bill and government bonds yields



Source: Norges Bank

Chart 3.3 Yield differentials for 10-year government bonds. Effective rates. Weekly figures



¹⁾ From 4 January 1999 German government bonds denominated in EUR

Source: Norges Bank

3.1 The bond market

Yields

Yields on Norwegian government bonds have risen by a good 0.5 percentage point on average since the last report. Yields on all maturities fell in the period to mid-April before the trend was reversed, with yields on bonds with long maturities showing the largest increase. The yield curve is slightly upward sloping. On 16 June, the yield on Norwegian ten-year government bonds was just under 5.4%, ie approximately 0.6 percentage point above its mid-March level.

The yield differential between Norwegian and German ten-year government bonds has widened from 0.8 percentage point in mid-March to 1.0 percentage point at 16 June, when the yield on German ten-year government bonds was almost 4.4%.

Turnover

Turnover in bonds on the Oslo Stock Exchange amounted to NOK 417bn in the period to end-May. Turnover in May amounted to NOK 69bn, with an average daily turnover of NOK 4.2bn.

Government bonds accounted for the largest share of turnover at 81% of total turnover so far in 1999 and a good 79% of turnover in May. Turnover figures for bonds other than government bonds were NOK 79bn to end-May, with just under NOK 15bn of this turnover recorded in May. Mortgage companies, banks and institutions with government guarantees were the principal issuers of these bonds.

New issues

Gross bond issues came to NOK 77.7bn in 1998, compared with NOK 74.4bn in 1997. In the first four months of 1999, gross issues came to NOK 36.2bn, compared with NOK 31.0bn in the same period of 1998. Private banks reduced their share of gross issues from 52% in the first four months of 1998 to 24% in the same period of 1999. State banks and state-owned enterprises accounted for 23% of total issues in the period to end-April, increasing from just over 11% in the same period of 1998.

Government bond S465 was increased by Dutch auction by NOK 3.0bn on 22 March with a weighted average interest rate of 4.74%. A total nominal value of NOK 110bn is outstanding in the six benchmark government bonds.

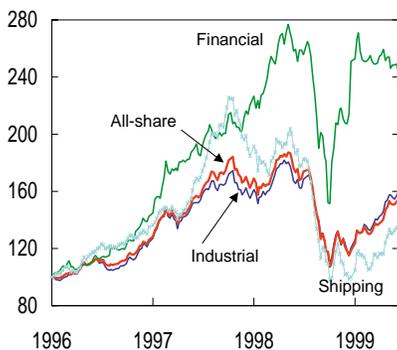
Table 3.1 Gross issues of bearer bonds by issuer sector¹⁾. In billions of NOK

	1997	1998	Jan - Apr	
			1998	1999
Central government	14.0	14.0	8.0	6.0
State banks and state enterprises	3.9	11.7	3.5	8.4
Private banks and insurance companies	39.9	35.0	16.2	8.7
Mortgage companies and finance companies	5.6	8.3	2.0	6.3
Private sector and municipalities	9.9	8.2	1.3	5.6
Non-resident borrowers	0.8	0.5	0	1.3
Total	74.1	77.7	31.0	36.2

¹⁾ Table 15 in the statistical annex shows the distribution of VPS-registered bonds by holding sector.

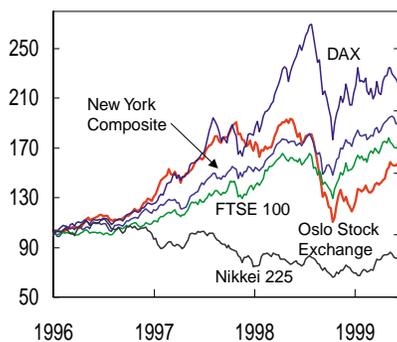
Source: Norges Bank

Chart 3.4 Share indices on the Oslo Stock Exchange. Weekly figures. Week 1, 1996=100



Source: Oslo Stock Exchange

Chart 3.5 International share indices. Weekly figures. Week 1, 1996=100



Sources: Reuters and Oslo Stock Exchange

Distribution of bond holdings

First quarter figures from Norges Bank and the Norwegian Central Securities Depository (VPS) show that insurance companies accounted for the largest share of VPS-registered bond holdings at a good 39% of the total market value of NOK 405bn. Commercial and savings banks (including Postbanken and the banks' guarantee funds) accounted for just under 18%, while the central government and social security sector accounted for almost 10%. Foreign investors' share at the end of the first quarter of 1999 was nearly 13%.

3.2 The stock market

Share prices

The all-share index of the Oslo Stock Exchange showed a decline of just under 30% in 1998, ie the poorest share price performance in Europe. In the period 1 January - 8 June, however, the Oslo Stock Exchange showed one of the strongest gains in Europe at nearly 22%. Since the beginning of 1995, the all-share index of the Oslo Stock Exchange has advanced by 78%. Of the sub-indices (Chart 3.4), the financial index has shown the slowest growth in 1999 at 5%. SMEs and industrials have both climbed by 27%, while the IT and shipping indices have advanced by 29% and 30%, respectively, since the beginning of the year.

Posting gains of approximately 22% since the beginning of the year, the Nikkei has outperformed all of the main international share indices shown in Chart 3.5. The DAX index has shown the weakest rise, advancing by about 4% so far this year. The New York composite and FTSE 100 have advanced by 5% and 8% respectively.

Turnover and market value

In the first five months of this year, turnover in shares and primary capital certificates on the Oslo Stock Exchange amounted to NOK 146.3bn (Table 3.2). This is a 9% drop in turnover on the same period in 1998. The lowest turnover was in SMEs, which fell by a good 44%. Turnover in industrials dropped by 7%. The market value of companies listed on the Oslo Stock Exchange has risen by close to 21% in 1999, equivalent to approximately NOK 501bn.

In February, the Oslo Stock Exchange introduced a new electronic system for trading shares and primary capital certificates. The automated transaction system has performed well so far in 1999. There has been an increase in terms of both the number and value of transactions over the Oslo Stock Exchange in the new trading system. Increased use of the automated transaction system may lead to increased liquidity

Table 3.2 *Turnover and market value on Oslo Stock Exchange. In billions of NOK*

Turnover:	1996	1997	1998	Jan.- May 1999
Total	231.7	341.1	322.7	146.3
Financial	28.1	43.3	51.4	28.2
Industrial	132.7	200.0	123.7	56.8
IT ¹⁾	-	-	33.0	17.2
Shipping/offshore	46.3	53.7	67.6	27.0
SMEs	16.2	34.4	24.4	7.8
Primary capital	8.2	9.4	7.1	2.8
Other	0.2	0.3	15.5	6.5
Market value	389.4	490.3	415	500.8

¹⁾The IT index was established in 1998.

Source: Norges Bank

Table 3.3 *Issues on the Oslo Stock Exchange. In millions of NOK*

Turnover:	1996	1997	1998	Jan.- May 1999
Total	9 020	21 501	10 466	3 665
Of which foreign	1 867	5 392	0	0
Financial	147	327	420	10
Industrial	3 516	5 094	1 385	2 668
IT ¹⁾	-	-	1 058	154
Shipping/offshore	1 970	3 893	1 747	385
SMEs	1 393	6 490	3 089	328
Primary capital	127	304	2 410	106
Other	0	1	357	14

¹⁾Not available prior to 1998

Source: Norges Bank

and transparency in the Norwegian stock market.

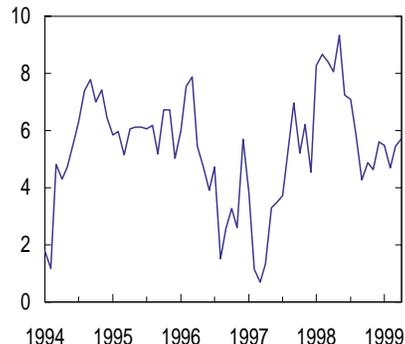
New issues

Shares and primary capital certificates issued in 1999, including issues in connection with stock exchange listings, amounted to just under NOK 3.7bn. This represents a drop of nearly 8% on the same period in 1998. The public sector and private placements accounted for 73% and 25%, respectively, of total issues to end-May this year. Shipping and offshore and industrials have accounted for most of the issuance this year in value terms. At end-May, 232 companies, including 23 foreign companies, were listed on the Oslo Stock Exchange.

Distribution of shareholdings

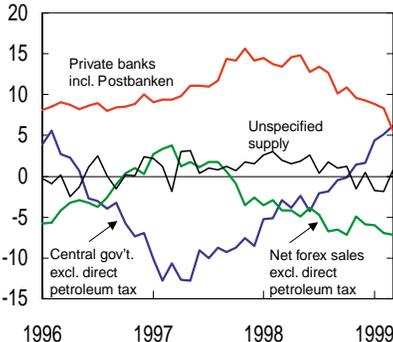
At end-May 1999, foreign investors had the largest holdings in Norwegian listed companies, accounting for slightly more than 31% of total market value. The largest Norwegian shareholders are private enterprises, with holdings of nearly 22% of market value. The general government sector accounted for 16% of total shareholdings at end-May 1999. Securities funds' holdings have increased their holdings of shares in the 1990s, and now own 8.3% of total market value, compared with 8% at the end of 1998. Private pension funds and life insurance companies have also increased their holdings of shares to 4% and 6%, respectively, of total market value at end-May.

Chart 4.1 Growth in the money supply (M2). Percentage growth in last 12 months



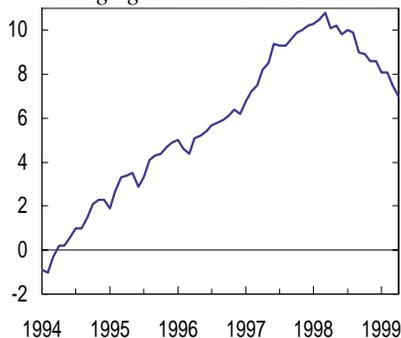
Source: Norges Bank

Chart 4.2 Contributions of money supply components to 12-month growth in money supply (M2). Percentage points



Source: Norges Bank

Chart 4.3 Norges Bank's credit indicator (C2). Growth in domestic credit supply to municipal sector, non-financial enterprises and households. Percentage growth in last 12 months



Source: Norges Bank

4 PRIVATE AND MUNICIPAL¹⁾ FINANCIAL ASSETS AND LIABILITIES

4.1 Money supply growth

At end-April, the twelve-month rise in the registered money supply (M2) was 5.7% (NOK 39.2bn), compared with 5.5% (NOK 37.9bn) at end-March. Year-on-year growth reached a peak of 9.3% at end-May 1998, but then slowed steadily to 4.3% at end-September last year before rising again in the fourth quarter of 1998. Year-on-year growth has fluctuated between 4.7% and 5.7% so far this year.

Underlying year-on-year growth moved down from 13.0% at end-March to 6.9% at end-April. From a low of -1.4% at end-October 1998, the growth rate rose steadily to end-March before falling again in April.

The central government's combined transactions (revenue deficit and loan transactions) contributed to a supply of liquidity which was substantially higher in the first three months of the year, compared with the corresponding period of 1998. However, banks withdrew liquidity in through march, whereas they supplied liquidity in the corresponding period of 1998. So far in 1999, net sales of foreign currency from money-holding sectors have been close to zero, whereas positive net sales were recorded in the same period last year. The total supply of liquidity in the period January-March 1999 was on a par with the level in same period of 1998.

4.2 Credit indicators

Year-on-year growth in the indicator for private and municipal sector gross domestic debt (C2), adjusted for exchange rate changes, moved down from 7.5% (NOK 84.7bn) at end-March to 7.0% (NOK 80.0bn) at end-April. This represents the lowest year-on-year growth since January 1997. Year-on-year growth has slowed by 3.8 percentage points since reaching a peak at end-March 1998. Three-fourths of this decline took place in the period September-April.

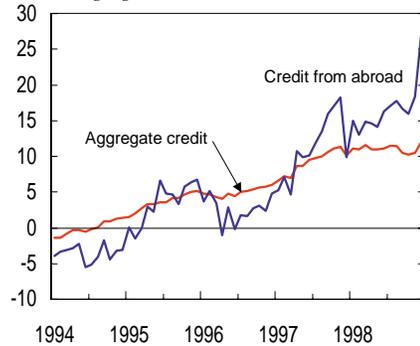
The underlying growth rate was 6.8% at end-April, against 7.1% at end-March. Underlying growth was down to 6.0% at end-November, but rose during the following three months before slowing in both March and April.

The slower year-on-year growth in C2 from March to April primarily reflects seasonally adjusted monthly growth in April, which was at its lowest rate since June 1995. This decline is partly attributable to changes in NOK-denominated credit

¹⁾The private and municipal sector consists of municipal government, non-financial enterprises and households.

Chart 4.4 Norges Bank's credit indicator (C3). Growth in aggregate credit (from domestic and foreign sources) to the municipal sector, non-financial enterprises and households.

Percentage growth in last 12 months



Source: Norges Bank

from domestic sources (C1) and partly to domestic foreign currency credit to the private and municipal sector. Private and municipal foreign currency debt was reduced for the second straight month and contributed to a reduction in the foreign currency debt share of C2 from 6.6% in March to 6.5% in April. However, year-on-year growth in private and municipal foreign currency debt was still as high as 26.3% at end-April after reaching 34.4% at end-February.

The decline in C2 from March to April was wholly attributable to bank lending. Twelve-month growth in bank lending slowed by 1.1 percentage points to 6.0% at end-April. Twelve-month growth in private and municipal certificate debt increased considerably from March to April, however. State lending institutions also showed higher lending growth in April. Lending from mortgage companies, finance companies and insurance companies remained basically unchanged. Year-on-year growth in lending from finance companies has slowed considerably from the peak in August 1998 (29.4%), but was still as high as 19.0% at end-April.

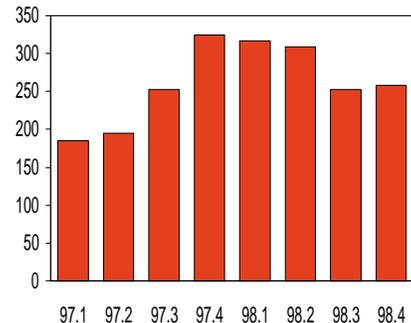
Lending from private banks, state lending institutions and mortgage companies accounts for a good 85% of C2. Aggregate lending from these three sources has decreased during the past few months in line with C2 growth. Year-on-year growth in lending to enterprises (9.5%) remained slightly higher than the growth in lending to the municipal sector (8.0%) and households (6.4%) at end-April. The slowdown in 12-month growth in lending to enterprises has still been far more pronounced than for other sectors, reducing the difference in credit growth across sectors.

The indicator for private and municipal sector total gross debt (C3) comprises private and municipal sector domestic (C2) and foreign gross debt. The indicator for private and municipal sector gross foreign debt rose by 28.4% (NOK 78.9bn) over the twelve months to end-March. Year-on-year growth in the indicator for private and municipal sector gross domestic debt was 7.5% (NOK 84.7bn) during the same period. Thus the indicator for total private and municipal gross debt (C3) increased by 11.6% (NOK 163.6bn) in the twelve months to end-March. In the first eleven months of 1998, year-on-year growth ranged between 10.2% and 11.6%. From November to December, it moved up 1.5 percentage points to 12.3%. This growth is exclusively attributable to foreign sources of credit. The increase in gross foreign debt may almost entirely be ascribed to oil- and gas-related activity.

In the first quarter of 1999, year-on-year growth in C3 slipped back to 11.6%. The decline is entirely attributable to domestic sources of credit.

Chart 4.5 Private and municipal gross assets less liabilities excl. shares etc.

Last 8 quarters. In billions of NOK



Source: Norges Bank

Table 4.1 Private and municipal sector assets and liabilities at market value.

In billions of NOK

	31 Dec 1996	31 Dec 1997	31 Dec 1998
Total assets	1824	2166	2213
Bank deposits etc	543	567	611
Bonds etc	82	89	94
Equities etc	422	620	589
Insurance claims	342	376	398
Other assets	435	514	522
Total liabilities	2402	2791	2804
Loans	1232	1385	1546
Bonds etc	131	139	162
Equities etc	712	949	848
Other liabilities	326	318	248
Net assets	-578	-625	-590
Households	229	294	288
Non-financial enterprises	-771	-897	-864
Municipal sector	-36	-22	-14
Memorandum I			
Gross assets less liabilities excl. equities etc ¹⁾	135	324	258
- non-financial enterprises	-58	52	-16
Memorandum II			
Money supply (M2)	645	675	712
Credit indicator (C2) ²⁾	993	1100	1197

¹⁾ For non-financial enterprises, 'liabilities excl. equities etc' refers to total liabilities excl. equities, units in securities funds and deposits

²⁾ Percentage change in the money supply differs from twelve month growth. The reason is that exchange rate valuation changes on domestic foreign exchange loans are deducted when calculating percentage growth.

4.3 The financial position of the private and municipal sector

General

The difference between gross assets and liabilities, excluding equities, units in securities funds and capital contributions, provides an indication of the private and municipal sector's financial position. The difference is estimated at NOK 258bn at the end of the fourth quarter of 1998, ie a reduction of NOK 66bn in the course of the year. The explanation for the reduction is that liabilities, excluding equities, etc, rose by NOK 114bn, while gross assets increased by NOK 47bn.

Developments in individual asset and liability items

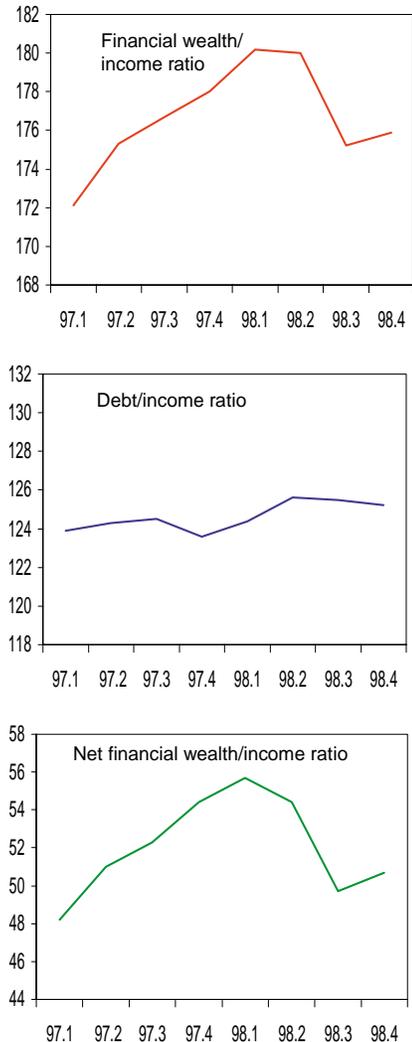
The percentage increase in private and municipal liabilities, excluding equities, etc, is estimated at 6.2% in the four-quarter period. The explanation for this change is that loans and bonds, etc, increased by 11.6% and 16.8% respectively, while other liabilities were reduced by 22.0%. About two-thirds of private and municipal sector debt, excluding equities, etc, consists of loans from domestic financial institutions and loans raised in the domestic market (bonds, short-term paper and inter-company loans). These correspond roughly to the composition of the credit indicator C2.

Year-on-year growth in the credit indicator (C2) was 8.6% at end-1998, ie 2.4 percentage points higher than the increase in liabilities, excluding equities, etc. In the fourth quarter of 1998, year-on-year growth in C2 decelerated by 0.4 percentage point, while liabilities, excluding equities, etc, moved up by 1.1 percentage points. This variance is attributable to an increase in loans from the foreign sector. The tendency towards lower domestic credit growth has continued into 1999 (see section 4.2).

Private and municipal sector bond assets increased by 5.2% from the fourth quarter of 1997 to the fourth quarter of 1998, while insurance claims and other assets increased by 5.9% and 1.5% respectively. Bank deposits, notes and coin (bank deposits, etc) together make up the largest asset item for the private and municipal sector. Bank deposits, etc, increased by 7.7% in 1998, while the corresponding four-quarter increase at the end of the third quarter of 1998 was 6.2%.

Domestic banks account for most private and municipal sector bank deposits. Domestic bank deposits, notes and coin account for about four-fifths of the money supply. The other components are CDs and unutilised credit. Money supply statistics also cover money-holding sectors other than banks and state lending institutions. At the end of the fourth quarter of 1998, year-on-year growth in the money supply was 5.6%. This was higher than at the end of the third quarter of 1998,

Chart 4.6 Households. Financial wealth/income ratio, debt/income ratio and net financial wealth/income ratio. Percentage of disposable income. Seasonally adjusted figures. Last eight quarters



Source: Norges Bank

when year-on-year growth was 4.3%. 12-month growth in the money supply has risen steadily in 1999 (see section 4.1).

The financial position of various sectors

Household net financial wealth as a percentage of disposable income decreased in both the second and third quarters of 1998, after the net financial wealth/income ratio peaked in the first quarter. In the last quarter of 1998, the net financial wealth/income ratio showed a slight increase to 50.7% of disposable income (seasonally adjusted). This increase can be attributed to a rising wealth/income ratio and to a debt/income ratio which remained at about the same level through the four quarters of 1998.

Non-financial enterprises' net asset position (measured at market value) strengthened in 1998. Gross assets declined by 0.5%, while gross liabilities were reduced by 2.0%. The financial position of the enterprise sector can also be seen as the difference between gross assets and liabilities, excluding equities, etc. Calculated in this manner, net liabilities of non-financial enterprises amounted to NOK 16bn at end-1998, against NOK 52bn at the end of the previous year. However, the basis for the calculations has some shortcomings, in that foreign commercial credit is only included to a limited degree in figures for 1998.

The calculations show an improvement in the net asset position of the municipal sector at the end of the fourth quarter of 1998 compared with the fourth quarter of 1997. There is nevertheless uncertainty attached to the first calculations of municipal balance sheets, since data for some of the financial items are based on projections.

Borrowing costs in Norway

Each year in the June report, Norges Bank presents calculations of real after-tax interest rates in Norway. A comparison of real after-tax interest rates in Norway and a selection of other countries will no longer be presented in this report.

The calculations provide an indication of household borrowing costs taking into account that inflation reduces the real value of debt and that interest on debt can be deducted from taxable income. The calculations are based on actual (not expected) price inflation, measured by the consumer price index. The interest rates in the calculations are based on mortgage-backed lending rates at commercial and savings banks.

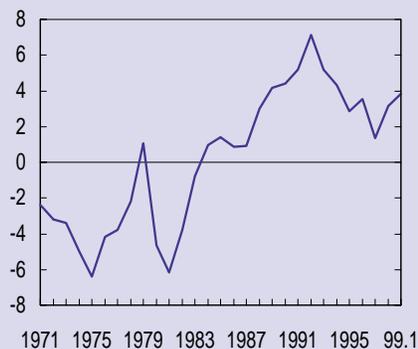
Chart 1 shows developments in real after-tax interest rates in Norway from 1971 to the first quarter of 1999. Real after-tax interest rates were generally negative in the period 1971 to 1983, reflecting low interest rates in a regulated credit market, high inflation and the value of the tax deduction, which was about 45% of debt interest for the average borrower. The only year with a positive real after-tax interest rate in this period was 1979. This must be seen in connection with the wage and price freeze that year, with a sharp fall in inflation. When the wage and price freeze was removed in 1980, inflation accelerated sharply and the real after-tax interest rate turned negative again. From the mid-1980s real after-tax interest rates became positive as a result of reduced inflation, while nominal interest rates remained high.

With the tax reform of 1992, the tax deduction for debt interest was set at 28% for all taxpayers, which sharply reduced the value of the tax deduction for the average taxpayer. In 1992, the real after-tax interest rate increased to

more than 7%. High interest rates in Germany following reunification and the currency turbulence in 1992-1993 led to higher nominal interest rates in Norway. In an environment of economic recession and low inflation, this pushed up real interest rates by a substantial margin. Real interest rates have gradually fallen later in the 1990s as a result of the decline in nominal rates in Norway in pace with European rates. In 1997, the real after-tax interest rate was as low as 1.4%.

In response to the strong pressures in the Norwegian economy and the exchange rate volatility in 1998, Norges Bank raised its key rates by a total of 4.5 percentage points. The real after-tax interest rate rose sharply to about 4.4% in the fourth quarter of 1998. The reduction in Norges Bank's interest rates in the first quarter of this year has to some extent reversed the rise in real rates. The real interest rate after tax was still 3.8% in the first quarter of this year, which was higher than the average for 1998.

Chart 1 Real interest rates after tax in Norway. Percentage per annum



Source: Norges Bank

1 SUMMARY

2 INTERNATIONAL AND NORWEGIAN SECURITIES MARKETS

- 2.1 Developments in international financial markets
- 2.2 Consequences for the Norwegian financial market

3 FINANCIAL EXPOSURE IN THE NON-FINANCIAL SECTOR

- 3.1 Financial exposure in the household sector
- 3.2 Financial exposure in the enterprise sector

Box:

- Demographic changes and financial exposure in the household sector

4 FINANCIAL EXPOSURE IN THE FINANCIAL SECTOR

- 4.1 Competition in the financial industry
- 4.2 Profit trends and balance sheets
- 4.3 Future developments in banks' results and financial strength

The cut-off date for this report was 31 May 1999.

In addition to its monetary policy responsibilities, Norges Bank is responsible for fostering financial stability, which involves analysing and reporting on the situation in the financial sector. The work includes analyses both of developments in financial institutions, primarily in the banking sector, and of the relationship between macroeconomic and financial sector developments. Analyses of the financial position of households and enterprises are important elements.

Since 1995 Norges Bank has produced reports on the situation in the financial sector and the outlook for the sector. The reports are for internal use, but are also made available to the Ministry of Finance and the Banking, Insurance and Securities Commission. Since 1997, excerpts from these analyses have been published in Economic Bulletin nos 2 and 4 under the title 'Financial Sector Trends' (from June 1998: 'Financial Sector Outlook').

1 SUMMARY

Last year's interest rate increases and financial turbulence contributed to reversing a trend with sharply rising debt and growing imbalances in the financial system. Credit growth has tapered off over the past year, and banks have managed to reverse the tendency of deteriorating financial strength. However, competition in the financial industry remains strong. This situation, combined with prospects for a turnaround in the Norwegian economy, with increased credit risk and expectations of higher loan losses, therefore represents a major challenge to banks.

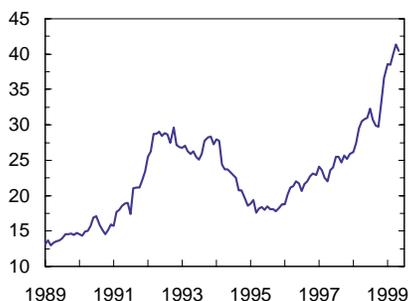
Continued uncertainty regarding developments in securities markets

The turbulence in international financial markets has gradually diminished in recent months. The robustness of the financial system has probably increased as a result of a reduction in the scale of large debt-financed "speculative" positions. In addition, international work to prevent financial crises and establish better routines has intensified.

However, there is still considerably uncertainty associated with developments in the securities markets. For example, both the OECD and the IMF have pointed out that equity prices in the US may be overvalued in relation to fundamentals (Chart 1.1). A sharp correction in the US equity market could have substantial contagion effects on international markets, including the Norwegian financial market.

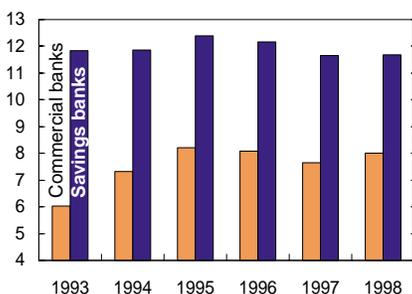
Norwegian financial institutions have limited direct exposure in countries where the uncertainty is greatest. Therefore, the possible effects on developments in Norway's real economy or in Norwegian securities markets as a result of turbulence in international financial markets will be of major importance to developments in Norwegian financial institutions.

Chart 1.1 Price/earnings ratio for the S&P Industrials index in the US



Source: *Financial Times*

Chart 1.2 Core capital ratio of commercial and savings banks. Per cent

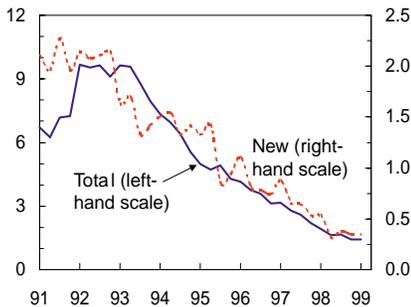


Source: Norges Bank

Strong competition puts pressure on banks' earnings

The competitive situation in the financial sector has intensified in recent years, and banks' earnings have come under pressure. This trend continued in 1998. Interest margins increased sharply in 1998. Even though interest margins declined in the last two quarters up to the end of the first quarter of 1999, banks' margins so far this year are somewhat higher than at the beginning of 1998. This may indicate that banks are giving higher priority to earnings than to maintaining or increasing market shares. However, there are many indications that the increase in margins is primarily related to changes in interest rates. In that case, margins are expected to fall back to the levels seen in 1997 as interest rates stabilise.

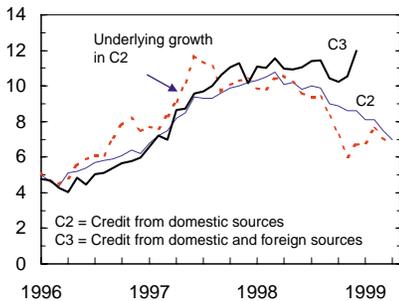
Chart 1.3 *Non-performing loans: total, and new in last quarter. Commercial and savings banks.¹⁾ Percentage of gross lending*



¹⁾ Excluding foreign branches

Source: Norges Bank

Chart 1.4 *Credit from domestic and foreign sources. 12-month and underlying growth (growth last 3 months, annualised). Per cent*



Source: Norges Bank

Pricing loans so that they reflect expectations of increased credit risk and losses will be a considerable challenge for banks in the period ahead. A number of factors indicate that competition from foreign financial institutions will increase further. Prospects for lower demand for credit from households and enterprises also suggest that competition for loans will intensify. However, slower credit growth will contribute to more balanced developments in the financial sector, entailing that banks can maintain their financial strength even if profits are reduced.

So far no increase in non-performing loans...

The rise in interest rates through 1998 led to a sharp increase in the interest burden of borrowers. So far, this has not been reflected in an increase in non-performing loans in the Norwegian market.

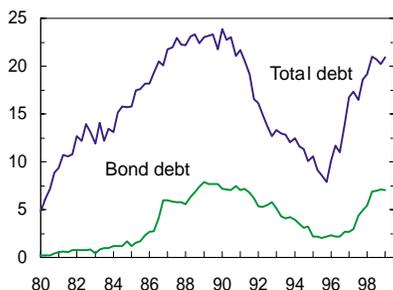
However, the increase in interest rates has contributed to a change in private and municipal sector credit growth. Credit from domestic sources has declined, while credit from foreign sources increased markedly in the fourth quarter of 1998. It is primarily the enterprise sector, particularly petroleum-related activities, that have increased borrowing from foreign sources. The accumulation of debt in some enterprises therefore appears to be continuing.

... but increased credit risk and the prospect of higher loan losses,...

Defaults and losses on loans to households are expected to remain low in the years ahead even though unemployment is expected to edge up. The strong growth in income and employment in recent years has led to a substantial improvement in households' financial position. A falling real interest rate up to the beginning of 1998 contributed further to improving debt-servicing capacity. The result is that the financial exposure of households is relatively low, and the credit risk associated with financial institutions' loans to households is generally limited.

There is, however, reason to expect an increase in defaults and losses on loans to the enterprise sector, although there is considerable uncertainty in this respect. A sharp rise in debt in recent years has resulted in a marked increase in the debt burden of enterprises. At the same time, a number of industries are experiencing growing pressures on profit margins as a result of increased labour costs and low product prices. Intensified international competition and prospects for weaker economic growth among our trading partners and in Norway will reinforce the negative profit trend for enterprises, particularly in some exposed industries. However, household consumption will make a positive contribution to parts of the

Chart 1.5 Banks' foreign debt as a percentage of total assets. Per cent



Source: Norges Bank

enterprise sector, particularly in sheltered industries. For the financial sector, this means that losses will be most pronounced for commitments to the internationally exposed sector.

... and continued high liquidity risk associated with short-term foreign financing

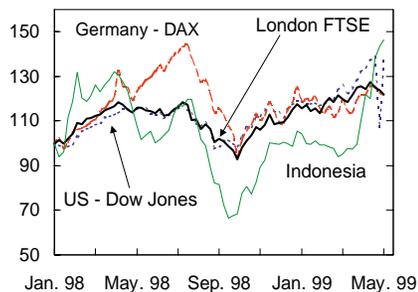
Since 1995, banks' foreign debt has increased substantially. Short-term debt accounts for a large share of this, and has partly contributed to funding domestic credit growth. The growth in foreign debt thus implies a marked increase in banks' liquidity risk. Growth in foreign debt was slightly lower in 1998 than in the two previous years, and at the same time there was a shift from short-term to more long-term foreign financing. However, the magnitude of short-term foreign financing is still considerable, and developments in the first quarter of 1999 indicate a further increase.

Need for measures to improve earnings

Increased credit risk and prospects for higher losses suggest that a number of institutions will have to take steps to improve earnings and maintain financial strength, possibly at the expense of market share. Analyses of possible developments in bank earnings illustrate that this may be a considerable challenge. Estimates indicate that banks may achieve satisfactory results in 1999. From 2000, however, pressures on earnings and rising loan losses could lead to a fall in operating results, with a weaker return on equity in relation to the banks' stated objectives. As a result of expectations of lower lending growth, however, it will still be possible to maintain financial strength. If lending growth should be higher than the estimated figure, financial strength will deteriorate, as core capital will rise at a slower pace than lending.

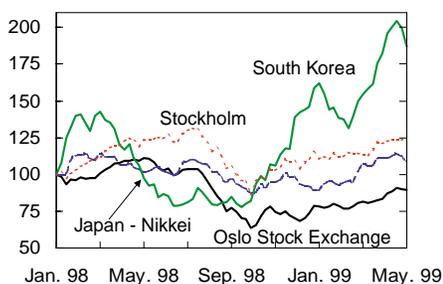
2 INTERNATIONAL AND NORWEGIAN SECURITIES MARKETS

Chart 2.1a Equity price movements in selected countries. Weekly figures. Index: January 1998=100



Source: Norges Bank

Chart 2.1b Equity price movements in selected countries. Weekly figures. Index: January 1998=100



Source: Norges Bank

2.1 Developments in international financial markets

The crises in Asia and Russia in 1998 demonstrated that because of the increased globalisation of financial markets a shock in one country or market rapidly spreads to other parts of the world. Norwegian financial markets are no exception. International shocks tend to be associated with sharp changes in commodity prices, and since the Norwegian economy is relatively vulnerable to changes in commodity prices, the effect of international shocks on Norwegian financial markets may in some cases be stronger than in other countries. Monitoring factors that may cause turbulence in international financial markets is therefore important.

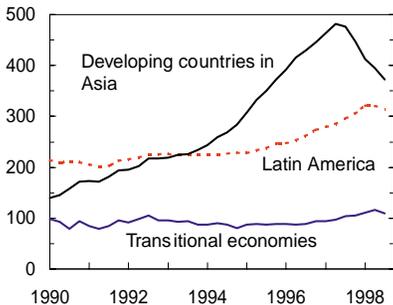
Gradual stabilising of international financial markets

The situation in international financial markets has gradually stabilised so far this year. Several countries, Brazil in particular, did experience problems in the wake of the Asian and Russian crises, but contagion to other countries and markets proved far less extensive than feared. In general, the financial system should have become more robust as a result of a decrease in the size of large, debt-financed "speculative" positions. The intensified international work to prevent financial crises also helps to increase the robustness of the financial system.

The continued advances on stock exchanges, and slightly higher long-term interest rates, may indicate greater international optimism regarding growth. This also applies to Japan, where both banks and the authorities are now showing increased determination to tackle bank losses. However, current indicators still show a very weak trend. Both the OECD and the IMF have pointed out that equity prices in the US may now be overvalued in relation to fundamentals. A sharp correction must be expected to have substantial international contagion effects. The increasing US current account deficit is also an imbalance that may give rise to a sudden change in mood with wide-ranging implications for financial markets.

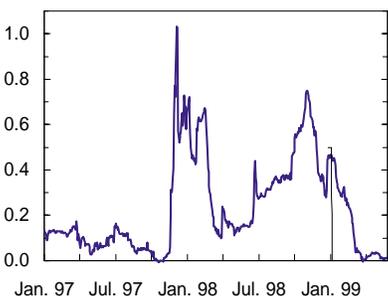
Brazil abandoned its fixed exchange rate (crawling peg) policy in January. The Brazilian real depreciated thereafter by about 40 per cent against the USD, but has since strengthened slightly. The interest rate has also been reduced in a number of steps over the past months, as the unrest has subsided. However, there is still some fear that the country will be

Chart 2.2 *International banks' loan debt to countries in selected areas. In millions of USD*



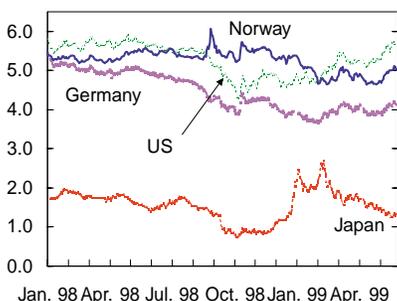
Source: Bank for International Settlements

Chart 2.3 *Japanese banks' risk premium internationally - "Japanese premium". Percentage points*



Source: Bloomberg

Chart 2.4 *Effective yield on 10-year government bonds. Jan '98 - May '99. Per cent*



Source: Norges Bank

unable to service its general government debt, which is very short-term and partly denominated in foreign currency.

Although several countries with a fixed exchange rate experienced pressure on their currencies, and responded by raising interest rates, the contagion from Brazil to other countries via the financial markets has been less than feared. There may be several reasons for this. First, the crisis in Brazil was expected to a greater extent than the crises in Asia and Russia. As a result, the investors with the most speculative positions, who normally react fastest and on a larger scale to this type of news, had reduced their exposure in advance.

One consequence of the financial unrest of recent years is a general reduction in the supply of capital to emerging and developing economies. For example, the volume of new syndicated bank loans to developing country borrowers was halved from the third to the fourth quarter last year (see Chart 2.2). This drying up of credit is also visible in the form of reduced lending over the securities markets. The counterpart to this credit crunch is a marked strengthening of the current account and an accumulation of foreign exchange reserves in these countries.

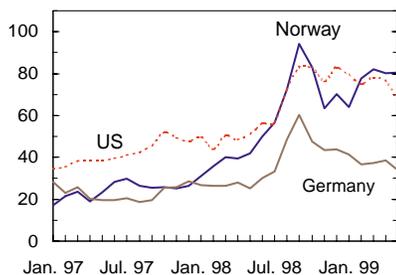
As previously mentioned, there has been a tendency in industrial countries for highly leveraged investors to reduce their borrowing because of the turbulence last autumn. This is reflected in a sharp reduction in bank loans to offshore banking centres, where many hedge funds are located. This effect has been partly counteracted by higher lending in connection with debt-financed corporate acquisitions.

In the Japanese financial sector, there are some signs of improvement, even though economic indicators do not suggest that the decline has come to a halt, and despite the fact that property prices fell in 1998 for the eighth successive year. Many banks have accepted support from the authorities for restructuring and debt relief.¹⁾ This support has been granted on the condition that measures are taken to improve profitability. Both the recent stock exchange rally (Chart 2.1), and a sharp fall in the additional costs Japanese banks have had to pay in the international interbank market (Chart 2.3) may reflect growing confidence in a solution to the banking problems in Japan.

Last autumn's easing of monetary policy in the US and other industrial countries was an important factor behind the stabilisation of international financial markets. Long interest rates were already very low in most countries, partly as a result of fears of an economic downturn, and partly as a result of signs of deflation in some countries (Chart 2.4). Short-term interest rates have remained at a very low level, but long rates have

¹⁾At the beginning of March, Japanese financial institutions applied for government support totalling NOK 480 billion as part of the authorities' measures to resolve the banking crisis.

Chart 2.5 *Differential between 10-year swap and government bond yields. Monthly figures, Jan'97 - May'99. Basis points*



Source: Datastream

moved on an upward trend from the record lows recorded last autumn and early 1999. The rise must be interpreted as a reflection of reduced fears of a serious international economic downturn.

The difference between government bond yields and the interest rates banks have to pay are still appreciably higher than the levels of previous years (Chart 2.5). This illustrates that the credit risk associated with banks, and probably also other non-government borrowers, is still considered considerably higher than normal.

Apart from a substantial fall immediately after the financial collapse in Russia in August last year, equity markets have been remarkably immune to unrest in other financial market segments (Chart 2.1). Both the Dow Jones index in New York and the FTSE index in London have reached record levels this year, while the markets in a number of crisis-hit Asian countries have strengthened. According to the BIS, the volume of announced global equity issues doubled from the third to the fourth quarter of 1998, to USD 30.5 billion.

Euro introduction has consequences for financial markets

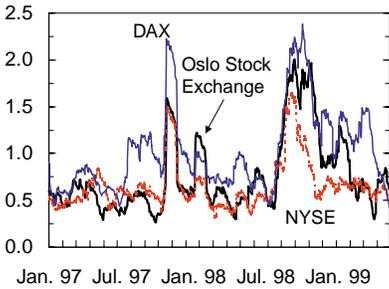
The introduction of the euro on 1 January 1999 proceeded more smoothly than generally expected, and its ripple effects on other parts of the world's financial markets are already visible. In January, more than 50 percent of new international bonds were denominated in euros. Since then, the euro's market share has fallen slightly and is now about the same as the dollar.

The euro was also expected to act as a catalyst for mergers and restructuring in the European banking world. A number of new mergers and acquisitions have been proposed in Europe since the beginning of 1999. In Italy, where there is a large number of relatively small banks, several bank mergers have been proposed. In Spain, two banks, Banco Santander and Banco Central Hispano, have agreed to merge to form Spain's largest bank. The most extensive merger, however, has been proposed in France. First, two major banks Paribas and Société Générale, agreed on a merger that would have resulted in France's largest bank, measured in terms of total assets. A third major bank, Banque Nationale de Paris, was also interested, and submitted a hostile bid for the other two banks. A merger of the three will result in Europe's largest bank.

2.2 Consequences for the Norwegian financial market

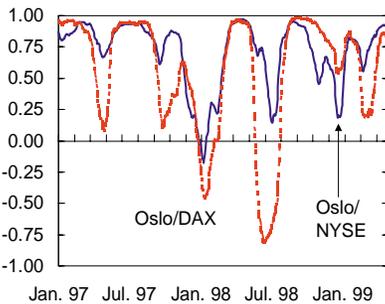
The direct effects of the international unrest on Norwegian banks have been relatively modest. Norwegian banks have

Chart 2.6 Volatility of equity price indices. Daily figures, Jan'97-May'99, 20-day moving average.



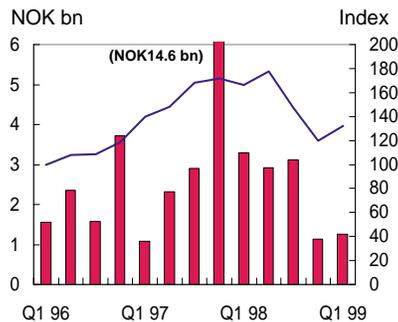
Source: Norges Bank

Chart 2.7 Correlation between Oslo Stock Exchange and stock markets in US and Germany. Daily figs, Jan'97-May'99. 60-day moving average.



Source: Norges Bank

Chart 2.8 Share prices and issues on the Oslo Stock Exchange. Quarterly figures. Index: Q1 1996=100. Issues in billions of NOK



Sources: Oslo Stock Exchange and Norges Bank

little direct exposure to the markets that have experienced the greatest turbulence or to those that would probably be most exposed in the event of further unrest. Thus, the possible effects on Norway's real economy or in Norwegian securities markets as a result of turbulence in international financial markets will be of greater importance to developments in Norwegian financial institutions.

Securities markets heavily influenced by international developments

Price movements in Norwegian securities markets have largely shadowed international movements in recent months. Since the beginning of the year, the Oslo Stock Exchange all-share index has increased by more than 22%. This is roughly the same as the Nikkei index, but more than the Dow Jones index and the largest European stock exchanges. Turnover, and hence liquidity, in the various markets have also picked up after declining slightly last autumn.

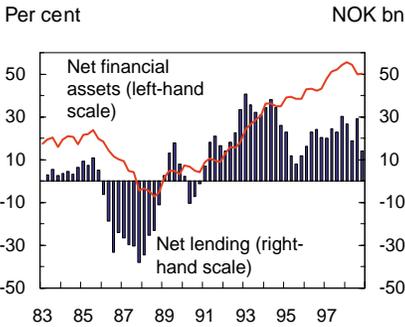
The volatility of prices in the Norwegian equity market, measured in terms of the standard deviation of the all-share index over a 20-day period, increased sharply last autumn, but has now dropped to a more normal level. The same trend has been observed in other countries. It has commonly been assumed that the correlation between different equity markets increases in periods with high volatility. However, there has been no increase in the correlation between the Norwegian equity market and equity markets in the US and Germany. The correlation is high, indicating that Norway would be severely affected by renewed international stock exchange unrest. The negative correlation with the DAX index in mid-1998 is primarily due to the fall in equity prices in Norway in connection with lower oil prices.

Turnover in equity markets has picked up in recent months, while the volume of new issues has dropped to a very low level. Although turnover has risen, it is still appreciably lower than at the same time last year. The very low level of new issues in the last two quarters must to some extent be viewed against the backdrop of share price movements. There appears to have been a clear and positive relationship between share price changes and the volume of new issues in recent years. This is partly because general future prospects are the primary factor determining both these variables. Traditionally, enterprises have also shown little interest in raising new capital in periods with low prices. Thus it is difficult to interpret the low level of new issues as an indication of a reduced supply of equity capital for enterprises.

Developments in the bond market have also been influenced by international trends. The rise in long-term interest rates that other countries, particularly in Europe, observed in February and March has been appreciably less in Norway. Actual short-

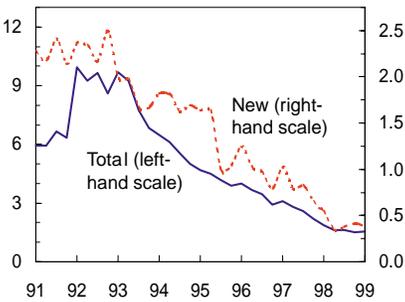
term interest rates and expectations that these will be reduced have also contributed to narrowing the long-term interest rate differential with other countries. The correlation in daily absolute interest rate changes between Norwegian government bonds and German and US government bonds has shown some fluctuations the past year. These fluctuations can largely be explained by macroeconomic conditions in Norway. Recently, the correlation has been at a level that was normal in the period prior to the turbulent market conditions of autumn 1998.

Chart 3.1 Households' net financial assets (% of disposable income) and net lending (total for last 4 quarters)



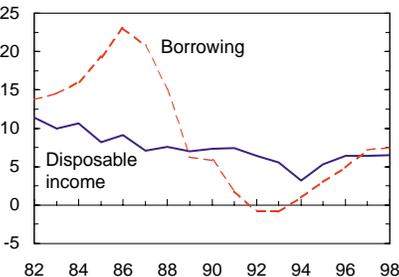
Source: Norges Bank

Chart 3.2 Non-performing loans: total, and new last quarter. Households' loans from private banks.¹⁾ Percentage of gross lending



Source: Norges Bank

Chart 3.3 Growth in borrowing from all sources and disposable income. Households. Per cent



Sources: Statistics Norway and Norges Bank

3 FINANCIAL EXPOSURE IN THE NON-FINANCIAL SECTOR

3.1 Financial exposure in the household sector

Main features and recent developments

The robust growth in income and employment in recent years has considerably strengthened households' financial position in the 1990s. Preliminary national accounts figures show a rise of 3.8% in household real disposable income from 1997 to 1998. The fall in real interest rates to the start of 1998 contributed to higher credit growth, but also made it easier to service debt.

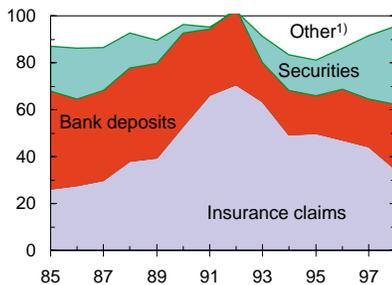
Several years with positive net lending combined with a higher market value for shares and other securities have led to a marked increase in household sector financial wealth. The decline in share prices in the second half of 1998 did entail a reduction in this wealth, but households' net financial wealth still accounted for 50% of disposable income at end-1998, following a peak of a good 55% at the end of the first quarter the same year. However, net lending was still significantly lower in 1998 than in the two previous years, ie NOK 14 billion against NOK 30 billion in 1997 and NOK 20 billion in 1996.

The household sector saving ratio edged up by 0.5 percentage point to 6.8% from 1997 to 1998. The saving ratio has remained fairly high in relative terms throughout the cyclical upturn in the 1990s, and has been rising since 1995. In a separate box, it is argued that the favourable trend in the saving ratio is in part due to demographic conditions.

So far, non-performing loans have not increased as a result of the sharp rise in interest rates in 1998. Quarterly figures for bank loans to households which have been non-performing for up to 90 days continue to be low (Chart 3.2). The total volume of non-performing loans amounts to 1.5% of gross lending, the lowest level recorded in the 1990s. Similarly, state banks have not experienced a marked increase in debt-servicing problems in the household sector over the past year.

Total credit growth to the household sector was marginally higher than the growth in disposable income in both 1997 and 1998 (Chart 3.3). The rise in interest rates through 1998 has served to dampen credit growth in the last six months. The year-on-year rise in lending from domestic sources was just over 7% at end-February 1999, a decline of one percentage point on six months earlier.

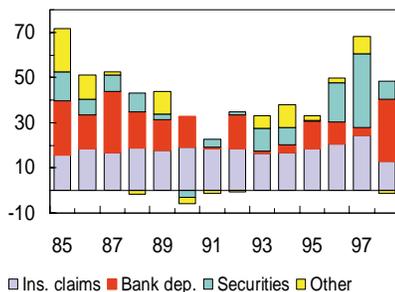
Chart 3.4 Households' gross financial investment in various assets. Moving average. Per cent of total



¹⁾ Notes and coin, lending, tax claims, tenants' deposits etc.

Source: Norges Bank

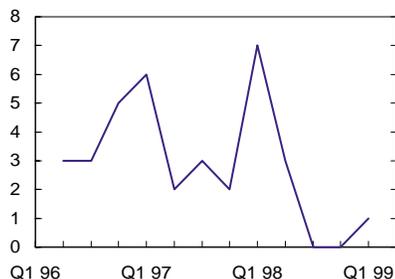
Chart 3.5 Households' gross financial investment in various assets. In billions of NOK



□ Ins. claims ■ Bank dep. ■ Securities ■ Other

Source: Norges Bank

Chart 3.6 Resale home prices. Whole country. Seasonally adjusted change from previous quarter. Per cent



Sources: NEF and ECON

Changes in household sector financial investment

Households' financial assets primarily comprise bank deposits and insurance claims, as well as shares, primary capital certificates and units in securities funds. Chart 3.4 shows households' financial investment in these three asset types as a share of total financial investment over the past ten years. The declining share for bank deposits over the period is particularly noteworthy. Bank deposits have fallen from 40% in the second half of the 1980s to around 20% at end-1997. This fall has been accompanied by an increase in financial investment in the form of shares, units in securities funds and other securities, which accounted for a very small share at the start of the 1990s. Saving in insurance differs from other savings products in that it is a considerably more long-term and less liquid form of investment. Occupational pensions account for around $\frac{1}{3}$ of insurance claims. The high share of insurance claims in the 1990s must therefore be viewed in the light of the high level of wage and employment growth. Demographic trends may also help to explain the increase in insurance claims in this period (see separate box).

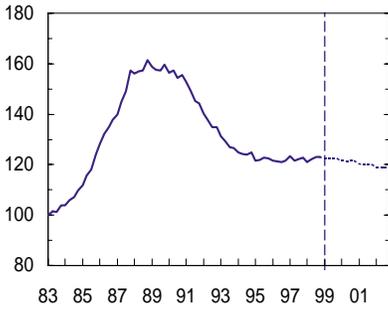
Over the period, the covariation between bank deposits' and securities' share of the total asset composition appears to have been negative. This is probably due to a growing awareness among households of investment management, and as a result savings products such as units in securities funds are increasing their market share in relation to bank deposits. In addition, the general increase in living standards may have raised households' tolerance for risk. An important effect of this trend for banks has been higher financing costs (see section 4.1).

Chart 3.5 shows households' financial investment by different assets. Investment in insurance claims is the most stable item at between NOK 13 and 24 billion annually. Bank deposits, shares and units in securities funds vary widely from year to year. Investment in bank deposits amounted to NOK 27 billion in 1998, a considerable increase on the previous year, which is probably ascribable to the negative trend in the return on equity and securities funds last year. The increase in household deposits helped to diminish banks' need for other forms of financing.

Value of household sector loan collateral

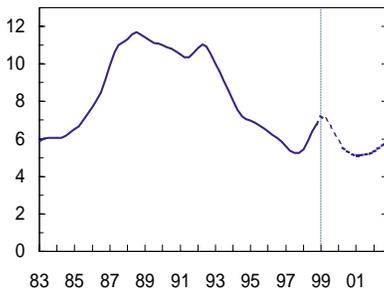
Thus far, house prices have not fallen as a result of the sharp rise in interest rates. Figures for the whole country from Econ and the Norwegian Association of Real Estate Agents show that resale prices remained unchanged, when adjusted for normal seasonal variations, through the first half of 1998, whereas there was a slight rise in prices in the first quarter of last year (Chart 3.6). This reflects the fact that it takes time before changes in interest rates have a full impact on house

Chart 3.7 *Gross borrowing as a share of disposable income. Household sector. Per cent*



Source: Norges Bank

Chart 3.8 *Interest expenses as a percentage of cash income. Household sector. Moving Q4 average. Per cent*



Source: Norges Bank

prices. Another possible reason could be the widespread expectations of a decline in interest rates in 1999. As a result of the household sector's sound financial position and the low level of housing starts in recent years, there is no reason to expect house prices to fall so sharply that it will have any significant effect on the value of financial institutions' collateral.

Households' debt-servicing capacity

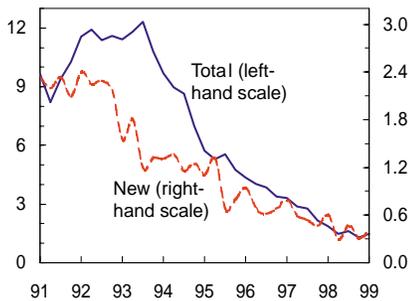
In the March Inflation Report, real income growth was projected to slow considerably in the years ahead – primarily as a result of falling employment and slower wage growth. Even though growth in household sector debt is also tapering off, this may entail a deterioration in households' debt-servicing capacity over the next few years. However, financial exposure is low in relative terms, and when viewed as a whole, the credit risk attached to financial institutions' lending to the household sector is limited.

Several factors indicate that credit demand from the household sector will slow in the period ahead – despite the technical assumption that money market rates will fall in line with market expectations over time. Assumptions regarding money market rates are the same as in the March Inflation Report. First, real income growth in the period 1999–2002 is projected to halve compared with last year's growth. In addition, many people will experience diminishing job security due to the rise in unemployment. It is assumed that this will also affect housing investment. According to the projections in the March Inflation Report, the household sector's debt/income ratio (ie household borrowing as a percentage of disposable income) will be around 120% for the next three to four years. However, house prices, in particular, constitute an element of uncertainty. Higher house prices may generate higher credit demand.

In Chart 3.8, households' debt interest burden is illustrated by means of the interest/cash income ratio. Cash income is defined as the sum of disposable income plus interest expenses. High values for this indicator indicates that many households have problems servicing their debt. As a result of financial consolidation and the fall in interest rates from 1993, the interest/cash income ratio has fallen markedly through the 1990s, accompanied by a reduction in non-performing loans in commercial and savings banks (see Chart 3.2).

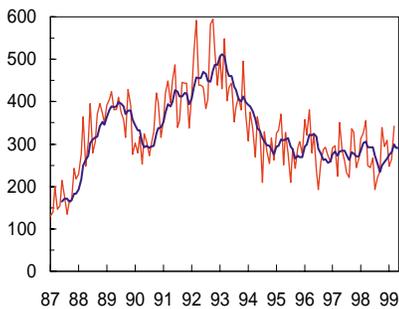
The technical assumption of declining money market rates and a moderate trend for the debt/income ratio indicate that households' debt interest burden will gradually diminish. As early as next year, the indicator is expected to be just under 6%, which is very low in historical terms. However, the fall may be somewhat overestimated, as these calculations do not take into account the increase in the share of fixed rate loans

Chart 3.9 *Non-performing loans: total and new in last quarter. Loans to enterprises from private banks. Percentage of gross lending*



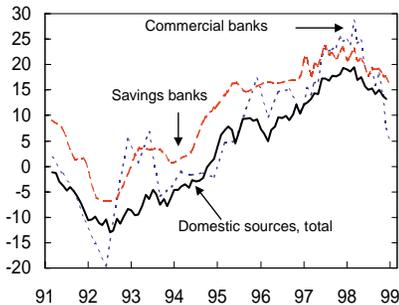
Source: Norges Bank

Chart 3.10 *Number of bankruptcies per month. Actual and trend (6-month moving average)*



Source: Statistics Norway

Chart 3.11 *Lending to private enterprises. 12-month growth. Per cent*



Source: Norges Bank

over the past year. Although growth in the Norwegian economy is currently slowing to a standstill, the household sector will have a sound financial position in the years ahead, which means that non-performing loans and loan losses in this sector will remain relatively low.

3.2. Financial exposure in the enterprise sector

Main features and recent developments

The sharp growth recorded in enterprise sector debt in recent years and the weak outlook for the Norwegian economy indicate that credit risk associated with lending to the enterprise sector is likely to increase in the period ahead.

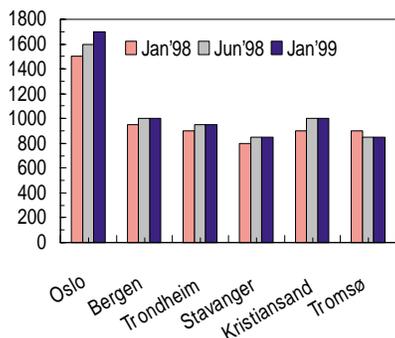
Profitability is already under pressure in several industries as a result of higher wage costs and low product prices. A sharp fall in oil investment and mainland business fixed investment will amplify the negative trend in enterprise sector profitability over time. More industries will gradually be affected by the negative cyclical impulses, and the mainland economy is likely to show little growth for several years. Growth in segments of the enterprise sector, primarily in sheltered industries, may, however, be boosted by household consumption. For the financial sector this means that the trend in losses will probably be most marked in connection with commitments to exposed industries.

Despite the sharp increase in interest rates and reduced economic growth through 1998, growth in new non-performing loans was very low in the second half of the year. Total non-performing loans from commercial and savings banks to the enterprise sector came to 1 1/3% of gross lending at end-1998, the lowest level recorded in the 1990s (Chart 3.9). It must be assumed that the trend in non-performing loans is closely related to cyclical developments, ie an increase in non-performing loans must be expected in the period ahead.

The number of enterprise bankruptcies remained more or less unchanged from 1997 to 1998. A total of 3 347 bankruptcy proceedings were instituted, of which incorporated enterprises (limited companies) accounted for 2/3 and private enterprises for 1/3. In 1998, it was primarily small companies with low turnover and debt and few employees that went bankrupt. The consequences for the financial sector were therefore marginal. As much as 90% of all bankruptcies were in enterprises with less than four employees, and 78% had an annual turnover of less than NOK 1 million.

The total growth in credit from domestic sources slowed considerably through 1998 (Chart 3.11). Having stood at around 20% in March 1998, the twelve-month rise in credit adjusted for exchange rate fluctuations fell to 13% by the end of the year, which is ascribable to the falling trend in mainland business-fixed investment from end-1997. The decline in

Chart 3.12 Average rental for office premises in largest cities. NOK/sqm



Source: *Dagens Næringsliv*

Table 3.1 Norges Bank's model for risk classification of enterprises

		Self-financing as a percentage of long-term debt		
		Negative	Moderate	Good
Financial strength	Good			
	Moderate			
	Negative			

Source: Norges Bank

In the risk classification model, each enterprise is assigned to a risk class on the basis of indicators for earnings, financial strength and liquidity. A total of 18 risk classes are used.

In this presentation, a simplified model with two variables is used:

- Earnings are measured in terms of self-financing as a percentage of long-term debt.
- Financial strength is defined as shareholders' funds as a percentage of debt plus equity.

The boundary between moderate and good is set at 20% for both variables. The red squares at bottom left in Table 3.1 represent enterprises with high risk, the yellow represent moderate risk and the white represent enterprises with low risk.

investment is probably contributed to the marked reduction in share issues towards the end of last year (see section 2.2). Total year-on-year growth in credit from domestic and foreign sources, when not adjusted for exchange rate fluctuations, was 20% at the end of the fourth quarter 1998. The decline in growth in credit from domestic sources in the second half of the year must therefore be seen in the light of the increase in growth in credit from foreign sources.

Value of enterprise sector loan collateral

Commercial property constitutes an important security for loans to the enterprise sector, in addition to mortgages on warehouses and other capital stock. The secondary market for such property does not function as smoothly as the market for resale homes, which means that securities furnished by enterprises are on average less liquid than those furnished by the household sector. As a result, the value of securities for commercial loans is probably more sensitive to cyclical movements, and losses on loans to the enterprise sector are more likely when they have problems servicing debt.

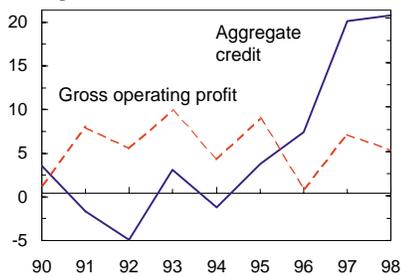
Rent for office premises in the largest towns remained more or less unchanged in the second half of 1998, despite the rise in interest rates. Average nominal rent is still substantially lower than the peak level recorded in the 1980s. Similarly, prices in the secondary market are clearly lower than in 1987, when adjusted for general inflation. There were also signs of a 10-15% fall in prices in the secondary market for commercial property in the second half of 1998, according to OPAK. If the Norwegian economy does enter a period of zero growth, a further fall in prices for existing commercial buildings must be expected. This, combined with a deterioration in enterprise sector debt-servicing capacity, means that financial institutions must be prepared for higher losses in the period ahead.

Risk classification of particularly exposed industries

On the basis of annual accounts figures reported to the Brønnøysund Registers, all Norwegian limited companies are classified according to risk, using Norges Bank's risk-classification model, SEBRA. Key elements in the model are presented in Table 3.1 and the text box below. The model is also described in more detail in Financial Sector Outlook, Economic Bulletin 1997/4.

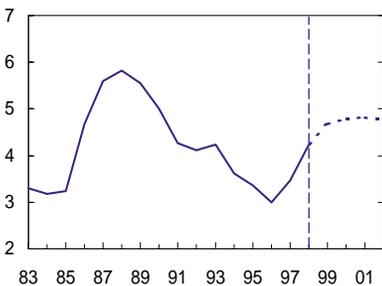
During the last cyclical downturn, banks recorded substantial losses on loans to property management enterprises. Property prices fell in line with falling rent income and rising interest expenses, to the extent that collateral values did not cover banks' outstanding loans when the wave of bankruptcies occurred. In 1997, high-risk enterprises accounted for 2/3 of long-term debt (NOK 56 billion) to the property management

Chart 3.13 Growth in aggregate credit from domestic and foreign sources and gross operating result. Enterprise sector. Per cent



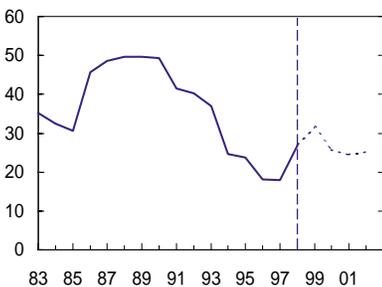
Sources: Statistics Norway and Norges Bank

Chart 3.14 Interest-bearing debt as a share of cash surplus excl. interest expenses. Private, non-financial enterprises



Source: Norges Bank

Chart 3.15 Interest expenses as a percentage of cash surplus. Private, non-financial enterprises. Per cent



Source: Norges Bank

sector. This share was around $_$ at the start of the 1990s. Enterprises which had a debt interest burden in excess of 50% of the cash surplus accounted for over half the debt in this sector in 1997. Furthermore, a survey conducted by the Banking, Insurance and Securities Commission shows that the most of the loans to the real estate sector are floating rate loans, which made them highly sensitive to the interest rate increases in 1998. According to OPAK, leasing contracts are generally long-term, which makes it difficult to regulate rent at short notice. It is therefore likely that costs increased more than income in 1998, and that the rise in interest rates has served to increase the risk of losses on loans to property management enterprises. If demand for commercial premises, and thus also rent income, should fall in the period ahead, this risk may become even higher.

Shipbuilding and construction enterprises will probably experience a reduction in orders in the period ahead. This will mean a loss in income, but these enterprises can reduce costs at relatively short notice through lay-offs, etc. Another common feature is that these enterprises do not have much long-term debt, and short-term borrowing is seldom in the form of bank loans.

In 1997, shipyards had long-term debts amounting to NOK 2 billion, whereas total debt came to NOK 23 billion. High-risk enterprises accounted for around 30% of long-term and total borrowing. Enterprises with less than 10% equity capital accounted for a good 50% of long-term debt, and therefore have poor financial strength in a situation where both orders and income are likely to decline.

The construction industry's long-term debt amounted to NOK 10 billion, and total debt to NOK 35 billion at end-1997. High-risk enterprises accounted for 60% of long-term debt in 1997, and around half of this refers to enterprises with an equity ratio of less than 10%. Even though the weak growth in orders combined with poor financial strength may lead to higher losses in both industries, bank losses will probably be limited due to the relatively low level of lending to these industries.

Outlook for enterprises' debt servicing capacity

In the period from 1996 to 1998, the debt/income ratio (the ratio between interest-bearing debt and cash surplus, less interest expenses) rose to over 4 for the first time since 1993 (Chart 3.14). Cash surplus is defined as gross product plus financial income, less wage costs and tax. Real annual growth in the cash surplus is projected at 1% in the period 1999-2001, which is considerably lower than the 21/4% recorded in the preceding 15-year period. Credit demand in the enterprise sector will decline, following a projected fall of up to 20% in mainland business-fixed investment over the next three-year

Demographic changes and financial exposure in the household sector

According to economic theory, households seek to distribute their life earnings so that consumption does not depend on the current period's income. This means that household saving is motivated by the wish to maintain roughly the same level of consumption after retirement or in periods of unemployment, as during periods of life with wage income. The theory posits that household wealth will increase in the period to retirement, and then diminish to zero, or desired level of inheritance.

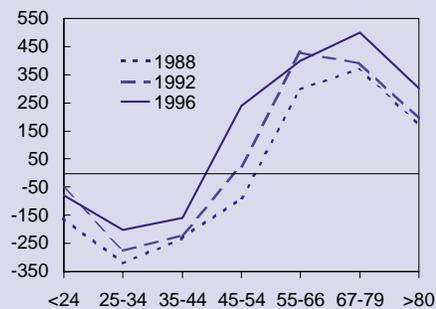
Chart 1 shows average net financial wealth for different age groups in three selected years. Housing wealth is not included, so that the curve for the youngest group has negative values. The path of the three curves seems consistent with the life cycle theory, in that net financial wealth increases towards retirement age, and then declines. With a few exceptions, the curve for both 1992 and 1996 is slightly higher than the curve for the previous period, reflecting an improvement in the financial position of all age groups in the period 1988-1996. The trend must be viewed in the light of a substantial increase in household disposable income in the period, as a result of growth in the Norwegian economy. Another important feature is that the age when households achieve a net lending position has fallen in the period. In 1988 this threshold was probably well over 50, whereas it was under 50 in 1996.

If the life cycle theory provides a good description of household behaviour, which Chart 1 seems to indicate, demographic changes will affect savings behaviour and financial exposure in the household sector. An increase in relative terms in the share of the population in each age group which has positive net financial wealth, will mean that financial exposure in the sector as a whole is reduced. Even though there is a limit to how much the composition of the age groups will change over a period of 10-15 years, Chart 2 shows that changes in demographic conditions probably have contributed to the marked improvement in the household sector's financial position over the past 10 years.

In 1986, those born in the baby booms between 1946 and 1970, were aged between 16 and 40. This age group accounted for nearly 40 per cent of the population. Many of these people have since moved from a net debt position to achieve positive net financial wealth in 1998.

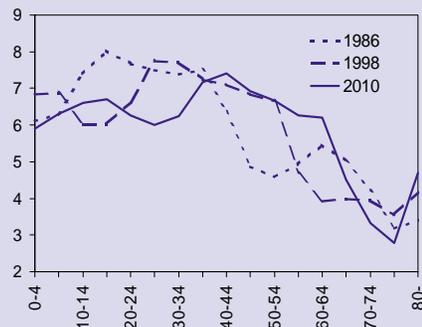
An important feature of developments in the period to 2010 will be that an increasing share of this baby boom generation will move into a net financial asset position. According to Statistics Norway's population forecasts, 34% of the population will be between 40 and 64 years of age in 2010. This, combined with assumptions of continued growth in real disposable income, therefore indicates that demographic conditions imply a trend rise in the saving ratio and a further improvement in the household sector's financial position.

Chart 1. Household sector average net lending, by age group. In 1000s of 1995 kroner



Sources: Statistics Norway and Norges Bank

Chart 2. Age composition of the population. Percentages in various age groups

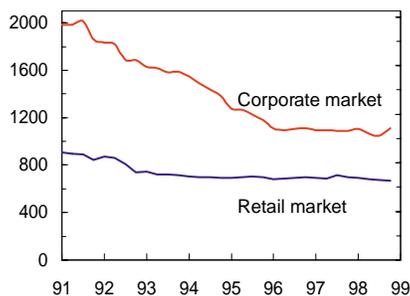


Source: Statistics Norway

period. Although it has been assumed that the growth in debt will slow to 5% in 2001, the debt/income ratio will edge up towards 5 as a result of weak profitability trends.

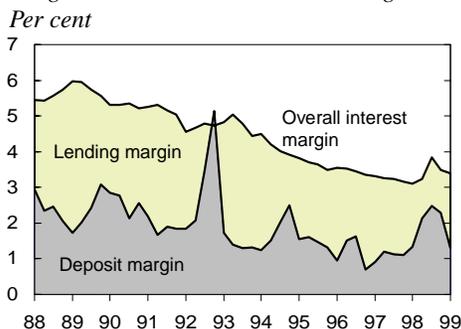
Enterprise sector debt interest is projected to 30% of the cash surplus in 1999, a marked increase on the past couple of years, but still low in relation to the period prior to the banking crisis. If the technical assumption is made that interest rates will be lower in the period ahead, the debt-interest burden will fall to 25%. In this scenario, the enterprise sector will thus have a sound debt-servicing capacity, but many enterprises will be vulnerable to unexpected developments which weaken profitability, due to the high debt/income ratio.

Chart 4.1 Market concentration. Herfindahl index for commercial and savings banks' lending. Index value



Source: Norges Bank

Chart 4.2 Banks' deposit and lending margins and overall interest rate margin.



Source: Norges Bank

4 FINANCIAL EXPOSURE IN THE FINANCIAL SECTOR

4.1 Competition in the financial industry

Competition in the financial industry is of considerable importance to banks' earnings, and therefore also to financial strength. In a situation with growing competition, key measures for maintaining profitability are to reduce costs and to expand the range of products, for example, by means of acquisitions, mergers and alliance-building. Some banks may also consider taking on higher risk. Two factors that describe changes in the competition in the banking industry are the trend in banks' deposit and lending margins, and the various indicators for market concentration. Increased competition will normally result in diminishing concentration and a deterioration in the deposit and/or lending margins.

Low market concentration in the lending market

Concentration in the loan market is low both in historical terms, and compared with loan markets in the other Nordic countries, as shown in Chart 4.1 by the Herfindahl Index²⁾ for the market for private and commercial loans. US competition authorities interpret a market where the Herfindahl Index is under 1000 as a market with low concentration and a market with values in excess of 1800 as concentrated. Concentration in the retail market has been low throughout the 1990s. The market for commercial loans has become considerably less concentrated in the course of the 1990s, and the Herfindahl Index now stands at around 1100. When lending from mortgage and finance companies is included, the Herfindahl Index for commercial loans is around 350 points lower, which indicates low concentration.

Pressure on banks' interest margins

Chart 4.2 shows changes in banks' deposit and lending margins³⁾ and the total interest margin from 1988 to end-1998. The deposit margin fell throughout the entire period to the third quarter 1996, and then rose again in 1997 and 1998. The deposit margin, particularly for wage accounts, increased considerably in 1998 in connection with the volatility in

²⁾ The Herfindahl Index is defined as the sum of all institutions' squared market shares measured in per cent. The index assumes values between 0 and 10 000.

³⁾ The deposit margin is defined as the differential between the effective three-month NIBOR rate and average interest on deposits. The lending margin is defined as the differential between average interest rates for all loans excluding non-accrual loans and the effective three-month NIBOR rate.

interest rates. In the two quarters to the end of the first quarter of this year, the deposit margin has again shown a falling trend.

Competition for household saving among banks, and between banks, insurance companies and securities funds is strong. In the 1990s, financial investment in insurance claims, securities funds and direct investment in the equity market has increased, at the cost of bank deposits (see section 3.1). The rise in interest rates and fall in the equity market in autumn 1998 has made bank deposits more attractive again, but this may only be short-lived. If interest rates fall in line with market participants' expectations, and share prices follow a positive trend, financial investment in the securities market will probably pick up. This may contribute to a reduction in the deposit margin.

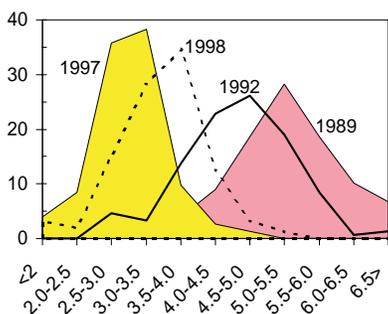
Competition for savings influences banks through lower deposit margins and a lower deposit to loan ratio. Lower deposit to loan ratios result in a further deterioration in banks' earnings as banks have to procure financing from other sources, which is normally more expensive than financing through customer deposits. This means that banks' gross earnings from traditional customer deposits deteriorates. Banks are trying to offset this trend, which weakens earnings, by offering new products. Many banks therefore offer saving in the form of life insurance, securities funds and direct investment in the equity market, in addition to traditional bank saving.

In order to expand the range of saving products on offer, banks often establish alliances and cooperation agreements, or mixed financial groups. It is assumed that this development will create considerable challenges in the period ahead for smaller savings banks which have traditionally had high deposit to loan ratios and offered a more limited range of other saving products. However, we anticipate that these banks will also use alliances and cooperation agreements to improve earnings.

The lending margin has shown a falling trend since 1989 (Chart 4.2), with a temporary sharp drop last year in connection with the rise in money market rates. The decline in the lending margin in the 1990s is in part ascribable to improvements in customers' creditworthiness and increased price competition.

At the same time, several foreign banks have also entered the Norwegian market. These banks hope to win market shares, and one way to establish customer relations with attractive customers is to offer loans at favourable prices. Most foreign banks have focused on large corporate customers, whereas the Swedish Handelsbanken and maybe even the Danish Den Danske Bank, if they manage to acquire Fokus Bank, are also focusing on the retail market and the market for small and medium-sized enterprises. As regards

Chart 4.3 Spread of banks' interest rate margins. Percentage of banks within various intervals



Source: Norges Bank

large customers, banks' are also in competition with the securities market. This competition will continue to grow as the introduction of the euro will probably lead to further development of the securities markets within the euro area.

On the one hand, growing competition combined with an expected reduction in credit demand in the period ahead, indicates that the strong pressure on banks' interest margin will continue. On the other hand, the equity capital situation for some banks appears to be restricting growth, which may also serve to alleviate the pressure on the lending margin. In addition, reversals of loan losses have slowed, and will eventually cease, at the same time that the large banks will find themselves in a tax position. The prospect of a rise in losses will also demand higher margins, if banks are to achieve satisfactory results. On the whole, there are several factors that indicate a slight increase in the lending margin. However, the competitive situation limits the scope for higher margins.

Chart 4.3 shows a reduction in the spread in banks' interest margins, accompanied by a fall in the margin level from 1989 to 1997. A reduction in the spread reflects difficulties in maintaining higher margins than competitors, due to keener competition. The chart also shows that the spread in interest margins increased parallel to the rise in interest rates in 1998. The increase in the spread may be due to banks' interest rate changes becoming effective at different times. It could also reflect that banks have adjusted to the rise in interest rates in different ways, depending on whether they wanted continued growth or consolidation in their balance sheets.

Payment systems – an important competition parameter

Payment services are in themselves an important product and can, in addition, generate sales of other banking services. For this reason, they are core products for banks. Competition from foreign banks will primarily be concentrated on large corporate customers who require international payment services. Foreign banks are expected to use international payments services as a means to win new customers in the Norwegian market.

Even if the number of transactions continues to rise, the reduction in average prices and strong competition indicates that total earnings from payments services are not likely to rise in the next few years.

Sharp competition in securities trading, etc

Several of the foreign banks which have established themselves in Norway have, to a large extent, focused on specialised products within foreign exchange trading, investment man-

Table 4.1 *Operating results and financial strength of commercial banks.¹⁾ In billions of NOK and as a % of ATA*

	NOK bn		% of ATA	
	Q1 98	Q1 99	Q1 98	Q1 99
Net interest income	2.4	2.8	1.96	2.02
Other operating income	1.5	1.7	1.20	1.20
Other operating expenses	2.6	2.8	2.14	2.02
Pre-loss operating profit	1.3	1.7	1.02	1.20
Recorded losses	-0.1	0.1	-0.11	0.04
Write-down/loss on long-term securities	0.1	-0.0	0.05	-0.03
Pre-tax operating profit	1.3	1.6	1.08	1.19
Core capital ratio ²⁾			7.2	7.7

¹⁾ Norwegian parent banks, excluding foreign-owned branches in Norway and Postbanken

²⁾ As a percentage of basis of measurement

Source: Norges Bank

Table 4.2 *Operating results and financial strength in savings banks. In billions of NOK and as a % of ATA*

	NOK bn		% of ATA	
	Q1 98	Q1 99	Q1 98	Q1 99
Net interest income	2.5	3.1	2.72	2.98
Other operating income	1.0	1.2	1.04	1.14
Other operating expenses	2.2	2.4	2.38	2.28
Pre-loss operating profit	1.3	2.0	1.38	1.85
Recorded losses	-0.0	0.2	-0.03	0.16
Write-down/loss long-term securities.	-0.2	-0.2	-0.20	-0.20
Pre-tax operating profit	1.5	2.0	1.61	1.90
Core capital ratio ¹⁾			11.3	11.6

¹⁾ As a percentage of the basis of measurement

Source: Norges Bank

agement, derivatives and securities trading in general. Such products often require a certain size, either in the form of total assets or number of transactions, and require considerable expertise and renewal. Large international banks therefore have a competitive edge on most Norwegian banks in this area, which may also make it difficult for Norwegian banks to increase earnings from these services. Another factor is that earnings from such activities are cyclically sensitive, and can therefore fluctuate substantially.

Norwegian banks have sought to develop expertise in the field of corporate finance⁴⁾, where price competition is limited and where expertise and contacts in the market (investment capacity) are of importance. Due to their knowledge of the market and customer relations, Norwegian banks have a competitive advantage over foreign banks and foreign, specialised brokerage firms as regards investment in Norwegian kroner and in relation to Norwegian enterprises. However, this activity is to date of little significance to banks' total earnings.

4.2 Profit trends and balance sheets

Profit trends

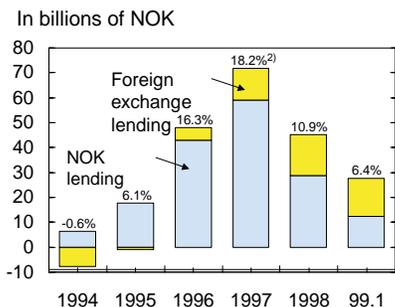
Commercial banks⁵⁾ ordinary operating profit was better in the first quarter of 1999 than in the same period in 1998, measured in both NOK and as a share of average total assets (ATA) (see Table 4.1). The improvement is due to higher net interest and lower operating expenses, measured as a share of ATA. Other operating income remained at roughly the same level, whereas losses increased slightly. However, the reduction in losses was considerable when compared with the third and fourth quarters of 1998. The high level of losses last autumn was primarily ascribable to one particular bank.

As mentioned, net interest was higher than in the first quarter of 1998, but showed a deterioration compared with the fourth quarter of the last year, and 1998 as a whole. The interest margin narrowed in the first quarter of 1998, then rose sharply to the end of the third quarter, followed by a decline again in the fourth quarter last year and the first quarter of 1999. The improvement in the interest margin last autumn reflected the rise in interest rates. The deposit margin increased sharply through 1998 as a result of time differences between when banks raised lending and deposits rates. However, the lending margin narrowed and stood at 1.1% at end-1998. As the increase in the deposit margin was greater

⁴⁾Corporate finance primarily comprises advice on and execution of issues of shares and debt instruments, and advice on mergers and acquisitions.

⁵⁾ The commercial bank group comprises all commercial banks (Norwegian parent banks), excluding Postbanken and foreign bank branches and subsidiaries in Norway.

Chart 4.4 Year-on-year growth in commercial banks¹⁾ gross lending in foreign currency and NOK

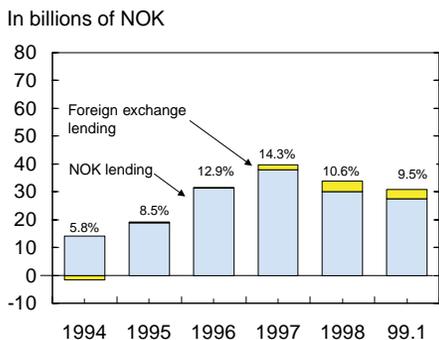


¹⁾ Excluding foreign branches

²⁾ Corrected for transfer from Vital to DnB

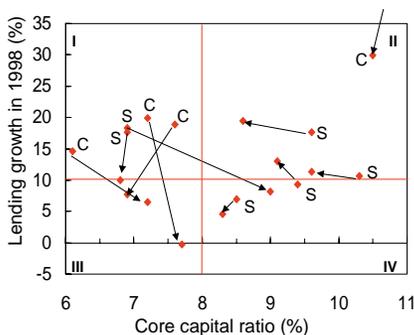
Source: Norges Bank

Chart 4.5 Year-on-year growth in savings banks' gross lending in foreign currency and NOK



Source: Norges Bank

Chart 4.6 Core capital ratio and 12-month lending growth in largest banks.¹⁾ Developments in 1998. Per cent



¹⁾ Excl. Postbanken

C = Commercial banks, S = Savings banks

Source: Norges Bank

than the fall in the lending margin, the interest margin as a whole improved. Falling interest rates in the first quarter of 1999 have had the opposite effect, ie the lending margin has risen, and the deposit margin has narrowed. The improvement in the lending margin, however, was smaller than the decline in the deposit margin, so that the interest margin as a whole has declined somewhat.

Commercial banks' other operating expenses rose by a nominal 7.8% from 1997 to 1998, whereas the increase from the first quarter of 1998 to the first quarter of 1999 was 6.1%. Expenses continued to rise sharply, even though banks have made provisions for restructuring measures and invested in new technology in order to reduce costs. As a share of ATA, expenses decreased by a little more than 0.1% in both bank groups.

Savings banks' ordinary operating profit before tax increased substantially in the first quarter of 1999, compared with the first quarter of 1998, due to a combination of higher net interest and capital gains on securities⁶⁾, and slightly lower other operating expenses (as a share of ATA). As with commercial banks, net interest deteriorated in the last quarter. Recorded losses rose from the first quarter of 1998 to the first quarter of 1999, whereas there was a fall in the last quarter, in line with commercial banks. Savings banks recorded a nominal increase of 7.6% in expenses from the first quarter of 1998 to the first quarter of 1999, which is considerably higher than from 1997 to 1998, when expenses increased by just under 3%.

Although both bank groups recorded good results in the first quarter of this year, some features call into question underlying earnings. For example, the rise in nominal costs continued to be high in the first quarter. In addition, accounts for the first quarter contain a number of one-off effects which boost profits. A more detailed evaluation of underlying earnings and future prospects is presented in section 4.3.

Banks' balance sheets and financial strength

Growth in bank lending continues to slow. At the end of the first quarter of 1999, the twelve-month growth in commercial banks' lending to customers was 5.1%⁷⁾ compared with 8.7% at the start of the year. Corresponding figures for savings banks were 9.5% and 10.2% respectively. Foreign currency loans accounted for a substantial part of commercial banks' lending growth in the last year (Chart 4.4). In 1998, foreign

⁶⁾ In addition to lower interest rates, the improvement is probably ascribable to changes in accounting rules which entail that securities are included in trading portfolios which are recorded at market value, whereas previously they were recorded at the lower of purchase or market value.

⁷⁾ Adjusted for transfers from banks to mortgage companies amounting to a good NOK 17 billion.

currency loans to Norwegian enterprises accounted for roughly 75% of growth. There has thus been a shift from NOK loans to foreign currency loans. The trend must be viewed in connection with the widening interest differential between Norway and abroad over the past year. Savings banks also recorded an increase in foreign currency loans, but the share was still marginal (Chart 4.5).

At the same time that lending growth has slowed, growth in banks' deposits has increased, therefore diminishing the need for financing from other sources. In addition, there has been a shift from short-term to more long-term foreign financing. The liquidity risk attached to banks' foreign financing has therefore been reduced somewhat. The volume of short-term foreign financing is still substantial, however, particularly as regards the large banks.

After two years of declining financial strength, core capital ratios in both bank groups remained more or less unchanged from end-1997 to end-1998, even though changes in the rules for the weighting of mortgages has, in isolation, resulted in a deterioration in capital adequacy. These changes had the greatest impact on savings banks. Banks were able to maintain capital adequacy in 1998 due to lower lending growth and the fact that some banks have raised new equity capital.

The trend in core capital ratios for the ten largest banks is shown in Chart 4.6. Banks in area I have high lending growth and low core capital, in relative terms. Area II is characterised by high lending growth and high core capital ratio. In area III, lending growth and core capital ratios are relatively low, whereas banks in area IV are characterised by sound core capital and low lending growth. This means that a bank which moves down and towards the right from one year to the next has reduced lending growth and increased capital adequacy, and is therefore less exposed to risk. The chart shows a largely positive trend, as banks with the lowest core capital ratios have recorded the sharpest fall in lending growth. Furthermore, capital adequacy in three of these banks has improved. As a result, there were no banks in area I at end-1998, whereas five banks were included in this area in 1997. Three banks have recorded high lending growth in 1998 – all three are savings banks. Core capital ratios in these banks deteriorated during 1998, but were still satisfactory at the end of the year.

4.3. Future developments in banks' results and financial strength

On the basis of the real economic forecasts presented in the December 1998 and March 1999 Inflation Reports, the outlook for competition in the financial sector presented earlier in this report, and banks' results and balance sheets for 1998, projections have been made for commercial and savings

banks' (parent banks) results in the period 1999-2002. The estimates are made to illustrate the consequences that different trends may have for banks' earnings and financial strength. This is done by establishing a baseline scenario and then evaluating the sensitivity of the assumptions underlying this scenario. With a few exceptions, the same assumptions have been made for commercial banks and savings banks. The estimates are relatively mechanical and shrouded in uncertainty, and should therefore not be interpreted as a description of expected developments.

Key assumptions for the estimates are the trend in lending growth, the interest margin, costs and loan losses. It has been assumed that banks' lending growth will slow in the years ahead, in line with prospects for a sharp decline in business-fixed investment and a slight fall in housing investment. Competition for private sector savings is expected to remain strong, resulting in continued low growth in deposits in the period ahead. The financing gap (difference between lending and deposit growth) will probably continue to widen, and in the estimates it has been assumed that this will be covered by borrowing in the form of securities.

Competition in the lending and deposit markets is expected to remain strong, entailing continued pressure on the lending and deposit margins (discussion above). Assumptions of higher loan losses in the period ahead may push banks to increase the lending margin, which is expected to be accompanied by a fall in the deposit margin, so that the interest margin as a whole will narrow. We have assumed that the interest margin will edge down in the given period towards the average margin recorded in 1997, ie slightly lower than the average for 1998.

Banks have stated objectives to increase earnings from sources other than deposit and lending activities. If it is assumed that commissions and fees rise in step with total assets, and that foreign currency gains and capital gains remain stable at the nominal average recorded over the last five years, other operating income as a share of total earnings will increase somewhat, but not enough to offset the reduction in net interest income.

Other operating expenses are expected to rise, in nominal terms, in the period ahead, in part due to the considerable challenges facing banks as regards technology and restructuring costs.

Following several years with an extraordinarily low level of losses, losses are expected to edge up to around 0.5% of net lending by 2002, which must be viewed as a normal level.

As a result of the falling trend in net interest and the continued rise in costs, combined with an expected normalisation of loan losses, total earnings will deteriorate and the return on equity will be weak. The trend in the return on equity will be even less favourable for commercial banks than savings banks, as savings banks currently pay full tax,

whereas commercial banks' tax burden will increase over the next few years.

Despite a deterioration in earnings, commercial banks' core capital ratios will only weaken marginally during the period, whereas savings banks will record an improvement. This is ascribable to the assumptions regarding low lending growth.

If estimates are based on the assumed trends outlined here, banks will face considerable challenges in achieving prices for lending which reflect the expected increase in losses. It may be necessary for a number of institutions to combine higher lending prices with measures to curb the rise in costs. In addition, some institutions will probably have to reduce lending growth in order to avoid a deterioration in financial strength, due to robust balance sheet growth.

NEW 500-KRONE BANKNOTE

A new 500-krone banknote was presented at a press conference at Norges Bank on 2 June 1999. The note was put into circulation on 7 June and is the fourth denomination to be issued as part of the Series VII Norwegian banknotes. The obverse, bearing a portrait of the young Sigrid Undset, was designed by Sverre Morken, Chief Graphic Designer. The rosette on the left bears elements inspired by her lace collars, while the background is based on traditional Norwegian weaving patterns and Gudbrandsdal tapestries. The reverse was designed by Arild Yttri, Deputy Graphic Designer. It bears a wreath of wheat spikes and wild roses, inspired by the first book in the Kristin Lavransdatter series, *The Bridal Wreath*. The base pattern on the reverse also draws upon elements from old Gudbrandsdal tapestries.

Sigrid Undset wrote 33 books and several hundred articles. An old manuscript recently discovered in her home, Bjerkebak, in Lillehammer, was published in book form in 1998.

Even in childhood, she dreamt of becoming an author. Her debut novel, *Fru Marta Oulie*, was borne of long hours of work at night at a time when she was working in an office in Christiania. She was awarded the Nobel Prize for literature in 1928 for her opus, *Kristin Lavransdatter*.

In addition to the usual security features of Norwegian banknotes such as the watermark, security thread, cotton paper, intaglio print, micro-lettering and see-through register mark, the new 500-krone note contains a 13 mm wide optically variable stripe containing a motif with a Norse horse and the number 500. As the note is held up to the light at different angles, the various parts of the motif light up in different colours. On the reverse of the note is a vertical stripe consisting of horizontal repetitions of the number 500 in iridescent colour. Both the size and the colour combination of the 500-krone note clearly distinguish it from the other Series VII banknotes.

The banknote shown below is 70% actual size.



THE 20-KRONE COMMEMORATIVE COIN

DESCRIPTION AND TECHNICAL DATA



Obverse



Reverse

A 20-krone commemorative coin has been minted to mark the 700th anniversary of Akershus Castle in Oslo. The coin is legal tender and is being issued at face value.

Technical details:

Diameter: 27.5 mm
Thickness: 2.2 mm
Weight: 10 g
Alloy: 81% Cu, 10% Zn, 9% Ni
Rim: Plain

Artist: Ingrid Austlid Rise

Design:

Obverse:

The reverse of King Håkon V Magnusson's two-sided seal (coat of arms). The Norwegian lion, the design which forms the basis for the present-day Norwegian coat of arms, has replaced the knight traditionally portrayed on the seal. Below the motif: the denomination 20 KR flanked by the

crossed pick and hammer mintmark of the Royal Norwegian Mint and the initials of the director of the Royal Norwegian Mint, JEJ (Jan Erik Johansen), all of which appear above NORGE (Norway) and the year, 1999.

Reverse:

Akershus Castle and medieval fortress as it appeared in the 14th century. The designer's initials, IAR, are inscribed in the fortress wall to the right. Below the motif to the right: the legend AKERSHUS 700 ÅR (Akershus 700 years).

The coin will come into circulation on 7 May 1999. No ordinary 20-krone coins bearing the date 1999 will be minted.

Oslo, May 1999

COMMEMORATIVE COIN TO MARK THE NEW MILLENNIUM

At a press conference held at Norges Bank on 18 May 1999, Minister of Culture Anne Enger Lahnstein presented a silver commemorative coin, the first of a two-coin series in celebration of the turn of the millennium. The second coin is to be of gold. The first coin is being issued by Norges Bank in collaboration with Tusenårskiftet - Norge 2000 AS, which was established by the Government to prepare and implement activities to mark the arrival of the new millennium, and the celebration of 100 years of Norwegian independence from Sweden in 2005.

The motif on the coin's obverse is the Norwegian lion. The obverse also bears the coin's denomination, the mint year and the text "Norge år 2000" (Norway - 2000). The turn of the millennium is symbolised on the reverse by the rings of a tree trunk and the text "Tider skal komme" ("Times will

come" - Luke 21.6). The coin was designed by the Chief Engraver of the Royal Norwegian Mint, Ingrid Austlid Rise.

The coin is of silver (925/1000) and struck in proof quality, so that the matt relief of the motif contrasts with the mirror-bright background. The coin has a nominal value of NOK 100, a diameter of 39 mm and weighs 33.6 grams. It contains one ounce (31.1 grams) of silver. A maximum of

50 000 will be struck. The coin will be delivered in a special case with a certificate of authenticity.

The coin may be purchased for NOK 395, and is being marketed by Samlerhuset AS on behalf of Tusenårskiftet - Norge 2000 AS. The coin will be issued on 1 September, but all households in Norway will receive a pre-issue offer. Sales profits will be used for millennium projects and cultural initiatives throughout the country.



Obverse



Reverse

EVALUATION OF NORGES BANK'S PROJECTIONS

*by Anne Sofie Jore, economic adviser in the Economics Department, Norges Bank**

As a means to drawing up the most accurate projections possible for economic developments, Norges Bank regularly evaluates its model-based forecasts. Analyses of forecast errors may make an important contribution to improving projections. It is also desirable to compare Norges Bank's projections with those of other institutions.

The strength of the cyclical upswing was clearly underestimated in the projections for the period 1994-1996. Projections for employment growth were particularly low, also for the 1997 projections albeit to a lesser extent. On the other hand, forecasts for price and wage inflation were fairly accurate. The forecast errors were to a large extent ascribable to erroneous assumptions about economic policy, particularly growth in public demand. Petroleum investment was also much higher than projected. If the model-based projections are corrected for these factors, they are very close to the outturn, particularly for price and wage inflation. Over the past year, Norges Bank took steps to improve the accuracy of the exogenous variables used in the projections. Among other things, the estimate for public spending growth is supplemented by Norges Bank's own assessment of local government demand. Furthermore, data on oil-related activities are collected from a larger number of sources than earlier.

A preliminary analysis of forecast errors for 1998, based on figures from the national accounts figures published in February 1999, indicates that previous analyses of forecast errors may have improved the projections. Forecast errors seem to have been reduced in 1998 compared with the two previous years.

A comparison with projections from Statistics Norway and the Ministry of Finance for the period between 1994 and 1998 indicates that the degree of forecast errors from the three institutions has been fairly similar. On average, however, projections from Statistics Norway and Norges Bank have been more accurate than forecasts from the Ministry of Finance.

In this article, we focus on forecast errors stemming from erroneous estimates of economic policy and inaccurate projections for other exogenous variables. A more thorough analysis would also include a further disaggregation of errors stemming from the incorrect use of the model and those errors occurring due to model deficiencies. Such an analysis will be undertaken once the revision of the national accounts system that took place in the mid-1990s has been fully incorporated in the model data.

Introduction

Pursuant to the Norges Bank Act, Norges Bank is an executive and advisory body in the area of monetary and foreign exchange policy. Analyses of the macroeconomic situation, including forecasts for economic developments in the Norwegian and international economy, which are published in the Bank's quarterly Inflation Report, are an important basis for the formulation of monetary policy. In addition, the analyses are used as a basis for advice on the orientation of general economic policy.

Norges Bank aims to produce the best possible projections for the Norwegian economy. The macroeconomic model RIMINI, developed in Norges

Bank's Research Department, has been the principal tool for Norges Bank's analyses since 1994. RIMINI is an econometric model with approximately 370 equations. About 70 of these equations are estimated on the basis of historical data, while the remaining equations are definitional relationships.

It must be possible to evaluate the outturn of Norges Bank's projections if they are to be credible over time. For this reason, Norges Bank has placed considerable emphasis on transparency and the availability of its forecast work, including adjustments of previous errors. Projections are based on a model that is publicly known, and the Bank's use of the model is published. The purpose is to provide

*With thanks to my colleagues at Norges Bank for their useful comments.

others with the basis for evaluating how we have arrived at our projections. Systematic evaluation of the use of the model places greater demands on the Inflation Report and ensures that projections are not actively used in an attempt to influence the market in any way.

It is important that errors are revealed if projections are to improve and become more accurate. This will lay the foundation for better exogenous projections and for improving the model and the way the model is used. We also wish to compare Norges Bank's projections with those of other institutions in order to determine whether our projections are at least on a par with those of other institutions.

Analyses of Norges Bank's projections have been published previously. In an article published in *Penger og Kreditt* 1996/1 (Madsen 1996), Norges Bank's projections for the years 1987-1994 are compared with those of other institutions. An article published in *Economic Buletin* 1998/1 (Jore 1997) provides an analysis of Norges Bank's projections for the period 1994-1996 that focuses on the factors behind forecast errors in 1996. The article also provides some summary measures of forecast errors for the Ministry of Finance, Statistics Norway and Norges Bank, showing that these institutions' projections were almost equally accurate. The article also shows that the strength of the cyclical upswing was considerably underestimated by all the institutions.

The first section of this article briefly describes the main sources of forecast error. This is followed by an analysis of forecast errors in Norges Bank's projections for 1997. The evaluation was carried out using the same method employed in the evaluation of projections for 1996 (Jore 1997). Forecast errors in the projections for 1998 are examined briefly on the basis of preliminary national accounts figures published in February this year. We will publish a more thorough analysis of 1998 at a later date. The last section of the article presents an overview of projections for the entire period 1994-1998, comparing projections from Norges Bank with those of Statistics Norway and the Ministry of Finance.

Forecast errors

The macroeconomic model RIMINI has been the most important tool for Norges Bank's projections since 1994. In the model, important economic relationships are represented by quantified empirical

relationships. The model also takes account of the simultaneity in the economy: the explanatory variables in the individual equation are taken as given, but by combining several equations account is taken of the fact that the explanatory variables in one equation are determined in another. The model also ensures consistency in that demand equals supply in the various market segments.

However, there are significant sources of forecast errors in an economic model. The model's coefficients are quantified on the basis of historical data. There are uncertainty intervals around each coefficient, and the interaction between many equations in a model increases the uncertainty around each variable. Changes in the functioning of the economy may not be captured by the quantification of coefficients. Finally, there are areas where the model does not take sufficiently into account important economic relationships.

These factors require the use of some degree of discretion, particularly for the shortest projections. The interpretation of current short-term statistics is an important basis for these discretionary evaluations. In practice, the evaluations are taken into account by adjusting the add factors in each equation. Erroneous adjustments of add factors therefore represent another important source of forecast errors. However, correct adjustments result in better forecasts.

In addition to forecast errors ascribable to incorrect assumptions on exogenous variables and model errors and deficiencies, projections may be affected by inaccurate estimates of the previous year's developments and a change in the base year of the national accounts. For projections for 1997 and 1998, forecast errors are also ascribable to the use of data from the old national accounts. This is examined more thoroughly by Jore (1997).

Owing to the main revision of the national accounts, it is not possible to make an exhaustive analysis of forecast errors due to the model and the use of the model. Norges Bank's Research Department is in the process of re-estimating the model relationships, however, so that a more complete analysis will be possible in due course.

In this article we will analyse the forecast errors for 1997 in the same way the analysis was undertaken in *Economic Bulletin* 1998/1. First, errors stemming from incorrect economic policy assumptions are eliminated, followed by errors ascribable to deviations of other exogenous variables from

actual developments. The errors remaining after adjusting for incorrect forecasts of policy variables and other exogenous variables are due to random effects, incorrect model use or model deficiencies. The projections are evaluated against the preliminary national accounts published in September of the following year. Revisions to the national accounts figures are also made after this time, but are usually minor. We will also briefly examine forecast errors for 1998 against accounts published in Statistics Norway's Economic Survey at the beginning of February 1999. These accounts usually undergo substantial revisions which, to a considerable extent, are based on projections for the fourth quarter. An analysis of forecast errors for 1998 is therefore of a provisional nature.

Errors in forecasts for 1997 and 1998

1997

In *Economic Bulletin* 1996/4, Norges Bank projected continued strong but moderating growth. We projected that growth in private and public consumption, traditional exports and mainland business fixed investment would be considerably lower than in 1996, while fixed investment in the petroleum sector would be substantially higher than the previous year. The lower growth in demand would, according to the projections, be accompanied by slower growth in mainland GDP and traditional imports. Following very high growth rates in employment in previous years, Norges Bank projected that employment growth would be reduced by half compared with the previous year. Pressures in the labour market were increasing, and it was assumed that price and wage inflation would be higher than in 1996.

Projections for key variables for 1997 are shown in Table 1, along with preliminary national accounts figures from Statistics Norway. As shown in the table, mainland demand was more robust than anticipated. The forecast for growth in private consumption was fairly accurate, while projections for public consumption and mainland business fixed investment were underpredicted. Petroleum investment was substantially higher than assumed. Total export growth was approximately as projected, but this was because the forecast errors in the sub-groups, traditional exports and oil and

gas exports, offset each other

Table 1 Projections for 1997 made in December 1996, and actual figures for 1997. Percentage growth from the previous year unless otherwise indicated

	Projection	Actual	Forecast error ¹⁾
Mainland demand	3¼	4.5	1¼
Private consumption	3½	3.4	-
Public consumption	1	3.0	2
Fixed investment	5½	9.7	4¼
Petroleum investment ²⁾	8	23.7	15¾
Exports	6	5.8	-¼
Oil, gas and pipeline transport	6½	2.3	-4¼
Traditional goods	6¾	8.0	1¼
Imports	6½	12.3	5¾
Traditional goods	5	8.6	3½
GDP	3½	3.4	-
Mainland GDP	3	3.7	¾
Employment	1½	2.9	1½
Annual wages	4¾	4.6	-¼
Consumer prices	2½	2.6	-
LFS unemployment	4	4.1	-

¹⁾ Percentage point difference between actual and projected value.

²⁾ Excluding services related to oil and gas production.

Sources: Statistics Norway (Economic Survey 3/98) and Norges Bank (Economic Bulletin 1996/4)

As a result of higher than expected demand, growth in both imports and mainland GDP was higher than implied by our projections. The higher growth in production also resulted in higher employment growth. Unemployment turned out as projected because higher employment growth was offset by higher growth in the supply of labour. An important factor behind the fairly accurate projection for consumer price inflation and wage growth is that unemployment was in line with projections. It is also clear that the main forecast errors, calculated as relative errors, related to variables that are exogenously determined, ie public consumption and petroleum investment.

The contribution of inaccurate exogenous assumptions to forecast errors is found by incorporating actual growth rates for the variables determined exogenously. The first line in Table 2 repeats the forecast errors for some of the variables in Table 1. The second line shows how large the forecast errors are after incorporating correct economic policy assumptions. In addition to public expenditure, these include money market interest rates and exchange rates. The projections for 1997 were based as usual on technical assumptions

Table 2 Forecast errors. The effect of changes in assumptions. Positive figures denote underprediction. Percentage points

	Mainland GDP	Employment growth	Wage growth	Consumer price inflation	Private consumption	Mainland business fixed investment
Aggregate error	¾	1½	-¼	0	0	4¼
Error after changes in policy assumptions	0	1	0	0	-¼	1
and after incorporation of correct estimates for all exogenous variables	0	1	0	-¼	0	¾

Source: Norges Bank

regarding exchange rates and money market rates. These entailed an average appreciation of 1 per cent from 1996 to 1997. The appreciation turned out to be somewhat lower, at 0.5 per cent. Interest rates averaged 3.7 per cent in 1997, 0.6 percentage point lower than the technical assumption.

If the economic policy assumptions for 1997 had been correct, the estimates for that year would have been more accurate. The forecast error for the estimate of growth in fixed investment would have been substantially reduced, primarily because the exogenously determined variable public investment was higher than anticipated. On the other hand, the estimate for private consumption would have been a little too high. Employment growth has increased by ½ percentage point in relation to the estimates, since public employment growth is now correctly projected. There is nevertheless still a substantial error in the employment estimate, whereas growth in mainland GDP is now correctly estimated.

The forecast errors remain virtually the same when the actual figures for the other exogenous variables are incorporated. The most important variables now assumed to be correct are petroleum investment and foreign price inflation. The increased petroleum investment helps to bring growth in mainland fixed investment closer to actual figures, but estimated consumer price inflation is now ¼ percentage point too low. The reason for this is that price inflation among our trading partners was lower in 1997 than assumed when the estimates were made. The accuracy of our estimate for consumer price inflation is due to the fact that the erroneous assumptions about external price inflation were offset by other types of error.

On balance, the forecast errors for 1997 were

smaller than for 1996. When correct assumptions for exogenous variables are incorporated, however, the estimated growth in employment still remains substantially underestimated. The remaining forecast error for growth in mainland fixed investment is almost as large, but the relative error is small, as is the forecast error for consumer price inflation.

The errors remaining after correct assumptions about economic policy and the other exogenous variables are incorporated are partly due to incorrect estimates for 1996, a change in the constant-price year, the break in the national accounts, and aspects of the model and its use. In future analyses of forecast errors, we will also look at the latter two causes of forecast errors, and the break in the national accounts will no longer have an effect. The analysis can then be more complete.

An evaluation of Norges Bank's projections for 1996 revealed that overly high forecasts for productivity growth, which is endogenous in the model, explained a large proportion of the forecast errors remaining after correct exogenous estimates had been incorporated. Productivity growth was also appreciably overestimated in the estimates for 1997. For a given GDP growth, this means that employment growth has been correspondingly underestimated. In recent years there has been a tendency to overestimate productivity growth and underestimate employment growth. If this is not attributable to the assumptions concerning exogenous variables, the cause must lie in factors relating to the underlying data, the model relationships or our use of the model. As described in Jore (1997), the main revision of the national accounts has led to problems in making model-based estimates. Forecast work for 1997 also had to be based on the old national accounts prepared up to and including 1994. Corrections of the add factors in the model's relationships are therefore used

to reconstruct historical growth rates. This has resulted in methodology problems with respect to arriving at values for the corrected add factors. Problems of this nature will affect the accuracy of the projections.

1998

Table 3 shows preliminary forecast errors in the estimates for 1998 presented in Economic Bulletin 1997/4. The estimates are compared here with the preliminary national accounts for 1998, published in February 1999. These are the first estimates for the national accounts, and the figures may be subject to major or minor revision.

From the preliminary figures, it appears that the forecast for economic growth was slightly overestimated in 1998, in contrast to previous years when economic growth was consistently underpredicted. Once again, factors exogenous to the model contributed to forecast errors – in particular, developments relating to the petroleum sector. Fixed investment in this sector again increased more strongly than expected, while oil and gas exports were substantially weaker than expected. In addition, the dramatic fall in oil prices, by a substantially larger margin than expected, resulted in a deficit on the current account instead of the large surplus projected.

Table 3 *Norges Bank's projections for 1998 presented in December 1997, and actual figures for 1998. Percentage increase on previous year unless otherwise indicated*

	Projection	Actual	Forecast error ¹⁾
Mainland demand	3¼	2.9	-¼
Private consumption	4	3.2	-¾
Public consumption	2	2.8	¾
Fixed investment	2½	2.0	-½
Petroleum investment ²⁾	2	18.8	16¾
Exports	7¾	0.5	-7¼
Oil, gas and pipeline transport	13½	-3.2	-16¾
Traditional goods	6	3.7	-2¼
Imports	4¾	6.9	2¼
Traditional goods	5	9.5	4½
GDP	5	2.0	-3
Mainland GDP	3¼	2.9	-¼
Employment	2	2.3	¼
Annual wages	5	6.3	-1¼
Consumer prices	2¾	2.3	-½
LFS unemployment, per cent	3¼	3.2	-

¹⁾ Difference in percentage points between actual and estimated value.

²⁾ Excluding services associated with oil and gas production.

Sources: Statistics Norway and Norges Bank

Overestimated growth in both private consumption and mainland fixed investment was partly offset by underestimated growth in public sector expenditure, but growth in mainland demand was still slightly overestimated. Exports of traditional goods were also overestimated. These errors were offset by the overprediction of GDP and import growth.

Employment growth was again underestimated, but the forecast error was appreciably smaller than in previous years. This can to some extent be viewed in the light of the experience of previous years. In the estimates for 1998, account was taken of the fact that there has been fairly systematic underestimation of employment growth and overestimation of productivity growth in the past.

Despite the fact that wage growth was underestimated and exchange rate movements were weaker than the technical assumption, consumer price inflation was overestimated. The main reason for this is that imported price inflation was substantially lower than anticipated, despite the weakening of the exchange rate.

Evaluation of estimates through the whole cyclical upturn

Charts 1 to 8 show Norges Bank's projections for some key macroeconomic aggregates for the period 1994 to 1998, together with forecasts from Statistics Norway, the Ministry of Finance, and growth rates in preliminary national accounts published in September of the following year¹⁾. The estimates are published in Economic Bulletin (1993/4, 1994/4, 1995/4, 1996/4 and 1997/4), Economic Survey (4/93, 4/94, 4/95, 4/96 and 4/97), the Final Budget Bill (1993, 1994, 1995, 1996) and the "Supplementary Proposition" (1997).

The three institutions have fairly similar projections for economic growth. Chart 1 shows that growth in mainland demand has been clearly underestimated throughout this cyclical upturn. Not until 1998, when growth in demand slowed, did the forecasts accurately predict growth in demand. The picture for growth in traditional

¹⁾ National accounts figures for 1998 were published in February 1999.

Chart 1-8. Growth estimates from Statistics Norway (SN), the Ministry of Finance (MoF) and Norges Bank (NB), compared with actual growth (Actual). Per cent. 1994 to 1998

■ SN ■ MoF ■ NB □ Actual

Chart 1. Mainland GDP

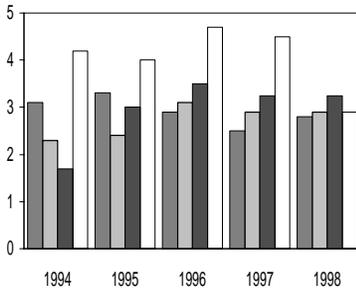


Chart 2. Export of traditional goods

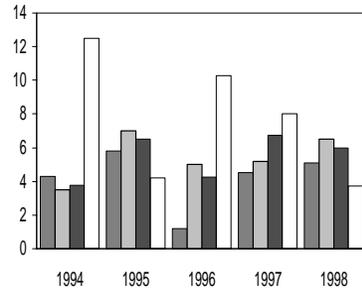


Chart 3. Petroleum investment

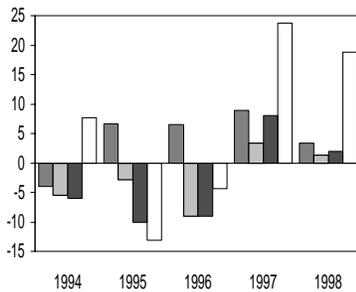


Chart 4. Mainland GDP

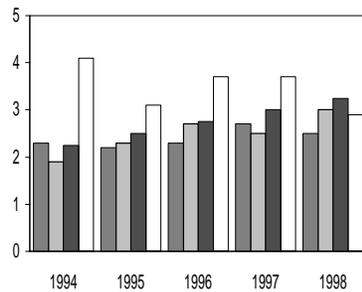


Chart 5. Import of traditional goods

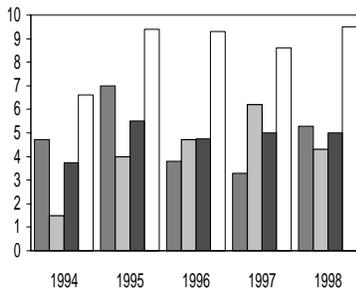


Chart 6. Annual wage growth

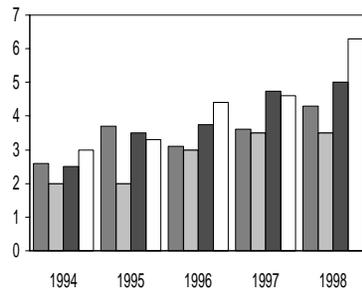


Chart 7. Consumer price inflation

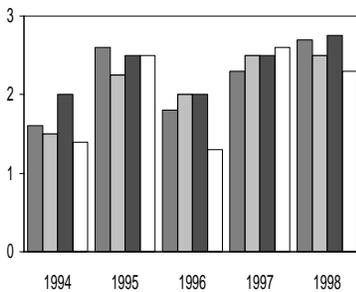
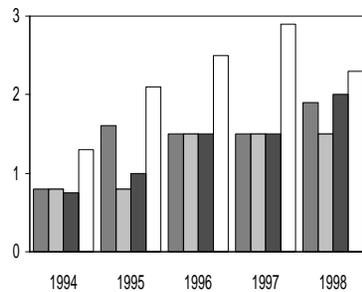


Chart 8. Employment growth



exports is more mixed, and there are both positive and negative forecast errors in Chart 2. Petroleum investment, which is determined exogenously, proves to be very difficult to estimate (see Chart 3). Although petroleum investment represents only a modest share of total demand, the changes in investment are so substantial from one year to the next that it makes a substantial contribution to changes in total demand.

Because growth in demand was underestimated, production and import growth was also underestimated (see Charts 4 and 5). The forecast errors for mainland GDP growth were reduced through the period, while projected import growth remained substantially lower than actual import growth.

Forecast errors for wage and price inflation are consistently smaller than those for demand and production (see Charts 6 and 7). This is partly because growth in nominal variables normally varies less than growth in real variables, but this may also be due to the general accuracy of the estimates for unemployment. Although there were large forecast errors for employment growth in the years 1995 to 1997 (see Chart 8), they were offset by corresponding errors in estimated labour force growth. The forecast errors for price inflation are largest in 1996 and 1998. The errors in 1996 are mainly due to the reduction of car taxes, while errors in 1998 can be attributed to imported price inflation being lower than expected, partly as a result of the ripple effects of the Asian crisis.

Table 4 contains two different measures of average forecast errors for selected variables in the period 1994 to 1998. The measures are calculated on the basis of the forecast errors shown in the charts. These measures summarise the information in Charts 1 to 8. MAE²⁾ provides an indication of the average size of the actual forecast error, in

²⁾MAE (mean absolute error) is defined as:

$$(1/N) \sum_{n=1}^N |y_n - \hat{y}_n|$$

where y_n presents the actual growth rate, and the \hat{y}_n estimated growth rate.

³⁾RRMSE (relative root mean squared error) is defined as

$$\sqrt{1/N \sum_{n=1}^N \left((y_n - \hat{y}_n) / y_n \right)^2}$$

where y_n presents the actual growth rate and the \hat{y}_n estimated growth rate.

percentage points, over this period, while RRMSE³⁾ indicates the size of the relative forecast error. The measures also provide an indication of which institution provided the best projections during the period. The table also includes sub-components of domestic demand.

There are no major differences in the forecast errors of the three institutions in terms of the average errors for these five years. The average relative forecast error is decidedly largest for public consumption and petroleum investment. The next poorest forecasts were generally made for growth in traditional imports and exports and employment. The forecasts for the other variables were better, but the average relative forecast errors nevertheless range between 25 and 35 per cent. Norges Bank's wage growth projections stand out with a relative error of only 14 per cent.

Table 4 Mean absolute error (MAE) and relative root mean squared error (RRMSE), 1994-1998

		SN	MoF	NB
Mainland GDP	MAE	1.1	1.1	0.9
	RRMSE	0.32	0.33	0.27
Employment	MAE	0.8	1.0	0.9
	RRMSE	0.35	0.46	0.42
Exports of traditional goods	MAE	4.8	4.5	4.1
	RRMSE	0.58	0.62	0.56
Imports of traditional goods	MAE	3.9	4.5	3.9
	RRMSE	0.46	0.56	0.45
Mainland demand	MAE	1.1	1.3	1.3
	RRMSE	0.30	0.35	0.34
Private consumption	MAE	0.7	1.1	0.9
	RRMSE	0.25	0.34	0.26
Fixed investment	MAE	2.2	2.8	2.6
	RRMSE	0.42	0.50	0.33
Public consumption	MAE	1.2	1.4	1.3
	RRMSE	1.27	1.70	1.69
Petroleum investment	MAE	14.5	13.1	10.8
	RRMSE	1.54	1.12	1.06
Annual wages	MAE	1.0	1.5	0.6
	RRMSE	0.23	0.35	0.14
Consumer prices	MAE	0.3	0.3	0.4
	RRMSE	0.21	0.25	0.32

Sources: The Ministry of Finance, Statistics Norway and Norges Bank

Conclusion

A thorough analysis of forecast errors entails analysing contributions to errors from exogenous variables and errors due to deficiencies in or incorrect use of the model. In this article, we have only looked at the contributions from exogenous variables. A more detailed study of the model's forecasting properties and our use of the model will be presented when the equations in the model have been re-estimated on the basis of new national accounts data. Norges Bank intends to present analyses of the quality of estimates and causes of forecast errors at regular intervals.

The general impression of the analysis is that in 1997 Norges Bank again underestimated the strength of the cyclical upturn, as was the case in the period 1994 to 1996. Nevertheless, projections for wage and price inflation were good. A substantial portion of the forecast errors is due to incorrect assumptions about exogenous variables, particularly public demand and petroleum investment. Adjusting for this, the model-based projections are close to the mark, particularly with regard to wage and price inflation. During the past year, Norges Bank has taken steps to improve its estimates of exogenous variables. Estimates of growth in public expenditure are supplemented with the Bank's own evaluations of local government demand, and information about petroleum activities is obtained from a wider range of sources than previously.

The preliminary analysis of 1998 indicates that forecast errors for demand and production growth

will be smaller this year. In particular, the estimate for employment growth appears to have improved. One reason for this may be that previous analyses of forecast errors revealed that overly high forecasts for productivity growth had been used in the model, thereby contributing to underprediction of employment growth. It is also clear that developments in the petroleum sector were very different from what was expected in terms of price, fixed investment, production and exports.

A comparison with projections from Statistics Norway and the Ministry of Finance for the period 1994 to 1998 indicates that the forecast errors of the three institutions are not substantially different. On the whole, however, Statistics Norway and Norges Bank provided estimates with somewhat smaller average errors than the Ministry of Finance.

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IMPLICATIONS FOR THE MANAGEMENT OF THE GOVERNMENT PETROLEUM FUND IF SPECIAL ENVIRONMENTAL CONSIDERATIONS ARE USED AS A BASIS FOR THE CHOICE OF INVESTMENT STRATEGY

Norges Bank submitted the following letter to the Ministry of Finance on 16 March 1999

1. Introduction

The need for applying special ethical criteria as a basis for the choice of investment strategy for the Government Petroleum Fund has been discussed on several occasions. In its letter of 22 April 1998, Norges Bank on a general basis discussed various ways of taking account of ethical factors in the management of the Petroleum Fund. Three different alternatives were discussed: (i) establishing a set of ethical criteria that are used to select those companies in which the Fund can invest, (ii) investing in unit trusts that have well documented ethical guidelines for their investment strategy and (iii) attempting to encourage companies to stress special ethical factors by using the voting rights provided by equities, but without limiting the Fund's investment universe. The submission focused exclusively on the effects of ethical guidelines on the operational management of the Fund. An important conclusion was that whereas the use of voting rights would have a limited impact on the management of the Fund, the exclusion of many companies from the Fund's investment universe might result in substantial costs and make it more complicated to engage in effective management with adequate control and performance measurement.

In the Revised National Budget for 1998, the Government discussed the possibility of introducing guidelines for the Petroleum Fund, with a stronger emphasis on the environment and human rights. The Government stated that such guidelines would have to satisfy the requirements concerning risk diversification, risk management and control and performance measurement of management. Clarity, consistency and practicability were also considered requirements if guidelines that emphasise the environment and human rights were adopted for the Fund. The Government concluded that so far it had not found ways of doing this that satisfy these requirements, but that it would continue its work to arrive at a solution whereby

special environmental considerations are used as a basis for formulating the Fund's investment strategy (environmental guidelines). The Government also announced that it would consider expanding the list of countries in which the capital of the Petroleum Fund can be invested, partly because this could make a positive contribution to economic development in countries and thereby promote democracy and human rights.

In this submission, Norges Bank will discuss the consequences of introducing guidelines for the Petroleum Fund. In another submission, the Bank will look more closely at the requirements that must be met if new countries are to be included in the Fund's investment universe.

Norges Bank has two functions in relation to the management of the Petroleum Fund. First, the Bank is responsible for the operational management of the Fund. Furthermore, the Bank provides advice on how the Fund's investment strategy should be designed. If the Government decides to introduce environmental guidelines for the Petroleum Fund, this may result in changes in both the investment strategy and operational management. In this submission, we will examine how the investment strategy can be designed and how the operational management can be implemented if such guidelines are introduced for the Fund.

In the discussion below, particular emphasis is placed on the requirements set out by the Government for environmental guidelines with respect to control and performance measurement, risk diversification, clarity, practicability and consistency. Norges Bank is of the view that it is absolutely necessary to establish such requirements for these guidelines. However, as will be seen in the following, it is difficult to satisfy these requirements, partly because it is very difficult to obtain comparable environmental information on all the companies in which the Petroleum Fund can invest (around 20 000 companies in 21 different countries). Moreover, it is pointed out that environ-

mental guidelines that limit the Petroleum Fund's investment opportunities might have a substantial impact on the Fund, partly because a tailored benchmark index for the Fund would have to be defined. This would increase the costs of management, and make it more difficult to evaluate Norges Bank's management. In addition, it would increase the Fund's risk because investments would have to be spread among a smaller number of equities. If it is decided to introduce environmental guidelines for the Petroleum Fund, it is also important to be aware of the practical problems associated with formulating clear and consistent rules. For example, environmental criteria will often require a considerable degree of discretionary assessments when selecting those companies that satisfy the criteria. Norges Bank does not possess the expertise for making such evaluations.

A key question is whether environmental guidelines for the Petroleum Fund will have positive effects on the global environment. In principle, such effects would be expected if the guidelines are relevant to the purpose and also entail that companies that do not satisfy the criteria must pay a higher price for raising equity capital than others. This would give companies an incentive to work more on environmental issues. Given the size and liquidity of international stock markets, however, it is very uncertain whether the introduction of environmental guidelines for the Petroleum Fund would have any effect. It is more likely that an effect will be seen if many investors use the same environmental criteria, but we do not know whether other investors will do so. Consequently, it is uncertain what effect a decision that limits the Petroleum Fund's investment options will have on the global environment.

In the final evaluation of environmental guidelines for the Fund, any positive environmental effects would have to be weighed against the effect on risk diversification, management costs, control and performance measurement of management. An assessment should also be made of whether there are other instruments that may be more effective for achieving the environmental objectives of the authorities. In this connection, it is also a question of whether it shall be taken into account that the public sector already has ownership interests in a large number of companies engaged in different types of business activities. It may, for example, appear reasonable to impose the same require-

ments on Norwegian enterprises that are owned by the state as for the Petroleum Fund's investments in foreign equities.

It is the Ministry of Finance that must assume responsibility for the work on environmental guidelines. This means, among other things, that the Ministry must define an investment universe and a benchmark portfolio for the Fund that are consistent with the environmental guidelines. A well defined investment universe and a precise benchmark portfolio are preconditions for being able to evaluate Norges Bank's management of the Fund.

It is important to avoid continuous changes in the guidelines for the Petroleum Fund, because the Fund is so large that even small changes in the guidelines might result in considerable transaction costs. In the view of Norges Bank, the need for stability and a long-term approach in the management of the Fund will also apply to environmental guidelines.

Environmental guidelines can be implemented in several ways. The guidelines can apply to a small portion of the Fund or the entire Fund, and the criteria may be used to select some companies or a large number of companies. The following discussion of principles applies irrespective of the solutions chosen, but the importance of the consequences that are discussed will naturally vary somewhat between the various alternatives.

In the following, we focus on the implications of environmental considerations for the Petroleum Fund's investment strategy and the operational management of the Fund. Most of the analyses and results that are presented, however, are generally valid even if it is found desirable to take other considerations of an ethical nature into account in the management of the Fund.

2. The current investment strategy

According to the Act of 22 June 1990 relating to the Government Petroleum Fund, the Ministry of Finance is responsible for the management of the Fund. Consequently, the Ministry is responsible for defining an objective for the management of the Fund and an investment strategy that is consistent with this objective. The Ministry of Finance has defined the Fund's objective as the highest possible financial return without excessive risk. In order to promote the objective of a high financial return, it

has been decided to invest portions of the Fund's capital in equities. With regard to risk considerations, the Ministry has attached importance to a broad diversification of the Fund's investments. It was therefore decided to distribute the investments among 21 different countries and ensure that within each country investments were spread among a large number of equities and bonds.¹⁾ As a result of this strategy, the Fund's capital is now invested in more than 2 000 equities throughout the world. This diversification of the Fund is also consistent with the objective that the Fund shall be a financial investor (cf §10 of the Regulation on the Management of the Government Petroleum Fund, 3 October 1997).

The Petroleum Fund's investment strategy is reflected in the benchmark portfolio that the Ministry of Finance has selected for the Fund. This portfolio has two important functions in the management of the Fund. In addition to reflecting the investment strategy, the benchmark portfolio shall also be used to assess management performance. It is therefore important that this portfolio is constructed on the basis of clear and objective criteria. The Petroleum Fund's benchmark portfolio is composed of market indices that recognised institutions have developed for equity and bond markets in various countries. There are several advantages associated with using these indices. First, considerable resources have been used to construct the indices to make them representative of the markets covered. Second, the companies included in the indices are weighted in accordance with their size (market capitalisation weights), and this is considered to be an appropriate method for spreading equity exposure. Third, the market indices are reliable since they are publicly available and their construction is well documented. Moreover, the index suppliers calculate daily returns, which is necessary for the ongoing control and performance measurement of management of the Fund.

In addition to selecting a benchmark portfolio, the Ministry of Finance has established limits for the degree to which Norges Bank can deviate from this portfolio, and has defined an investment universe for the Fund. With regard to the invest-

ment universe, the Ministry has emphasised that the Fund shall only be invested in countries with liquid and smoothly functioning financial markets with sound company, stock exchange and securities legislation. For the Fund's equity investments, this means that the Fund can choose from about 20 000 companies that are listed in countries in which the Fund's capital can be invested. This investment universe gives Norges Bank the opportunity to carry out cost-effective index management for a large portion of the Fund, and it also provides sufficient flexibility for the portion of the Fund that is subject to active management. This increases the likelihood that the Bank, through its management, can generate an excess return relative to the benchmark portfolio.

The Ministry of Finance's formulation of the investment strategy for the Petroleum Fund gives Norges Bank a clear mandate for the management of the Fund. According to the Regulation on the Management of the Government Petroleum Fund, Norges Bank shall seek to achieve the highest possible return for the Fund within the limits set out in the Regulation (§2). The limits are set in the form of permitted deviations from the Fund's benchmark portfolio. This clear mandate makes it possible to evaluate the quality of Norges Bank's management. This may be accomplished, for example, by comparing the return on the Fund with the return on the benchmark portfolio. Since the Bank is measured against recognised benchmark indices that are also used by other managers, it is also possible to compare the Bank's management with the management of other investors.

3. Environmental guidelines and investment strategy for the Petroleum Fund

The introduction of environmental considerations in the management of the Fund involves the introduction of a new objective for this management. In addition to the financial return and risk, an objective that relates to environmental issues must also be defined. It is the political authorities that must specify what this objective shall be and the emphasis it shall be given compared with the other objectives for the management of the Fund. When this has been accomplished, it is necessary to define an investment universe and a benchmark portfolio that reflect the change in the objective of the management of the Fund. This is necessary to

¹⁾ The countries are: Canada, the US, Belgium, Denmark, Finland, France, Italy, Ireland, the Netherlands, Portugal, Spain, the UK, Switzerland, Sweden, Germany, Austria, Australia, Hong Kong, Japan, New Zealand and Singapore.

permit continued evaluation of Norges Bank's management of the Fund.

Environmental guidelines

It has gradually become more common for investors to attach importance to considerations of an ethical or social nature when drawing up their investment strategies. This approach has come furthest in the US and the UK, but investors in other countries have also begun to place greater emphasis on such considerations in their choice of investment strategy.²⁾ According to the Social Investment Forum, which is an interest group in the US for investors who want an ethical investment strategy, its members consist of private individuals, companies, universities, hospitals, pension funds, religious institutions and other non-profit organisations. The ethical criteria that are most widely used in the US market relate to tobacco, gambling, arms, alcohol and the environment. With regard to environmental criteria, there are basically three different reasons why investors want to use such criteria when drawing up their investment strategy.

The first reason is that some investors want to change corporate behaviour in a more environment friendly direction. This can be done in two ways. One way is to use ownership interests provided by equities to influence the companies either by voting at general meetings or through talks with corporate management. It appears that an increasing number of investors are using their ownership interests in this way, and there are indications that such behaviour is actually influencing corporate activities.³⁾ The second way is to confine investments to companies that satisfy special environmental criteria. Those companies that do not satisfy the criteria are thereby given an incentive to improve their activities. The effect this has on companies is discussed in the literature.⁴⁾ A key

issue is whether the company's funding costs increase if some investors refuse to invest in the company. This will in turn depend on the degree to which the markets for the company's shares are smoothly functioning and liquid and how many investors react in the same way. It is therefore difficult to comment in general on how not investing in some companies affects companies' environmental efforts. It is, however, worth noting that the markets in which environmental analyses of companies are most common are the same markets that are considered to be the most smoothly functioning in the world (the US, Canada and Europe). There is thus little reason to assume that the introduction of environmental guidelines for the Petroleum Fund in these markets will, in isolation, have any impact.

The second reason that investors take environmental considerations into account is either that they do not want to be associated with environmentally harmful activities or that they want to support firms that introduce positive environmental measures. This justification is not dependent on the measures having any effect on the activities of the companies, but rather to demonstrate an attitude towards the environment. This can also be accomplished through a deliberate choice of companies for investment purposes.

The final reason that managers take environmental considerations into account in their investments is that some are of the view that this will contribute to ensuring a high return on equity investments. The idea is that companies that take environmental issues seriously are engaged in forward-looking activities that, over time, will result in a high return for investors. It is difficult, however, to find empirical support for this view. The analyses we are aware of conclude that selecting a limited number of companies based on special environmental criteria does not have a systematic effect on the return of an equity portfolio.⁵⁾ If it is decided to exclude a large number of companies or all companies in some industries, it is difficult to assess the effects on the return. The reason is that the portfolio will then have features that deviate considerably from the features of a portfolio that is not subject to environ-

²⁾ Social Investment Forum estimates that about 4 per cent of all management in the US is based on special ethical guidelines. In addition, there are many investors who in ethical questions make use of voting rights provided by share ownership (these manage about 5 per cent of the total capital).

³⁾ See James Angel and Pietra Rivoli: "Does Ethical Investing Impose a Cost Upon the Firm? A Theoretical Examination", *Journal of Investing*, Winter 1997.

⁴⁾ See Wallace Davidson, Dan Worrell and Abuzar El-Jelly: "Influencing Managers to Change Unpopular Corporate Behaviour Through Boycotts and Divestitures", *Business and Society*, August 1995.

⁵⁾ See Laura Gottsman and Jon Kessler: "Smart Screened Investments: Environmental Screened Equity Funds that Perform Like Conventional Funds", *The Journal of Investing*, Fall 1998.

mental criteria. The return on the portfolio will therefore vary considerably in relation to the return on the benchmark index. This makes it difficult to evaluate whether there are any systematic differences in returns. In this situation, data on returns for many years will be required before it is possible to draw a conclusion, but so far such data are not available. Limitations on the Fund's investment options will, however, result in a poorer trade-off between return and risk. A poorer trade-off means that for a given return, the risk will increase. How much more unfavourable this trade-off will be will naturally depend on the extent of the limitations imposed on investment options.

The discussion above shows that it is difficult to justify environmental guidelines on the basis of return considerations. If environmental guidelines are to be introduced for the Petroleum Fund, the justification must consequently be that (more passively) one wants to demonstrate an environmental standpoint or (more actively) one will attempt to influence companies to work more seriously on environmental issues. If the reason is that one wants to actively attempt to influence companies, it is necessary to evaluate whether it is the use of voting rights or the selection of companies that has the greatest impact on companies' environmental efforts. Another question is whether, in making this choice, account shall be taken of what the state is doing in other areas. The state already has ownership interests in a number of Norwegian enterprises, and it must be appropriate to select a system for the Petroleum Fund that is also applied to these enterprises.

If one wishes to promote environmental considerations by selecting companies on the basis of environmental criteria, it is necessary to determine the criteria to be emphasised. This again is a question of the purpose of introducing environmental guidelines. There is an important distinction between negative and positive environmental criteria. With the use of negative criteria, companies that engage in activities that are considered environmentally harmful are excluded. This can be done either by excluding all companies in the least environment-friendly industries, or by selecting those companies that pollute the most in each industry. Positive criteria entail that only companies that have excelled in some way through their work on environmental issues are selected. This can occur if the company has received

environmental certification or drawn up an extensive environmental report. Previously, it was most common to only use negative criteria, but in recent years many investors have chosen to make use of a combination of positive and negative criteria. The use of only positive criteria is not particularly widespread. In any event, the criteria must be such that determining whether a company satisfies the criteria or not is relatively simple and clear-cut.

When the Fund's environmental objective has been defined, the emphasis this objective shall be given in relation to other objectives, such as the return and risk, must be determined. Before considering this question, it is necessary to determine to what extent there may be a conflict between the various objectives. When using voting rights, it is unlikely that such a conflict will arise since there will be no limitations concerning the companies in which the Fund can invest. If companies are selected on the basis of environmental considerations, there will be a conflict in particular between the environmental considerations and the need to reduce the Fund's risk by spreading investments among a large number of equities. The degree of importance to be attached to environmental considerations in the management of the Petroleum Fund will be a result of striking a balance between these two considerations.

After clearly defining the objective of introducing environmental considerations, the next stage will be to draw up an investment strategy that is consistent with this objective. If environmental criteria are used for selecting those companies in which the Fund can invest, the Fund's current investment strategy must be changed. The following section focuses on the work this will entail. It may be added here that if it is decided to safeguard environmental considerations by using voting rights, the investment strategy will not have to be changed. In the management of the Fund, the benchmark indices and the same investment universe used today can continue to be applied. However, the Ministry of Finance must draw up guidelines that show how the Fund shall vote on various issues. It is important that the guidelines are precise and that they explicitly deal with how voting rights shall be used in various questions that may have a bearing on the environment. Moreover, a system is required for translating these guidelines into the active exercise of voting rights. It may be

very demanding to develop a system for this. However, there are consulting firms that have specialised in systematising information on the proposals to be considered at companies' general meetings. Voting will be considerably simplified by subscribing to these companies' databases, analyses and software. Norges Bank's submission of 22 April 1998 provides a further discussion of the use of voting rights.

The Petroleum Fund's investment universe

Environmental criteria can be used in two ways. The first is to construct tailored equity portfolios that take into account the environmental criteria selected. The second is to invest in unit trusts that apply environmental criteria. In the submission of 22 April 1998, it is argued that tailored portfolios have several advantages over unit trusts. First, the environmental considerations considered important can be safeguarded more precisely when the investor determines the criteria to be used. Second, the costs of investing in unit trusts are considerably higher than own management. Moreover, unit trusts that apply environmental criteria are small compared with the Petroleum Fund. As a result, the Petroleum Fund might be a dominant investor in these funds, which may make it more difficult to avoid undue market influence when buying or selling units in unit trusts. In the following, we will therefore concentrate on the work of constructing tailored equity portfolios based on environmental criteria.

When the list of desired environmental criteria has been defined, the various companies must be evaluated in terms of these criteria. This requires knowledge concerning each company's activities. The task of gathering this information requires considerable resources. The Fund's investment universe consists of about 20 000 companies, and it will be virtually impossible to maintain a database with environmental information on so many companies. It is therefore necessary to delimit the investment universe considerably if environmental criteria are introduced for the management of the Petroleum Fund. One way of doing this is to start with the companies that are included in the Fund's benchmark portfolio, which consists of 2 000 companies in 21 different countries. Satisfactory environmental information is available in many of these countries, particularly

in Asian countries. This means that the work on environmental guidelines must primarily be concentrated on approximately 1 400 companies that are included in the benchmark indices in Europe, the US and Canada. These stock markets cover 80 per cent of the Fund's equity investments, and the companies in the benchmark indices also represent about 85 per cent of each country's stock market measured by market capitalisation. In addition, it will be possible to obtain environmental information on a limited number of companies outside the benchmark indices. This implies that the environmental guidelines may cover an important portion of the Fund's investment universe. It is, however, worth noting that the companies that are initially covered by environmental analyses only constitute a small share of the total number of companies that are currently part of the investment universe. When, in addition, the companies that do not satisfy the criteria are eliminated, it is obvious that the environmental guidelines will entail a considerable reduction in the Fund's investment universe. This change in the investment universe may have implications for both risk and management costs. This is discussed later in this submission.

Even if it is decided to concentrate the work on environmental guidelines on the approximately 1 400 companies in the Fund's benchmark index in the US, Canada and Europe, it will be very demanding to build up and maintain an environmental database on our own for such a large number of companies. However, there are consulting firms that have specialised in gathering environmental information on companies in these countries. In the work on environmental guidelines it may therefore be natural to use the databases developed by these consulting firms. It is uncertain, however, whether these databases contain the information that is most relevant in terms of the specific environmental considerations to be taken into account.

The consulting firms that have specialised in collecting environmental information on companies' activities primarily use two sources. The first consists of public registers that contain information on companies' emissions and any environmental penalties. The second source is information provided by the companies themselves. This information is obtained by reading annual reports, by sending companies question-

naires or by directly contacting the companies.

Negative environmental criteria are normally related to conditions that can be quantified and where public registers provide satisfactory quality assurance of the data. Nevertheless, it is no simple matter to use such criteria. The reason is that the information on, for example, the absolute level of emissions of a company is of limited value. It is more relevant to focus on environmental efficiency in the companies' production processes by looking at the relationship between emission volumes and production volumes. However, since it is difficult to obtain information that shows the relationship between production volumes and emissions for the various production processes, it is difficult to measure environmental efficiency in a satisfactory way. Another negative environmental criterion that can be used is whether or not environmental penalties have been imposed on the company. This criterion, however, also raises a number of discretionary questions: How can one deal with the fact that countries have varying practices with regard to environmental penalties? In some countries it may be necessary to set a lower limit for the size of the environmental penalty to avoid excluding many companies, but what should this limit be? Shall special requirements be established for the level of government that has imposed the penalty? Environmental penalties will also apply to past conditions and do not necessarily provide an indication of existing conditions in the company. The discussion in this section shows that even though much of the environmental information can be objective, its interpretation may be subjective.

Positive environmental criteria are often more qualitative than the negative criteria. Many of the positive criteria will therefore involve a greater element of discretionary evaluations when they are used. Some examples can illustrate this. A positive criterion that is used is whether the company produces an environmental report, although the requirements that must be fulfilled before one can say that the company has such a report are not obvious. Another positive criterion is whether the company has environmental certification (for example, ISO 14001). The problem with this criterion is that the certification does not apply to the company, but rather a production process in the company. The use of this criterion therefore raises a number of questions: Must all production processes be certified before it can be said that the

company is? What requirements shall be imposed if the company has many subsidiaries? Should all these subsidiaries be certified before one can say that the company has environmental certification? How shall one deal with companies in industries where environmental certification is not so widespread (such as some service industries)?

As the consulting firms will play a key role in the work on environmental guidelines, it is important to make a thorough evaluation of these firms. The analyses carried out by the consulting firms may have considerable effects on equity exposure in the Petroleum Fund, and these firms must be subject to the same requirements concerning quality and reliability as those who execute the operational management. In evaluating the firms, it is important to examine more closely the sources they use, how the information is analysed, how the firms are organised, the firms' resources and whether the activities of these firms in other areas (such as their own equity management) will result in conflicts of interest. It is also worth noting that the market for this type of service is limited. If it turns out that the consulting firm cannot supply a product of sufficient quality, there are few alternative firms to use.

One general problem with using environmental criteria is that it requires a good overview of those activities in which the companies are involved. However, in the case of large multinational companies with ownership interests in companies in a number of countries, it may prove difficult to obtain this overview. It would also be necessary to decide how large an ownership interest, if any, a company may have in a company that does not satisfy environmental criteria before the proprietary company is also disqualified. Another problem is that no national or international standards have been devised for companies' environmental reporting. The result is that it may be difficult to obtain comparable environmental information on companies from different countries. Another factor is that the environmental criteria that can be used will be determined by the information that can be gathered by the consulting firms. This means that one cannot freely choose environmental criteria.

The Revised National Budget for 1998 states that the environmental criteria must be objective and easily identifiable. The discussion above shows that it will be difficult to find environmental criteria that

satisfy this requirement. Efforts are being made, however, to improve the quality of companies' environmental reporting, and in recent years two global programmes that are examining this more closely have been established. Global Partner Working Group is a joint project with consulting firms in various countries that have specialised in gathering information on companies' activities. The aim of this project is to coordinate and standardise the analyses of companies internationally. Global Reporting Initiatives (GRI) is a cooperation between companies and interest groups from a number of countries for establishing an international standard for companies' environmental reporting. As both these programmes are in a start-up phase, it is too early to evaluate their impact. However, it seems likely that in the long run they will make it easier to apply environmental guidelines systematically and consistently across countries. These two initiatives are also interesting for managers that do not focus on environmental considerations. Obtaining more information on the environmental aspect of companies' activities may also improve the quality of financial analyses of companies. There are consequently a number of reasons why the ongoing work of coordinating and standardising companies' environmental reporting is positive.

Two solutions regarding the actual process of selecting companies on the basis of environmental criteria are conceivable. The first is subscribing to the consulting firms' databases, but that we ourselves determine those companies that satisfy the environmental criteria. The second is to give the environmental criteria to the consulting firms, and ask them to select the companies. In the US, most investors have opted for the first solution, while the second solution seems to be most widespread in the UK. Irrespective of the solution chosen, it is important that precise environmental criteria are drawn up and that there is a system which makes it possible to continuously evaluate the problems that might arise when the criteria are to be applied. As the work will require professional environmental insight and entail policy priorities, this cannot be a task for Norges Bank.

The work on selecting companies on the basis of environmental criteria will result in a list of companies that satisfy the criteria. This list will represent the Fund's investment universe in the countries concerned, and serve as a basis for the construction of benchmark indices.

Benchmark indices

The current benchmark indices for the Petroleum Fund's equity investments are the Financial Times/Standard & Poor's index. Norges Bank has discussed with the supplier the possibility of constructing and maintaining a tailored index for the management of the Petroleum Fund based on a list of companies that satisfy the environmental criteria. The main conclusion is that the supplier is willing to do this. The tailored indices can be delivered with the same frequency and level of detail as the official indices. This will, however, require greater resources on the part of the index supplier and thereby a higher fee.

On the basis of the official benchmark indices and a list of companies that satisfy the environmental criteria, the index supplier will be able to construct tailored benchmark indices for the Petroleum Fund. These benchmark indices will have two important functions. First, they will serve as the basis for the evaluation of Norges Bank's management. Second, the indices will make it possible to study the impact of the environmental criteria. The latter can be accomplished by comparing the return on the official indices with the return on the tailored indices. This is possible as long as the differences between the two types of indices can be exclusively ascribed to the implementation of environmental criteria. This requires, however, a continuous evaluation of companies that at irregular intervals are included in the official indices. This can take place with as little as four days' notice. During this period, it is therefore necessary to clarify whether the company satisfies the environmental criteria or not. An alternative, of course, is that the composition of the tailored index is kept stable over a longer period (quarter or year). The disadvantage of this approach is that the possibility of evaluating the effect of the environmental criteria is lost as the difference between the official indices and the tailored indices is no longer solely due to environmental criteria, but also varying frequencies for updating the indices.

In Europe, the US and Canada it is realistic to assume that all companies in the Fund's benchmark indices can be assessed on the basis of the criteria. As the Fund's capital gradually increases, however, the applicable benchmark indices may not provide a sufficient spread of the

Fund's investments. It may then be appropriate to use benchmark indices that contain more companies than the existing benchmark indices. If this occurs, it may prove difficult to apply the environmental criteria to all companies in the indices. The tailored indices will then acquire features that deviate substantially from the official indices, and it will no longer be possible to evaluate the effects of environmental guidelines by comparing the return on the official indices and the tailored indices.

There are two ways of constructing tailored benchmark indices for the Petroleum Fund based on the companies that have satisfied the environmental criteria. The first is to use market capitalisation weights so that when some companies are removed from an index the remaining companies will be weighted on the basis of their size. The second is to weight the remaining companies so that the features of the equity index are as similar as possible to the features of the benchmark index. This can be done by giving a higher relative weight to companies with features that are closely correlated with the features of companies that do not satisfy the environmental criteria. Two objections can be raised to constructing equity portfolios in this way. First, it may result in substantial transaction costs since the equity composition which makes the portfolio similar to the benchmark index can change over time. Second, it will be more difficult to ascertain what is achieved through the use of environmental guidelines. The reason is that when a company is removed because much of its activity is of a polluting nature, attempts will be made to invest more in companies that are engaged in closely related activities but which still satisfy the environmental criteria. Norges Bank will therefore recommend the use of market capitalisation weights if tailored benchmark indices are to be constructed.

Implications of environmental guidelines

The implications for the Fund's return and risk figure prominently when evaluating to what extent environmental guidelines should be introduced. We argued earlier that environmental guidelines will not necessarily have a systematic impact on the Fund's return, but that the Fund's risk will increase. In order to shed light on the increase in risk, Norges Bank was commissioned by the

Ministry of Finance to make a study in which examples of equity portfolios that applied environmental considerations were constructed.

Norges Bank decided to focus on equity markets in the UK, the US and Canada. These markets were selected because there were consulting firms in these three countries that had (i) long experience in constructing equity portfolios that apply environmental considerations and (ii) a database with environmental information covering nearly all companies in the Petroleum Fund's benchmark index in these three countries. Various sets of environmental criteria were used: one set with negative criteria (certain types of pollution and environmental penalties) and one set with positive criteria (environmental certification and environmental reports). The results from the US and Canadian stock markets were very similar. It is therefore more interesting to compare the results from the UK and US markets:

- i) The negative criteria entailed the exclusion of about 25 per cent of companies from the benchmark index in both markets. However, particularly large companies were eliminated in the UK market, with the result that the tracking error⁶⁾ was higher in this market (3.36% compared with 1.67% in the US market).
- ii) The positive criteria produced very different results in the two markets. In the US market, 90 per cent of the companies were eliminated from the benchmark index, while in the UK market the figure was 25 per cent. This difference also had an impact on the tracking error, which was 6.65% in the US market and 1.42% in the UK.
- iii) In the UK market, approximately the same number of companies were eliminated when positive criteria were applied as when negative criteria were used. In both cases about 50 of the 207 companies included in the British benchmark index were excluded. In the two groups with companies that were excluded through negative and positive criteria respectively, there were only three companies that

⁶⁾ Tracking error is a measure of how much the return on a portfolio can be expected to deviate from the return on the benchmark index. A tracking error of 2 per cent means that the actual return will, with a very high degree of probability, lie within an interval of +/- 4 per cent around the return on the benchmark index.

were represented in both groups. This demonstrates that the use of negative or positive environmental criteria will have a considerable influence on the remaining equities.

These results show that the implications of introducing environmental criteria depend both on the criteria used and how these are interpreted in the various markets. It is therefore difficult to comment in general on how much the Fund's risk will increase if environmental criteria are introduced. There is no doubt, however, that the Fund's risk will increase when limitations on the Fund's investment options are imposed.

4. Management with environmental guidelines

The Petroleum Fund will gradually become a fund of considerable size, also in an international context. As a result, the operational management of the Fund will be facing challenges that are otherwise not common in Norwegian fund management. Norwegian unit trusts usually invest in a limited number of companies with the aim of achieving a high return. The same strategy for the Petroleum Fund would rapidly come into conflict both with the objective of low costs in the establishment of the Fund's portfolio and with the requirement that the Fund shall be a financial investor that shall have limited ownership interests in any one company. Norges Bank has chosen a combination of index management and active management in order to achieve the objective of cost-effective excess returns, and the main emphasis has been placed on index management.

Index management means that investments are made in a portfolio which, to the greatest possible extent, reflects the benchmark portfolio in order to achieve a return that is as close as possible to the return on the benchmark portfolio. This type of management is particularly attractive for a large fund like the Petroleum Fund because management and transaction costs associated with index management are very low.

Furthermore, a portion of the Fund's equity investments is set aside for active management. The objective of active management is to outperform the benchmark portfolio. Active managers will select equities that are expected to provide a higher financial return than the benchmark portfolio. The

actively managed portion of the Petroleum Fund will therefore contain a smaller number of equities than well diversified index management.

Index management as the core of a large equity portfolio ensures better management of risk and costs and is an important precondition for the effective use of active management. Even though the relationship between passive and active management will not remain constant, this model will continue to be the core of the management also in the future.

Operational implications of environmental criteria

The introduction of environmental criteria for the management of the Petroleum Fund will not change the management model for equity investments. It will be possible to continue both index management and active management based on a new benchmark index and a well defined investment universe. However, there are costs associated with both the immediate change in the Fund's actual investments as a result of a new benchmark index and a different investment universe, and higher costs linked to the management of equity investments. Index management based on a tailored benchmark index will make it more difficult to achieve the appropriate market exposure in a cost-effective manner. It is also reasonable to assume that the possibility of generating an excess return through active management will be reduced if a substantial part of the investment universe is eliminated.

Investments through the use of futures contracts are as a rule the most cost-effective way of achieving the desired market exposure. The use of such contracts is particularly useful when new capital is transferred to the Petroleum Fund. By using futures contracts the shift to equities can take place with the help of internal trades between index managers, over a longer period and at low costs. The alternative to futures contracts is either higher costs because a large volume of equities must be traded quickly, or higher risk in management because the right market exposure is not achieved swiftly enough. The return on futures contracts reflects the return on all the equities included in the indices for which the futures contracts are traded. By taking positions in futures contracts the Petroleum Fund can benefit from the return on

companies that will not be a part of the Petroleum Fund's investment universe if environmental guidelines are introduced. With a narrowing of the Fund's investment universe, it is therefore necessary to clarify whether futures contracts for official equity indices may continue to be used in management.

The establishment of a tailored benchmark index will result in greater deviations between the futures contracts used to achieve market exposure and the market exposure actually desired. This means that the risk associated with daily management of the Petroleum Fund will increase. The more companies in each market that are excluded from the tailored benchmark index, the greater the problems will be.

The costs associated with a change in the benchmark portfolio relate to the need to sell portions of the current portfolio when companies are eliminated from the investment universe and capital is reinvested in the new benchmark index. The possibilities for executing these transactions outside stockbroking companies, with the help of internal trades of equity portfolios by index managers, will be limited because in this case the portfolios will not be the same as those held by other large investors. The execution of such transactions in the stock market may therefore involve considerable costs.

If some of the larger companies in the existing benchmark portfolio are eliminated, the liquidity of the remaining equities in the benchmark portfolio will be reduced. Liquidity is a measure of how costly it is to execute transactions. Reduced liquidity will involve higher transaction costs when new capital is transferred to the Petroleum Fund. The low costs of index management are partly based on index managers' opportunities to acquire the equities by exchanging portfolios internally, without using external stockbroking companies. If a tailored benchmark portfolio deviates substantially from the official indices, the possibility of using such trades is reduced, and transaction costs increase.

The purpose of active management is to use extensive analysis and market know-how to invest in companies that over time are expected to provide a higher return than the benchmark portfolio. It may be more reasonable to assume that this analysis and market insight can generate excess returns in those parts of the market that are

outside the benchmark portfolio because these have presumably been analysed less and because they are part of a less efficient market. A review of the Petroleum Fund's active equity investments shows that between 10 and 20 per cent of the investments are made in companies that are not part of the benchmark portfolio. A reduction in the investment universe therefore entails that active managers would be forced to select investments which they are not convinced will provide an excess return. The value of the extensive analysis that is made of various investment alternatives thereby declines and the possibility of generating an excess return is reduced

5. Concluding remarks

To what extent environmental guidelines should be introduced for the Petroleum Fund is a question of what the objective of Fund management shall be. It is the political authorities that must decide how and to what extent such guidelines shall be introduced. In this submission, Norges Bank has attempted to shed light on the implications of environmental guidelines for the design of the investment strategy and the operational management of the Fund.

If one wishes to implement environmental guidelines for the Petroleum Fund, this must be done with a view to maintaining the clear division of responsibility between the Ministry of Finance and Norges Bank. This implies, for example, that the Ministry must define an investment universe and a benchmark index that are consistent with the environmental guidelines. If it is decided to use voting rights, no changes in the investment universe and benchmark index are required. If, on the other hand, companies are to be selected on the basis of specific environmental criteria, both the investment universe and the benchmark index must be adjusted. A well defined investment universe and a precise benchmark portfolio are preconditions for permitting sound control and performance measurement of Norges Bank's management.

Norges Bank's work on constructing examples of equity portfolios that apply environmental criteria has provided useful insight. An important lesson was that the choice of environmental criteria has a considerable effect on which companies are excluded from the investment universe. The analyses of the UK stock market showed, for example, that the use of positive criteria would

result in higher investments in those industries which, when applying negative criteria, implied lower investments. Another important lesson was that the same environmental criteria produced different results in different countries. This shows that the criteria selected and the interpretation of them may have considerable implications for the composition of the Petroleum Fund's equity portfolio. The work on selecting environmental criteria that can be applied in a consistent and objective manner across countries is therefore a difficult task.

The operational management of the Fund will be influenced if environmental criteria are introduced. First, the costs of index management will increase. The reason is that it will no longer be possible to use the same benchmark indices as those used by other managers. Internal trades (crossing) and the use of equity futures will no longer be as appropriate. This means that changes in equity exposure must to a greater extent be based on purchases of physical equities in the market, thereby increasing transactions costs. Second, environmental criteria will make it more difficult to achieve an excess return in active management. The reason is that such criteria will result in a considerable reduction in the Fund's investment universe, which in turn will limit the options available to active managers.

In this submission, we have shown that environmental guidelines that limit the Petroleum Fund's investment options may increase the Fund's risk at the same time that it will be more difficult to implement cost-effective management. Consequently, there are definite costs associated with the introduction of environmental guidelines for the Fund. These costs must be balanced against any environmental gains resulting from such guide-

lines. It is difficult, however, to document these environmental gains. Another question is whether there are other instruments that may be more effective for achieving the environmental objectives of the authorities.

The introduction of environmental guidelines for the Petroleum Fund may also be motivated either by the unwillingness of the Norwegian authorities to be associated with environmentally harmful activities or the desire to support companies that introduce positive environmental measures. This justification is not dependent on whether the measures have an impact on the environmental efforts of the companies. It is the political authorities that must evaluate the gains derived from such measures. It is important, however, that these gains are evaluated against the costs this will entail for the management of the Fund. An evaluation should also be made of whether it shall be taken into account that the state already has ownership interests in a large number of enterprises engaged in various types of business activities where it may also be argued (with equal force) that emphasis should be placed on environmental considerations.

An alternative to excluding companies from the Fund's investment universe is to use voting rights provided by equities to influence companies' work on environmental issues. A major advantage of this alternative is that it does not influence the management of the Fund. However, it is also necessary to be aware that the use of voting rights will require considerable work on elaborating precise guidelines that show how the Fund shall vote on various questions.

AN EVALUATION OF EMERGING MARKETS AS AN INVESTMENT ALTERNATIVE FOR THE PETROLEUM FUND

Norges Bank submitted the following letter to the Ministry of Finance on 16 March 1999:

1. Introduction

In its letter of 22 August 1997 to the Ministry of Finance, Norges Bank discussed the Petroleum Fund's investment strategy, and in particular the Fund's allocation by country. Norges Bank recommended that the Fund be invested mainly in developed markets, but that up to 5 per cent of the Fund could be invested in emerging markets, which comprise developing countries and transition economies.

In its letter, Norges Bank stressed that emerging economies are characterised by rapid economic growth and steadily improving financial markets. It was pointed out that this may generate expectations of solid returns on investments in emerging markets. Moreover, it was stressed that if the economic situation in these countries is not synchronised with developments in other countries, investment in emerging markets may also contribute to reducing the variation in the Fund's total return.

Norges Bank's recommendation was provided on a general basis with reference to the objective of the Fund, which is to maximise future purchasing power, given an acceptable risk level. The Bank indicated that it was not certain that investment would take place in emerging markets in the Fund's initial phase, nor did it propose any restrictions on eligible countries.

In the National Budget for 1998, it was stated that investing in emerging markets could be an interesting option for the Petroleum Fund, but that the building up of expertise on investments in these markets would have to be balanced against other high priority tasks. Following an overall assessment, the government concluded that it would not permit investment in emerging markets at that time.

In the Revised National Budget for 1998, the government announced that it would take a closer look at whether the Petroleum Fund's country list should be expanded, and stated the following:

"In the view of the government, it will be natural to review this list with a view to increasing the number of countries in which the Petroleum Fund can invest. First, it is conceivable that in due course more countries will fulfil the criteria established with respect to company, securities and stock exchange legislation. Second, it may prove appropriate to include some countries that are on their way to becoming fully developed, well regulated markets. It will be relevant to consider in this connection South Africa and some countries in Eastern Europe, South America and Asia. The government also stresses that investing some of the Fund in these countries may make a positive contribution to their economic development, thereby promoting democracy and human rights."

The purpose of this submission is to discuss the requirements that should be fulfilled before new countries are included in the Fund's investment universe. The evaluations are based on the objective of the Fund, which is to maximise future wealth at an acceptable risk level. Norges Bank has not considered whether investing in emerging markets will contribute to promoting economic growth, democracy and human rights in emerging economies. Only new countries have been considered in connection with expanding; we have not evaluated whether investing in commodity contracts, unlisted equities or real property would be more appropriate in view of the Fund's objective. Since it will be necessary to prioritise resources in the operational management, an overall evaluation of this nature should preferably be available before any investment in emerging economies takes place.

Three factors are of particular importance when an expansion of the country list is considered:

- Foreign participants must have access to the markets, and the markets must satisfy certain minimum requirements with respect to settlement systems, size, liquidity and regulation.
- A certain degree of political and macroeconomic stability is required in the countries considered in order to limit country risk.
- The effect of including new countries on the Petroleum Fund's return and risk must also be considered.

The general principles for considering new countries are drawn up in the following, and specific examples given. However, Norges Bank does not aim in this submission to give concrete advice as to whether the country list should be expanded. Recent developments in emerging economies and recent literature have led to an increased focus on the risk of investing in emerging markets. Further work on evaluating which countries fulfil the various requirements is required before a recommendation can be made.

The settlement risk associated with emerging markets is greater than that in developed markets. At the same time, the legal framework in emerging markets is not fully adequate. Emerging markets also tend to be small, and to have poorer liquidity than developed markets. This makes it important to give careful consideration to settlement risk, liquidity and the legal system of the countries in question before permitting investment in these countries.

In general, developed economies are considerably more stable, both politically and economically, than emerging economies. The country risk associated with investing in emerging economies can be high, and it is therefore necessary to make thorough analyses of both the political and the macroeconomic stability of these countries.

Both the operational and the country risk of investing in emerging markets can change rapidly. It is therefore important that the minimum requirements are satisfied at all times. This presupposes that the use of resources in the follow-up phase is sufficient to reveal significant changes in risk.

At times, the return on investments in emerging stock markets has been higher than in developed markets, but also considerably more variable. At the same time, the covariation between the return in developed and emerging markets has been low, but recently there have been indications that this covariation has increased. The diversification gains

are probably slightly smaller today than earlier, and at the same time it is uncertain whether the return on investing in emerging markets is satisfactory in relation to the risk. Before any expansion of the country list takes place, a thorough review should therefore be made of whether new countries contribute to reducing the risk or increasing the return of the Petroleum Fund.

In principle, an expansion of the country list may apply to the Fund's equity and bond investments alike. However, much of the discussion in theoretical and empirical literature is concentrated on the equity markets in emerging economies, and it is easier to obtain good benchmark indices for equity investment. This means that there is generally somewhat better information available on emerging equity markets than bond markets. Better equity market data make it easier to estimate the effect on the Petroleum Fund's return and risk when including new equity markets rather than emerging bond markets. At this stage, Norges Bank has therefore decided to focus on emerging equity markets.

Section 2 of the submission presents the current country list. Emerging markets are delimited in section 3. Section 4 discusses minimum requirements for settlement systems, legislation, size and liquidity, while section 5 discusses country risk. Section 6 discusses new countries in the light of the effect on the Petroleum Fund's return and risk. This is followed by a summary.

2. Current country list

In the Revised National Budget for 1997, it was pointed out that estimates of the size of the Fund had been revised substantially upwards, and a longer horizon for investments was applied. It could therefore be questioned whether the country allocation, which was based on import weights, resulted in an optimal country allocation. It was argued that import weights could result in overinvestment in small countries such as Denmark and Sweden, that the import pattern could change over time, that real imports from a country could differ from direct imports, that vulnerability to economic downturns in Europe could be undesirably high, and that the profitability of large international companies was associated primarily with global economic developments; moreover, that in the long term there might be grounds for expecting that exchange rate risk would be smaller because the

real return on investments in different currencies would converge over time.

In principle, the country allocation can be based on three different sets of weights: GDP weights, import weights and market capitalisation weights. GDP weights provide an indication of the relative importance of an economy, while import weights provide a direct indication of the existing import pattern. Market capitalisation weights reflect the relative size of securities markets. In the National Budget for 1998, the Ministry of Finance refers to the evaluations concerning choice of country weights in the Revised National Budget for 1997, and to a letter of 22 August 1997 from Norges Bank, in which the Bank recommends that primary emphasis be placed on GDP weights, but that some emphasis should also be placed on Norway's import pattern. These considerations were consequently used as a basis for the regional allocation:

The Americas	30 per cent
Europe	50 per cent
Asia and Oceania	20 per cent

It was decided to handle equities and bonds differently in the individual regions. In order to limit transaction costs and avoid large holdings in individual companies, it was considered appropriate to use market capitalisation weights for equities. However, these weights were not regarded as an appropriate alternative for bonds, as they may entail that investments automatically increase in countries with growing debt. It was therefore decided to use GDP weights as the basis for distributing bond investments within each region.

In selecting countries, emphasis was placed on investing the capital in the Petroleum Fund in countries with smoothly functioning financial markets and sound securities legislation. Other factors emphasised were satisfactory size and liquidity of financial markets and no restrictions on the access of foreign participants to the markets. In order to ensure that country selection was based on objective criteria, the indices for developed markets of one of the large investment banks was used as a basis. These indices are constructed on the basis of criteria that are relevant to the management of the Petroleum Fund, since they distinguish between countries precisely on the basis of the size and liquidity of securities markets, the legislation

governing them and access by foreign investors.

The current country list is identical to the list of developing countries in the equity index of Morgan Stanley Capital International (MSCI). The following countries are currently included in the investment universe:

- Canada and the US
- Belgium, Denmark, Finland, France, Italy, Ireland, the Netherlands, Portugal, Spain, the UK, Switzerland, Sweden, Germany and Austria
- Australia, Hong Kong, Japan, New Zealand and Singapore

3. Emerging markets

There is no clear-cut set of criteria for defining emerging markets. The International Finance Corporation (IFC), which is part of the World Bank, uses a general economic criterion: the average income in the country (measured as GDP per capita). If the country's average income does not exceed the World Bank's limit for a high-income country, the country is defined as an emerging economy. This is a commonly used method for defining emerging economies.

The IFC has introduced a third category of markets, designated "frontier markets". These frontier markets are described as small, illiquid and with poor information flows even by the yardstick used for emerging markets. The IFC does not regard these equity markets as a suitable investment option for foreign investors. Equity markets in Bangladesh, Botswana, Estonia and Lithuania are examples of this type of market.

Work is in progress in the IFC to change the definition of emerging markets. One reason for this work is that average income can be substantially influenced by exchange rate fluctuations, and that average income can grow rapidly in some countries without a corresponding development in the stock market. Moreover, a number of qualitative features of emerging markets, such as the quality of regulation, surveillance, transparency and accounting standards, are important features which should be emphasised when drawing a distinction between developed and emerging markets.

The emerging markets' share of aggregate world

¹⁾ IFC: Emerging Stock Markets Factbook 1998

GDP in 1996 was about 19 per cent, while their share of the world population was 84 per cent. The market value of the emerging stock markets amounted to 9 per cent of aggregate world stock market value in 1997¹⁾. Measured as a share of Norwegian imports, emerging economies are weighted at about 15 per cent.

The market values of emerging stock markets

Table 1: Market capitalisation, September 1998

	USDm	Share region	Share total
Latin America			
Argentina	42 555	11.77 %	2.69 %
Brazil	155 582	43.02 %	9.83 %
Chile	46 735	12.92 %	2.95 %
Colombia	11 734	3.24 %	0.74 %
Mexico	87 334	24.15 %	5.52 %
Peru	11 621	3.21 %	0.73 %
Venezuela	6 056	1.67 %	0.38 %
Sub-total	361 617	100.00 %	22.84 %
Asia			
China	245 411	31.66 %	15.50 %
India	113 132	14.59 %	7.15 %
Indonesia	10 895	1.41 %	0.69 %
Korea	46 773	6.03 %	2.95 %
Malaysia	63 571	8.20 %	4.02 %
Pakistan	6 255	0.81 %	0.40 %
Philippines	20 584	2.66 %	1.30 %
Taiwan	245 867	31.72 %	15.53 %
Thailand	22 731	2.93 %	1.44 %
Sub-total	775 219	100.00 %	48.97 %
Europe			
Czech Republic	11 305	5.80 %	0.71 %
Greece	54 830	28.15 %	3.46 %
Hungary	9 924	5.10 %	0.63 %
Poland	12 540	6.44 %	0.79 %
Portugal	51 274	26.33 %	3.24 %
Russia	20 199	10.37 %	1.28 %
Slovakia	1 035	0.53 %	0.07 %
Turkey	33 649	17.28 %	2.13 %
Sub-total	194 756	100.00 %	12.30 %
Middle East and Africa			
Egypt	23 906	9.51 %	1.51 %
Israel	40 976	16.29 %	2.59 %
Jordan	5 784	2.30 %	0.37 %
Morocco	16 739	6.66 %	1.06 %
South Africa	162 680	64.69 %	10.28 %
Zimbabwe	1 408	0.56 %	0.09 %
Sub-total	251 493	100.00 %	15.89 %
Total	1 583 085		100.00 %
Memorandum:			
Norway	53 000		

²⁾ The IFC defines the stock market in Portugal as emerging, while the MSCI includes Portugal in its index of developed stock markets. Thus Portugal is already included in the Petroleum Fund's investment universe.

included in the IFC Investable Index (IFC-I)²⁾ are presented in Table 1. IFC-I is an index constructed such that it reflects foreigners' actual options for investing in emerging stock markets. These countries are thus appropriate candidates for investment.

4. Minimum requirements regarding settlement systems, legislation and market size and liquidity

Natural minimum requirements are that securities markets are open to foreigners, have satisfactory size and liquidity and are subject to an adequate regulatory regime with appropriate legislation and satisfactory surveillance. They should also have an efficient settlement system.

It is difficult to stipulate objective requirements regarding these areas, and there may be relatively small differences between the markets of some countries. In our evaluations, we have chosen to use the Norwegian equity market as a basis for comparing some of the factors under consideration. The Norwegian market is relatively small in an international context. An alternative yardstick could be the smallest markets included in the existing country list.

i) Openness, settlement systems and legislation:

At end-1997, only some of the emerging markets included in the IFC-I placed restrictions on foreigners' maximum holdings in individual companies. Restrictions on foreigners' holdings of individual equities in relevant emerging markets therefore do not seem to represent any effective obstacle to an international investor such as the Petroleum Fund.

It is natural to impose a number of requirements with respect to the settlement systems in countries in which the Petroleum Fund invests. In the remainder of this section, a brief review will be given of key elements of settlement systems, and it is stressed that the settlement systems in emerging securities markets are more risky than those in developed markets.

It is important that the process of linking trades includes all participants in the transaction, ie the local custodian, the global custodian, investors and local intermediaries. This area is not as well organised in emerging markets as in developed

markets.

In some emerging markets, physical settlement systems are used. In such systems, the probability of fraud, theft, loss of securities and delays due to limited settlement capacity is greater than in electronic systems.

Many emerging markets lack centralised ownership registers, such as that of the Norwegian Central Securities Depository. The risk in the settlement system increases with the number of decentralised ownership registers.

It is a definite advantage for securities ownership to change at the same time that cash settlement takes place, that this cannot be reversed, and that the process is finalised in no more than three days. Developed markets normally have more efficient procedures in this respect than emerging markets.

Errors in trades or settlements occur regularly, and it is therefore necessary to have procedures to ensure the correction of errors which are enforced consistently by an independent body such as a stock exchange or supervisory body. Risk in this area is also normally smaller in developed markets than in emerging markets.

Standardised and automated information and reporting systems reduce the possibility of error and also reduce the time it takes to discover and locate errors. SWIFT is an international reporting and information system that is used widely, and it will be an advantage if the participants in the securities market use either SWIFT or a similar system. Such information and reporting systems are not as common in emerging markets as in developed markets.

It is important that provisions established to ensure transparency of market transactions are enforced, that a competent supervisory body with broad powers is established, and that regulations are interpreted and enforced consistently. Key areas must be subject to adequate legislation. In particular, property law, contract law, securities legislation, bankruptcy legislation, tax legislation and court and arbitration systems are important components in an assessment of the legal framework. There is reason to believe that emerging markets lag behind developed markets in these areas.

Indices³⁾ have been developed for some

important emerging markets which measure the risk in the settlement system. This type of index makes it possible to compare the efficiency of settlement systems in different countries in terms of the overall costs incurred by market operators as a result of transactions that have to be reversed. Another type of index measures the security linked to dividend and coupon payments, repayment of withholding taxes and protection of rights in connection with corporate events. These two indices are combined into a third index (operational risk index), in which account is also taken of other operational factors such as compliance with international organisations' recommendations concerning the organisation of settlement systems, the complexity and efficiency of the regulatory regime and legislation, counterparty risk and force majeure risk. Table 2 below shows the countries that achieve satisfactory values (higher than 65)⁴⁾ using this index.

ii) Size and liquidity:

Criteria that are relevant in an assessment of the size and liquidity of markets are discussed under this point. The criteria that are most important in our view are discussed towards the end.

It is important that markets be of a certain size in both an absolute sense and in relation to the Petroleum Fund's investments. It therefore seems sensible to rank markets according to total market value, with a view to excluding the smallest markets in each region. There are considerable differences in size. Seven markets are larger than the Norwegian equity market (see Table 2).

Because market values (in USD) fluctuate widely as a result of changes in the dollar exchange rate, and because market values in local currencies can also be relatively volatile, one should consider whether the requirement should refer to an average of the market values at the end of each month, for example for the past year, or the past 2-3 years.

Another obvious requirement is that market liquidity is high, ie not significantly poorer than in industrial countries. Measures of liquidity are annual trading volume, the relationship between turnover and market value (turnover rate) and the difference between bid and offer prices. Data on trading volume

³⁾ Source: GSCS Ltd., IFC Emerging Stock Markets Factbook 1998.

⁴⁾ GSCS Ltd describes values over 70 as "strong" and "solid". We have set the requirement at 65 in order to avoid excluding too many countries.

and turnover rate are available, but it is difficult to determine where the limits should be set.

The rate of turnover on the Oslo Stock Exchange was about 5.3 per cent in September. This means that total turnover in the month was equivalent to 5.3 percent of the average market value during the month. Table 2 shows markets with a turnover rate of at least 5.3 per cent.

The daily turnover on the Oslo Stock Exchange in

Table 2:

	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5
Latin America					
Argentina	x				x
Brazil	x	x	x	x	x
Chile	n.a.				x
Colombia	n.a.				x
Mexico	x	x			x
Peru	x				x
Venezuela					
Asia					
China		x	x	x	x
India		x	x	x	x
Indonesia					x
Korea	x		x	x	x
Malaysia	x				x
Pakistan	n.a.		x		x
Philippines					x
Sri Lanka	n.a.				
Taiwan	n.a.	x	x	x	x
Thailand	x				x
Europe					
Czech Republic					
Greece		x	x	x	x
Hungary			x		
Poland					x
Portugal			x	x	x
Russland	n.a.				x
Slovakia	n.a.		x		
Turkey	x		x	x	x
Middle East and Africa					
Egypt	n.a.				x
Israel	n.a.				x
Jordan	n.a.				
Morocco	n.a.				
South Africa		x		x	x
Zimbabwe	n.a.				

Criterion 1: Score on "Operational Risk Benchmark" over 65, data not available for other countries

Criterion 2: Total market value more than USD 53bn

Criterion 3: Circulation rate per year more than 5.3%

Criterion 4: Daily turnover more than USD 133m

Criterion 5: Number of companies for potential investment higher than 15

September 1998 was about USD 133 million. Table 2 shows which countries satisfied a criterion of a daily turnover of at least USD 133 million in September 1998.

In some countries, there are very few companies that are open to foreign investors and at the same time feature sufficient size and liquidity. One rule of thumb is that there should be at least 15 companies in a portfolio to ensure that company-specific risk is reduced through diversification. This is risk associated with the individual company, and not related to general market movements. Table 2 shows which markets consist of at least 15 companies in which foreigners can invest.

It is possible to differentiate between countries on the basis of the criteria (or a combination of criteria) outlined in this section. It is more difficult to arrive at natural critical values, and an evaluation of a reasonable weighting of the various ratios. Table 2 shows which emerging markets are on at least the same level as the Norwegian market for the various criteria. The operational risk index was not available for the Norwegian market, so the limit here is based on an absolute evaluation. The countries that satisfy "minimum requirements" are indicated by an x in the table.

In our view, one prerequisite for even considering investment in emerging markets is that operational risk is not too high (criterion 1 in Table 2). Next, it seems natural to require that the market, measured by total market value, be of a certain minimum size (criterion 2). Further, it should be required that the liquidity of the market is good, both measured in terms of daily turnover (criterion 3) and turnover rate (criterion 4). Each market should also contain a sufficient number of companies representing real investment options for foreigners (criterion 5).

5. Country risk

Country risk is a function of political and macroeconomic stability. Political risk materialises when the authorities of a country expropriate property, introduce foreign exchange or trade restrictions, change tax legislation or introduce other rules that restrict payments of dividends and interest and which reduce the value of equities and bonds. Macroeconomic stability is partly linked to the stance of fiscal and monetary policy, and to a country's vulnerability to economic shocks.

Country risk associated with investments in

emerging markets is substantially greater than that associated with investments in developed markets. In consequence, individual assessments must be made of country risk. This risk often materialises in the form of event risk⁵⁾, which is not always reflected in historical rates of return.

Considerable resources are required to perform in-depth country analyses for short investment horizons, and this is even more difficult for longer time horizons. Countries regarded as risky in the short term may be acceptable in the longer term, and vice versa. The Petroleum Fund has a long-term investment horizon, and its long-term strategy should be as fixed as possible. Consequently, it is not easy to distinguish between countries at one point in time on the basis of assessments of political and economic stability criteria. Country analyses require substantial resources. One possible solution may be to base evaluations on work done by other institutions and incorporated, for example, in country risk indices. Several institutions are developing risk indices with a country ranking based on a weighting of political and economic indicators. Indicators that measure political tension, the stability of the regime, income distribution, inflation, current account deficits and foreign debt are used.

It is relatively simple to point to shortcomings in most of the country risk evaluation systems, and it is particularly difficult to place a limit on acceptable risk. The fact that index values may change within a relatively short space of time is also a problem. Table 3 shows JP Morgan's country risk index and Moody's and Standard and Poor's credit rating of the same countries. JP Morgan's country risk index focuses on economic criteria, such as GDP growth, average income, inflation, budget balance, balance of payments and credit growth. Standard and Poor's and Moody's use both political (qualitative) and economic (quantitative) factors as the basis for evaluating the risk associated with government bond investments in the various countries. Norges Bank uses these two credit rating institutions to determine which bonds the Fund can invest in.

If one decides to use country risk indices as an aid when selecting new countries, index producers must be chosen, and a maximum requirement for acceptable country risk must be stipulated. The literature provides no clear recommendations

pertaining to either the first or the second question. However, there is reason to believe that a relatively objective framework is better than an alternative without a framework. Norges Bank therefore recommends that a thorough evaluation be made of the use of country risk indices as a basis for selecting potential investment countries.

Table 3:
Country risk indicators/indices: January 1999

	JP Morgan Jan. 99	JP Morgan Oct. 99	Moody's	S&P
Latin America				
Argentina	41	40	Ba3	BB
Brazil	63	72	B2	BB-
Chile	29	27	Baa1	A-
Colombia	40	46	Baa3	BBB-
Mexico	39	46	Ba2	BB
Peru	35	40	Ba3	BB
Venezuela	47	56	B2	B+
Asia				
China	41	44	A3	BBB+
India	38	39	Ba2	BB
Indonesia	53	87	B3	CCC+
Korea	28	54	Ba1	BB+
Malaysia	32	54	Baa3	BBB-
Pakistan	n.a.	n.a.		
Philippines	36	53	Ba1	BB+
Sri Lanka	n.a.	n.a.		
Taiwan	32	34	Aa3	AA+
Thailand	33	54	Ba1	BBB-
Europe				
Czech Republic	29	36	Baa1	A-
Greece	33	35	Baa1	BBB
Hungary	30	30	Baa2	BBB-
Poland	31	27	Baa3	BBB-
Portugal	n.a.	n.a.		
Russia	63	85	B3	CCC-
Slovakia	n.a.	n.a.		
Turkey	47	44	B1	B
Middle East and Africa				
Egypt	n.a.	n.a.		
Israel	n.a.	n.a.		
Jordan	n.a.	n.a.		
Morocco	39	46	Ba1	BB
South Africa	43	44	Baa3	BB+
Zimbabwe	n.a.	n.a.		

Sources: JP Morgan, Moody's and S&P

Poorest score on the JP Morgan index is 140.

The best score is 0. A low value thus implies low risk

In Moody's system, 'Aaa' means lowest risk and 'C' highest.

Baa1' implies less risk than 'Ba1', while 'Ba1' is less risky than 'B1'.

In S&P's system, 'AAA' means lowest risk and 'CC' highest risk, Here 'BBB' implies less risk than 'BB+', while 'BB+' is less risky than 'CCC+'.

⁵⁾I.e. risk of large, discontinuous price jumps as a result of rare events or shocks.

6. A better trade-off between risk and expected return

In portfolio theory it is assumed that an investor makes a choice based on the expected return and risk, measured as the standard deviation of the return. A high expected return is positive, while a high standard deviation (risk) is negative. This theory formed the basis for Norges Bank's previous work on choosing a benchmark portfolio.

In this section, investment in emerging equity markets is considered on the basis of traditional portfolio theory. An array of articles has been published which document historical rates of return in emerging markets and the covariation between rates of return in equity markets in industrial countries and emerging economies.

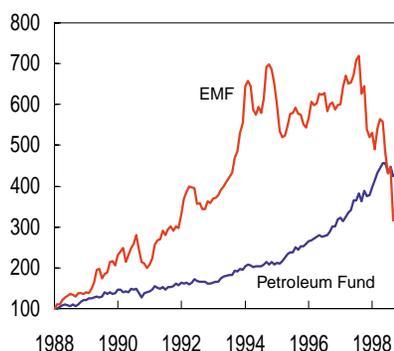
Reference is made to key findings in the literature and Norges Bank's own analyses. An account is first given of historical returns in emerging markets, and then the risk of this type of investment is considered. Finally, special features of the Petroleum Fund are discussed.

i) Return

Historically, it has been possible to achieve a high return by investing in emerging equity markets. Recently, however, returns have been substantially higher in developed markets than in emerging ones. Chart 1 shows developments in MSCI's emerging markets index (EMF) from 1988 up to the end of 1998. The chart also shows how the value of an equity portfolio with the same country allocation as the Petroleum Fund's equity portfolio would have developed during the same period. This index is based on MSCI's indices for developed markets.

The historically high return in emerging markets may have reflected both structural changes that have increased demand for equities, and high economic growth. A number of emerging economies have opened up securities markets to make it easier to buy and sell equities, and at the same time accounting rules and the rules and regulations for new issues have been improved. Parts of the public sector have been privatised, important economic reforms have been carried out, and programmes to stabilise exchange rates and prices have been implemented. Moreover, emerging markets have been underrepresented in the portfolios of investors in industrial countries.

Chart 1 *Index movements. 1988=100*



Future returns on investments in emerging markets will depend among other things on the future economic growth of the emerging economies. This growth will depend on growth in the labour force and structural changes in the business and public sectors that improve the efficiency of the economy.

In emerging economies, the labour force will increase substantially, whereas it will stagnate in developed economies. This may lead to a sharper rise in the production capacity of emerging economies than in developed economies. This is used by some as an argument for the view that the equity markets of emerging economies will show a stronger performance in the future than those of developed economies.

ii) Risk

If there is low covariation between the return on securities in different countries, an investor will be able to improve the relationship between the return and risk of the portfolio. Low covariation between rates of return in different countries may be due to a desynchronisation of the economic cycles in the various countries. Emerging economies often have a business cycle that deviates from that of developed economies. For an international investor, investments in emerging markets may therefore contribute to reducing the overall risk associated with the portfolio.

A number of factors may explain the lack of synchronisation of economic cycles: national factors, different industrial structures, different monetary and fiscal policy, different institutional and legal regimes and asymmetric shocks. These differences may cause country-specific variation in rates of return. A priori, it may be expected that

covariation in rates of return is high given geographical proximity, participation in institutional exchange rate arrangements, extensive trade in the region, and many cultural and economic similarities. In the following, some general observations are made regarding risk associated with investments in emerging markets.

In isolation, there is substantially higher risk associated with investing in emerging markets than in developed markets. Chart 1 shows clearly that there has been considerably higher volatility in emerging markets than in developed markets. However, the covariation between the return in developed and emerging markets has long been considered so low that international investors have been able to reduce risk by investing in emerging markets.

Recently, however, there have been indications that the covariation between the return in developed and emerging markets has increased slightly. This would mean that diversification gains are now lower than previously.

There are, moreover, indications that covariation increases in periods of rising risk. This implies that diversification gains are smallest when the need is greatest.

Calculations carried out by Norges Bank using monthly data for the period 1993-1998 show that it can be difficult to reduce the risk of a portfolio consisting of shares issued in developed markets by investing in emerging equity markets. This also applies to an equity portfolio that has the same country weights as the Petroleum Fund.

It has been demonstrated that the covariation between weekly rates of return is less than that between monthly rates of return, which in turn is smaller than the covariation calculated using annual data. For the Petroleum Fund, long-term structures are relevant. It may be that diversification gains are smaller for investors with a long investment horizon than for investors with a short horizon. However, it is difficult to draw definite conclusions on this point, since we do not have enough data to calculate correlations for long investment horizons.

The covariation between returns in emerging markets in the same region is generally relatively low. For this reason it may be advisable to invest capital in more than one country in each region. At any rate, the standard deviation of the return on market-weighted regional portfolios is substan-

tially lower than the standard deviations of the returns in the equity markets of the various countries.

The covariation between the return on market-weighted regional indices is also relatively low. One implication of this may be that it is sensible to invest in several regions in order to reduce region-specific risk.

The above discussion shows that further work must be done to determine whether investments in emerging markets may contribute to reducing risk in a portfolio which is only invested in developed markets. Special emphasis should be placed on studying possible gains for investors with a long investment horizon.

iii) Special features of the Fund

In addition to traditional portfolio model analyses, it may be natural to examine more closely special features of the Petroleum Fund. The first is that the objective is to maximise the Fund's international purchasing power. The second is that in principle the management of the Fund should be viewed in connection with Norway's other national wealth.

The purpose of the Petroleum Fund is to maximise future international purchasing power, given an acceptable level of risk. Significant changes in the exchange rate may reduce the purchasing power of the Fund, and therefore represent a type of risk that it may be advisable to limit. But although the exchange rates of emerging markets have shown wide fluctuations, it is not a foregone conclusion that investments in these countries will increase the Fund's risk. This is because exchange rate risk must be viewed in the light of the objective of the management of the Fund, which is to maximise the Fund's international purchasing power. One way of limiting risk may consequently be to invest capital in countries from which we know we will be importing goods and services when the Fund's capital is to be used. We do not know today which countries these will be, but it is reasonable to assume that a certain share of Norway's imports in the future will come from emerging economies (today this share is 15 per cent). Viewed in isolation, this means that exchange rate risk can be reduced by investing parts of the Fund in these countries. Norges Bank has argued in the past that exchange rate risk is less important when there is a long investment horizon, but that this does not mean that it can be ignored

altogether. Consequently, it can be argued that investing portions of the Fund in emerging markets may contribute to reducing the Fund's exchange rate risk.

The Petroleum Fund constitutes part of the country's national wealth. Ideally, Petroleum Fund investments should be considered taking into account Norway's total wealth, which could produce results that differ from those generated by traditional portfolio models. It may be argued that the portfolio should be spread among regions that are not subjected to the same type of shock at the same time, and that attempts should be made to reduce the covariation between developments in the Norwegian economy and the return on the Fund to an even greater extent than implied by traditional portfolio models. The latter implies that investment should take place in countries that are relatively different from Norway. Emerging economies will have a different economic and demographic structure, and be located in other regions than our typical trading partners. Important features distinguish emerging economies from Norway, and investing in the stock markets in these countries may contribute to reducing the covariation between developments in the Norwegian economy and the return on the Fund.

7. Summary

Norges Bank has considered in this submission what criteria should form the basis for investment in equity markets in emerging economies.

An evaluation of relevant countries should be based on the IFC definition and delimitation of emerging markets. These markets must then be evaluated in terms of the requirements that should be applied with respect to settlement systems, size and liquidity. Some relevant criteria are outlined at the beginning of this submission, and markets that satisfy certain minimum requirements are identified. The general impression is that the risk is greater than that associated with investment in developed markets.

After narrowing the possibilities on the basis of an appraisal of the openness, settlement risk, legislation and liquidity of the various markets, Norges Bank recommends that the remaining countries be evaluated against a requirement of political and economic stability. Such assessments may be based on country risk indices, as described above in this submission.

To ensure consistency with the existing portfolio, remaining country candidates should then be evaluated according to their contribution to the Petroleum Fund's return and risk.

The risk associated with investing in emerging markets is greater than that associated with investing in developed countries. In the opinion of Norges Bank, further work should be done to determine the degree of risk, and how it can best be handled. This will require a substantial amount of work, since there are several types of risk that must be investigated more thoroughly: settlement risk, country risk, market risk and exchange rate risk. An evaluation of whether investment in emerging markets should be permitted should be based on the results of this work. This means that the individual country should be evaluated on the basis of its settlement systems, legislation and political and economic stability. Moreover, potential markets must be evaluated on the basis of their size, liquidity, and effect on the Petroleum Fund's return and risk.

If the country list were expanded, the question of whether the same countries should also be included in the benchmark portfolio would also have to be considered. The selection of countries and asset allocation are strategic decisions based on the objective of the management of the Petroleum Fund. Among other things, the establishment of benchmark portfolios should contribute to ensuring that the management is closely in line with the strategic objective of the portfolio. It therefore seems logical that any expansion of the country list should be accompanied by a change in the benchmark portfolio. If the benchmark portfolio is changed, the manager will have a strong incentive for including the new countries in the actual portfolio.

Before Norges Bank can invest capital in new countries, systems must be adapted and expertise acquired. Investing in emerging markets is more demanding in terms of a continuous assessment of whether the countries in question fulfil the various criteria at all times. It may therefore take some time before Norges Bank is operationally in a position to invest in emerging markets. If a decision is made to expand the country list, it could mean that Norges Bank would have to give lower priority to some other areas in its operational management. This implies that, in principle, an expansion of the country list should be considered in the light of other important responsibilities associated with the management of the Fund.

NEW WORKING PAPERS FROM NORGES BANK

Norges Bank's Working Papers (*Arbeidsnotater*) present research projects (not necessarily in their final version), and are published among other reasons to enable the author to benefit from the comments of colleagues and interested parties. Only Working Papers published in English are listed below. Subscriptions are available free of charge and individual copies may be obtained from the Information Department of Norges Bank. Postal address: PO Box 1179 Sentrum, N-0107 Oslo, Norway.

Steinar Holden and Ragnar Nymoen: "Measuring structural unemployment: Is there a rough and ready answer?" *Arbeidsnotat* 1998/9. 36 pp. ISSN 0801-2504. ISBN 82-7553-132-2.

In recent years, the OECD has measured the structural rate of unemployment by an indicator called the Non-Accelerating Wage Rate of Unemployment. The NAWRU indicator is an important element in the policy analysis of the OECD. The rise in the estimated NAWRUs is also taken as evidence that Nordic unemployment, as well as unemployment in the rest of Europe, has increased due to a malfunctioning of labour markets. The paper presents stable empirical wage equations for Denmark, Finland, Norway and Sweden over the period 1964-1994, in sharp contrast to the increased NAWRU estimates. The instability of the NAWRU estimates is the product of a misspecified underlying wage equation, and not due to instability in the wage setting itself.

Øistein Røisland and Ragnar Torvik: «Exchange rate versus inflation targeting: A theory of output fluctuations in traded and non-traded sectors». *Arbeidsnotat* 1999/1. 32 pp. ISSN 0801-2504. ISBN 82-7553-135-7.

This paper develops a basic theory for output fluctuations in traded and non-traded sectors under two alternative monetary policy regimes; exchange rate targeting and inflation targeting. The conventional wisdom from one-sector models says that inflation targeting gives better output stabilisation than exchange rate targeting when demand shocks occur, but the opposite when supply shocks occur. In a model with a traded and a non-traded sector, we show that the conventional wisdom holds for the non-traded sector. However, for the traded sector, inflation targeting destabilises output compared with exchange rate targeting when both supply and demand shocks occur. The only shocks where inflation targeting provides better output stability for

the traded sector are shocks to world market prices. The two-sector structure introduces new mechanisms that may turn around earlier results for aggregate production. For instance, a demand shock may induce higher aggregate output fluctuations with inflation targeting than with exchange rate targeting. Moreover, a positive demand shock may prove to be contractionary under inflation targeting.

Hans K. Hvide and Eirik G. Kristiansen: Risk Taking in Selection Contests". *Arbeidsnotat* 1999/2. 47 pp. ISSN 0801-2504. ISBN 82-7553-137-3.

We study selection contests in which the strategic variable is degree of risk rather than amount of effort. The selection efficiency of such contests is examined. We show that the efficiency of a contest may be improved by limiting the competition in two ways; a) by having a small number of contestants, and b) by restricting contestant quality. Uncertainty about own type is shown to have an ambiguous effect on selection efficiency. The results contribute to our understanding of such diverse phenomena as promotion processes in firms, selection of fund managers and research tournaments.

B. Gabriela Mundaca and Jon Strand: «Speculative attacks in the exchange market with a band policy: A sequential game analysis». *Arbeidsnotat* 1999/3, 46 pp. ISSN 0801-2504. ISBN 82-7553-137-3.

We model the exchange rate market for a country that initially follows a band policy, as a four-stage sequential game of complete information, where a stochastic shock is realized in the last stage. Given a fixed cost of leaving the band, we show that three types of equilibria may exist, corresponding to different expectations by the public about the government retaining the band, (1) in all future states, (2) only in some future states, and (3) in none of the states. In case (2) a speculative attack occurs but is countered when the cost of countering it is not

too high, leading to adverse shifts in fundamentals. We study the government's incentives to abandon or retain the band, and to abandon the band preemptively before public expectations are revealed. The standard Krugman and Obstfeld models are obtained as special cases, respectively when we have regime collapse as a unique equilibrium, and when there are multiple equilibria and the game always progresses to stage 4.

*Qaisar Farooq Akram: «Multiple unemployment equilibria: Do transitory shocks have permanent effects?» Arbeidsnotat 1999/6, 36 pp.
ISSN 0801-2504. ISBN 82-7553144-6*

We adapt the multiple equilibria approach to characterize the behaviour of Norwegian unemployment since 1972. This approach may be associated with unemployment hysteresis as a nonlinear phenomenon. In this nonlinear framework transitory shocks may cause a transition from one equilibrium to another and thus have permanent effects on economic activity. A Markov regime switching model and an LSTAR model are employed to take account of possible multiple equilibria and asymmetric responses to positive and negative shocks. The empirical results seem to support these contentions.

AUCTION CALENDAR FOR GOVERNMENT BONDS AND TREASURY BILLS IN THE SECOND HALF OF 1999

The following schedule has been established for auctions of government bonds in the second half of 1999:

Announcement:	12 noon	20 Sept.	15 Nov.
Auction:	10 am	27 Sept.	22 Nov.
Settlement:	10 am	30 Sept.	25 Nov.

The following schedule has been established for auctions of Treasury bills in the first half of 1999:

Announcement:	1 July	5 Aug.	2 Sept.	1 Oct.	29 Oct.	2 Dec.
Auction:	5 July	9 Aug.	6 Sept.	5 Oct.	2 Nov.	6 Dec.
Settlement:	7 July	11 Aug.	8 Sept.	7 Oct.	4 Nov.	8 Dec.

Auctions of government bonds and Treasury bills may be cancelled or supplemented with ad hoc issues.