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Contents

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Symbols in tables	**Symbol**
Data not available	..
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Nil	0
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Economic trends*

In the second quarter, output in the mainland economy edged up, and the projections presented in this report imply that the Norwegian economy passed a cyclical trough in the early part of summer of this year. Output growth had remained clearly lower than trend growth since early 2000, which means that the cyclical downturn had spanned close to three years. The previous cyclical peak was relatively flat, however. If the peak is placed early in 1998, the downturn lasted as long as five years.

In the coming two years, we expect a cyclical upturn, where growth will be higher than trend growth in the first year in particular. Unemployment will continue to rise in the short term, but is expected to pass the peak in early 2004. It is normal that the turnaround in the labour market occurs somewhat later than in product markets. Because the cyclical upturn is expected to be moderate, the economy will remain in a period of sluggishness over the next two years, i.e. that the output level will be slightly lower than the projected trend level. Both the recovery and the high level of wages following several years of high wage growth point to high productivity growth in the period ahead. Even if unemployment edges down, it will still remain at a high level at a little less than 4½ per cent.

The projected economic recovery will primarily be fuelled by an upswing in household demand. This reflects a pronounced expansionary shift in monetary policy through 2003. The impetus to growth from fiscal policy is unclear, but will probably be moderate, at least in terms of the contribution from output and public employment. The projected upswing in the international economy will make a positive contribution, but the upswing in the world economy is also expected to be fairly weak. Petroleum investment will provide some contribution to growth ahead, but developments in petroleum investment are shrouded in uncertainty as usual.

The shift in monetary policy must be seen in connection with the marked appreciation of the krone through 2001 and 2002. The appreciation of the krone has made a substantial contribution to the considerable fall in underlying inflation through 2003. Inflation is now clearly lower than target. The appreciation also led to a loss in competitiveness in the Norwegian business sector, and is probably behind a substantial share of the sharp fall in manufacturing output over the past year. Statistics Norway's estimates show that monetary policy has a considerable impact on domestic demand and total output, but that it primarily influences inflation and output in the internationally exposed sector through the effects on the exchange rate. The effects of interest rate changes on inflation are therefore dependent on how they influence the exchange rate. It would appear that the monetary policy strategy, and the subsequent rise in interest rates in July last year, underpinned long-term expectations of high interest rates in Norway relative to other countries, and thereby contributed to the marked appreciation of the krone. Similarly, the pronounced shift in monetary policy appears to have contributed to the marked depreciation of the krone through 2003.

The weakening of the krone will push up imported price inflation in the period ahead. The impact on consumer prices will, however, be limited in the short run because margins in the distributive trades will probably narrow after the marked increase in the period with a pronounced fall in import prices. Moreover, relatively high unemployment and moderate wage growth ahead will contribute to keeping underlying inflation below target also in the somewhat longer term. Our calculations are based on the assumption that interest rates will rise somewhat through the latter half of 2004 and into 2005, in line with a corresponding, assumed increase in interest rates in the euro area, so that the krone remains stable. This implies that there will not be a further shift in monetary policy, but a normalisation, adapted to a continued weak, but still broadly balanced economic situation in 2005.

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* Translated from Økonomiske analyser 4/2003 by Janet Aagenæs and Helle Snellingen.

International economy

Following a period of sluggishness at the end of last year and the beginning of 2003, it now appears that the international economic situation is improving. Developments in global financial markets, with rising equity prices and an increase in long rates, indicate expectations of higher growth. Domestic demand is rising in the US and some positive signals have also come into evidence in Japan. However, developments in the euro area remain weak, and second-quarter figures indicate that GDP contracted for the euro area as a whole.

Economic growth in the US is expected to pick up in the period ahead, but the recovery is still fragile. The depreciation of the dollar against the euro and Canadian dollar and an expansionary fiscal policy will make a positive contribution. However, a precondition for a robust upturn in the US economy is that the higher level of investment activity recorded in the second quarter is maintained. In the euro area, growth is expected to pick up gradually from the first half of next year, buoyed by higher global growth.

Developments in the oil market

The spot price of Brent Blend rose from about USD 24 per barrel at the end of April to around USD 30 at the beginning of September. For the first eight months of the year, the price has averaged just under USD 29 per barrel, against about USD 25 last year.

The most important reason for the rise in prices over the last few months was that Iraq did not succeed in maintaining production at the level prevailing before the toppling of the former regime, which meant that exports fell by a little less than 2 million b/d. Iraq is not covered by OPEC's quota system. Since OPEC kept its production quotas unchanged, global stocks of both crude oil and finished products increased less in the past few months than would otherwise have been the case. In particular, many analysts have pointed to the low stocks of petrol in the US during the driving season, which is now drawing to a close.

According to the Energy Information Administration in the US, stocks of crude oil in the OECD are at their lowest level for 15 years. In the period ahead, it is particularly important that stocks of heating oil are restored to acceptable levels before winter arrives in the northern hemisphere. If Iraq does not manage to increase exports over the next few months, OPEC will probably have to increase production to keep oil prices within the desired interval of USD 22-28 per barrel. Irrespectively, oil prices have been particularly high so far this year, and it appears that the average price for 2003 as a whole will be in the upper range of this price interval. In the projection period, oil prices are projected to be about USD 25 per barrel.

US

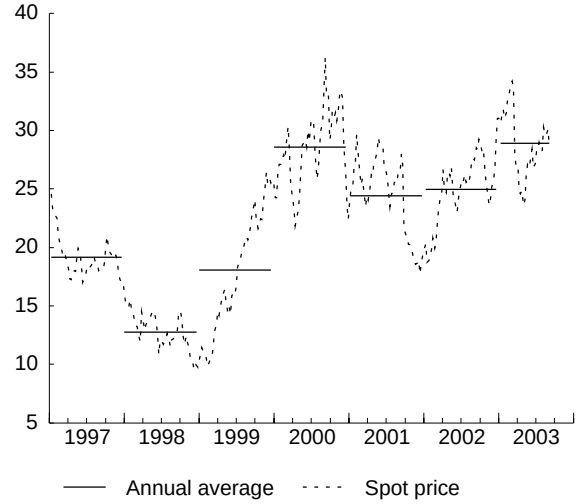
In recent months there have been signs of an upturn in the US economy. Figures for the second quarter show that GDP growth has picked up following two fairly weak previous quarters. The stock market has rallied and surveys indicate that consumer and business confidence has improved. Long interest rates have moved up and the deflation scenario appears to have been "priced out" of the market.

GDP growth in the second quarter was primarily fuelled by household consumption and public expenditure. Consumer spending has been the most important growth factor during the period of sluggishness in the US economy over the last three years. This was also the case in the previous quarter, which showed a pronounced rise compared with the previous two quarters. Car purchases were the main sub-component. The rise in public spending primarily related to higher defence expenditure linked to the war in Iraq. Growth in private investment also picked up compared with the first quarter. Growth was particularly strong for machinery and construction. This represents the key to a robust upswing in the US economy.

The balance of trade continues to deteriorate. It may seem surprising, taking into account the sharp depreciation of the dollar, but it primarily reflects a different cyclical phase for the US economy compared with its trading partners. US imports rose considerably in the second quarter as a result of higher domestic demand, while sluggish global developments affected demand for US goods and services, with exports showing a decline. The trade deficit is also consistent with a J-curve effect. This implies that a weaker currency initially results in a worsening trade balance because the value of imports is higher and the value of exports is lower measured in dollar terms, but that higher exports and reduced imports in the somewhat longer term result in an improvement in the trade balance. However, this effect is smaller in the US than in other countries inasmuch as a high share of US imports is priced in dollars.

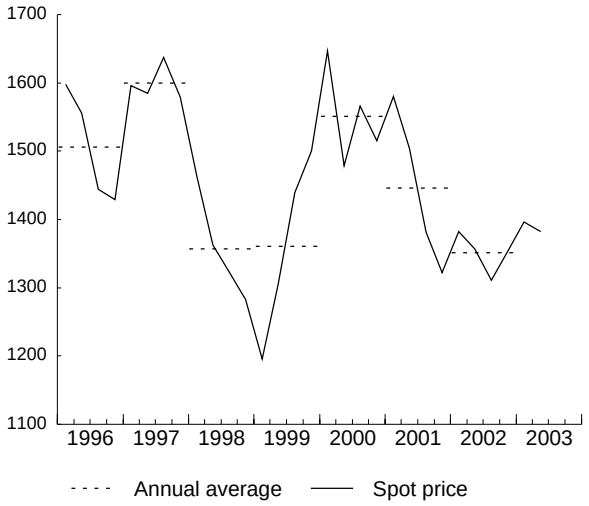
Retail trade continued to expand, and was 1.4 per cent higher in July than in the previous month. This is the highest increase since March. There was broad growth across a number of groups, but cars are still making the main contribution. Continued low interest rates and expectations of higher growth will help to sustain consumption. However, there are several factors that point to the opposite, particularly the weak labour market. Unemployment is now higher

Spot price crude oil, Brent Blend
Dollar per barrel



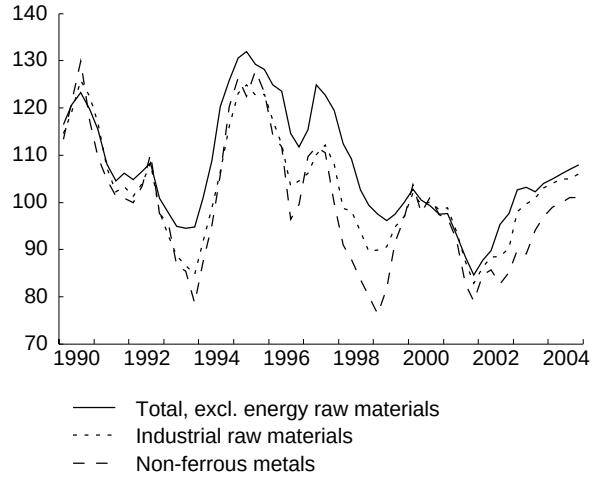
Source: Norges Bank.

Spot price aluminium. 1996 - 2003
Dollar per 100 lbs.



Source: IMF.

Commodity prices on the world market 1990 - 2004
Dollar based indices. 2000 = 100



Sources: HWWA-Institut fur Wirtschaftsforschung and AIECE.

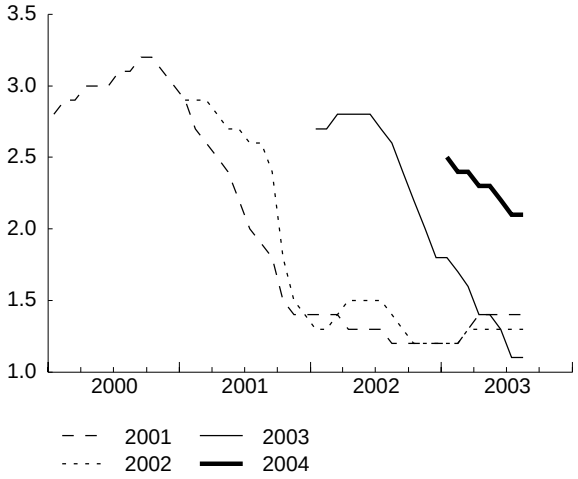
than 6 per cent, and employment continues to fall. Negative developments in the labour market reduce growth in household income and lead to lower expectations concerning economic developments. Debt-burdened households in the US have lost part of their wealth in the stock market in the last few years. If the stock market should again fall following the rally this spring, growth in consumer spending may slow. The tax cuts this summer will contribute to maintaining demand growth in the short term. In the longer term, however, it is essential that labour market conditions improve.

The housing market is also a good indicator that monetary policy is still having an impact. Despite weak developments in other parts of the economy, historically low interest rates are resulting in a continued rise in residential construction, which is now at a very high level. House prices also rose considerably through the second quarter. The sharp rise in prices is not sustainable and has led to concerns that a price bubble is developing in the housing market. House sales were record-high in July, but higher long rates in recent months are expected to curb demand ahead. In recent years, a steady fall in interest rates has enabled households to refinance their loans at lower interest rates. This has been an important factor behind strong consumption growth. Higher long rates will curb demand both for refinancing and dwellings and may trigger a correction in house prices. A sharp fall in house prices will have a negative impact on household consumption and may ruin the prospect of an economic upswing. If overall growth in the US economy picks up as expected, the financial position of households will improve and hopefully offset the effect of higher interest rates, thereby preventing a sharp fall in house prices.

Industrial output expanded by a strong 0.5 per cent in July after having exhibited sluggish developments over the past year. The upswing was broadly based, with car production making the largest contribution. Viewed in relation to other positive signs in the macroeconomic picture, this may be an indication that manufacturing is heading for better times. There are several factors that may underpin an improvement in manufacturing. Inventories are very low, which means that higher demand will quickly translate into higher output. Moreover, conditions are in place, with low interest rates and subdued inflation, a weak dollar and an expansionary fiscal policy. Robust growth in investment is important for a continued and vigorous upturn. Capacity utilization, however, is still low. This limits the need for new investment. Weak international demand and falling exports may also hamper a robust upswing in manufacturing for the moment.

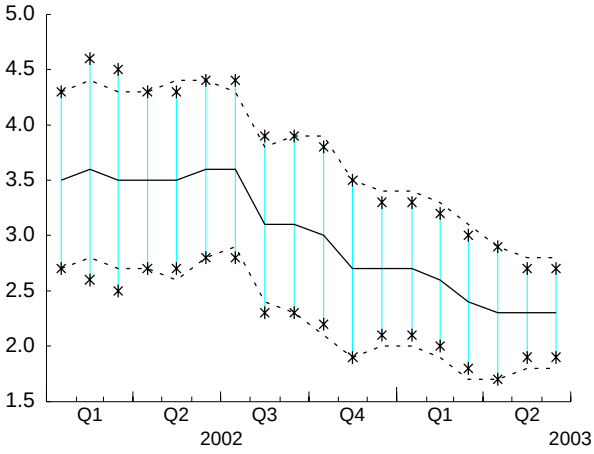
The US dollar has depreciated sharply since the beginning of 2002. Up to mid-June 2003, it depreciated by close to 20 per cent on a trade-weighted basis and

GDP growth forecasts for Norway's main trading partners for 2001 - 2004 given on different dates
Per cent



Source: Consensus Forecasts.

GDP growth forecasts for the US for 2003 at different points in time
Average forecast (solid line) with +/- 2 standard deviation (star points) and +/- 2 "normal" deviation (dashed line)



Source: Consensus Forecasts.

35 per cent against the euro. Since then, however, it has appreciated somewhat, by about 4 and 7 per cent respectively. At the beginning of September, one euro cost USD 1.10. The depreciation of the dollar means that US producers' international competitiveness has improved considerably. Admittedly, the positive effects are being moderated in the short term as a result of weaker demand from the euro area and Canada (whose currencies account for most of the depreciation) due to sluggish economic developments in these countries. All the same, a weaker dollar will gradually help to improve the balance of trade. Foreign demand may therefore contribute to maintaining total demand.

Domestic demand is being bolstered by an expansionary fiscal policy. Recently approved tax cuts are already on their way to taxpayers' pockets. Most of them are in the form of discount cheques, paid directly to households. There are also other measures, including a reduction in the marriage tax penalty, but these will first take effect at the beginning of next year and are of less importance for the overall picture. Higher military spending is also having expansionary effects. All in all, the budget balance has deteriorated and a number of states are struggling with unsustainable budget deficits. Substantial fiscal tightening will therefore have to take place in the US over the next few years.

Improved key figures for the US economy have led to a rise in long rates. Yields on ten-year government bonds have risen markedly since the end of July, albeit from historically low levels. Core inflation has remained at around 1.5 per cent in the last four months. This underpins the impression that the economy has stabilized and that the risk of deflation has diminished. Long interest rates are now discounting higher growth and inflation. The Federal Reserve is still keeping short interest rates at a record-low level in order to stimulate the economy. Growth remains fragile, and interest rates will probably not be raised before the labour market shows a noticeable improvement.

Europe

European stock markets have risen sharply since March. Long interest rates have also increased this summer. Positive signals from the US economy are an important reason for this. However, economic data have not matched this optimism, and second-quarter figures revealed sluggish developments in large parts of the euro area. In the second quarter, GDP contracted in Germany, France and Italy, the euro area's three largest economies, and GDP is expected to fall for the euro area as a whole. Weak global demand, a tighter monetary policy than in the US and the effects of the strong euro have contributed to sluggish developments.

The gap between optimistic expectations, reflected in rising equity prices and rising long interest rates, and weak figures for the second quarter, gives grounds for concern. The risk that we will see a renewed decline in European stock markets in the period ahead has increased, which would also affect consumption and investment.

The euro has appreciated by nearly 30 per cent against the dollar over the past one and a half years, despite some depreciation in the last two months. The sharp appreciation of the euro is having an adverse impact on the internationally exposed sector. Competitiveness has particularly deteriorated against the US and countries that have pegged their currency to the US dollar, such as China and to some extent Japan, but also against the UK. The appreciation of the euro has negated a large part of the easing of monetary conditions provided by the interest rate cuts so far.

Macroeconomic projections according to selected sources
Annual change in per cent

	GDP-growth						Inflation (consumer prices)					
	1999	2000	2001	2002	2003	2004	1999	2000	2001	2002	2003	2004
USA												
NIESR	4.1	3.8	0.3	2.4	2.4	3.0	1.6	2.5	2.0	1.4	2.1	3.0
ConsF	4.1	3.8	0.3	2.4	2.3	3.7	2.2	3.4	2.8	1.6	2.2	1.7
EC	4.1	3.8	0.3	2.4	2.4	2.5	2.2	3.4	2.8	1.6	2.0	1.7
OECD	4.1	3.8	0.3	2.4	2.5	4.0	2.2	3.4	2.8	1.6	2.4	1.7
Japan												
NIESR	0.2	2.8	0.4	0.1	0.7	1.0	-0.7	-1.2	-1.5	-1.6	-0.9	-0.7
ConsF	0.8	2.4	0.4	0.2	1.0	0.7	-0.3	-0.7	-0.7	-0.9	-0.4	-0.6
EC	0.7	2.4	0.4	0.3	1.5	1.3	-0.3	-0.7	-0.6	-0.9	-0.6	-0.7
OECD	0.7	2.6	0.4	0.3	1.0	1.1	-0.3	-0.7	-0.7	-0.9	-0.9	-1.0
EMU												
NIESR	2.8	3.5	1.5	0.8	0.6	1.8	1.2	2.2	2.5	2.3	1.8	1.0
ConsF	2.8	3.5	1.4	0.8	0.6	1.6	1.1	2.2	2.7	2.3	1.9	1.4
EC	2.8	3.5	1.5	0.9	1.0	2.3	1.1	2.4	2.5	2.2	2.1	1.7
OECD	2.8	3.6	1.5	0.9	1.0	2.4	1.1	2.4	2.5	2.4	2.0	1.6
Trading partners												
NIESR	3.0	3.7	1.4	1.3	1.1	2.1	1.2	1.8	2.1	1.8	1.9	1.3
ConsF	3.1	3.5	1.3	1.3	1.1	2.1	1.3	2.2	2.5	2.0	2.0	1.6
EC	3.1	3.5	1.3	1.3	1.4	2.3	1.2	2.0	2.4	1.9	2.0	1.6
OECD	3.1	3.5	1.3	1.3	1.4	2.5	1.4	2.1	2.5	2.1	2.0	1.6

Sources: EC from April, OECD from June, NIESR from July and Consensus Forecasts from August 2003 . All the inflation projections from the NIESR apply to the consumption deflator.

The strong euro, coupled with sluggish economic developments, has curbed inflation. The fairly tight monetary policy over the past few years has made investments in European securities relatively attractive and thus contributed to the appreciation of the euro. At the same time, it has led to lower inflation by curbing investment and consumption. Germany, where the economic situation is weakest, also has the lowest inflation rate.

The European Central Bank has cut its key rate by 0.75 percentage point so far this year, to 2 per cent. In May, inflation was below the ECB's upper limit of 2 per cent for the first time in more than three years. Inflationary pressures clearly appear to be abating. Stagnation in manufacturing in particular, but also the generally weak economic performance, point to low interest rates for an extended period ahead. It is assumed that interest rates will rise gradually from the third quarter of next year.

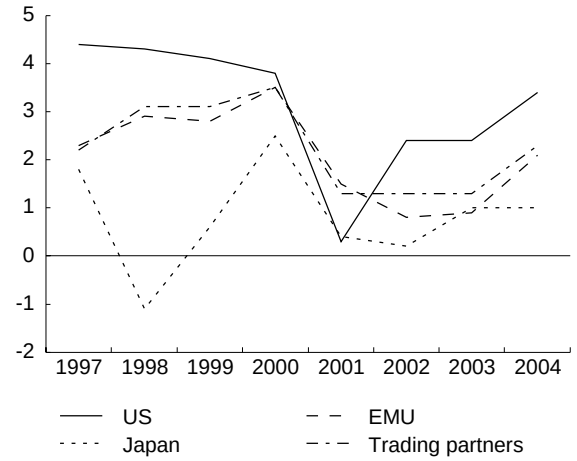
Germany, France and Portugal are set to exceed the Stability and Growth Pact's budget deficit ceiling of 3 per cent of GDP this year. Italy is also at risk. Recently, Germany and France have signalled that the limit will probably be exceeded again next year. In the event, this means a breach with the Stability and Growth Pact for the third consecutive year. Strict budgetary requirements may prolong the downturn and the Pact has been subject to severe criticism. The budget deficits have contributed to limiting the downturn, but are not sustainable in the long term. The scope for a more expansionary fiscal policy in the euro area is therefore limited.

In Germany, GDP contracted by 0.1 per cent in the second quarter, which is the third consecutive quarter showing negative economic growth. The weak global economy, combined with a strong euro, has resulted in sluggish exports, and the moderate increase in domestic demand was not sufficient to offset the negative contribution from foreign trade. Germany is the largest economy in the euro area, and sluggish developments are therefore having contagion effects on the rest of the region.

Germany's problems are due to a mixture of structural problems and weak economic developments. The Government is seeking to introduce a reform, "Agenda 2010", in which key points include cutbacks in social security schemes, such as sick pay and unemployment benefits, and a relaxation of job-protection rules. Such reforms may have an expansionary effect in the longer term, but the relatively export-oriented German economy seems dependent on stimulus from an international recovery in order to emerge from the downturn.

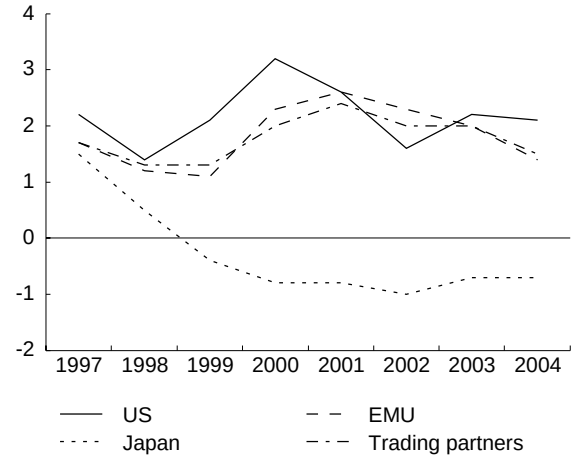
Growth in the euro area is expected to remain weak in the second half of 2003. Household demand will remain subdued as a result of high unemployment. Sentiment indicators have provided some signs of improved confidence in the business sector, but there are still no signs that investment is picking up. The

GDP growth for the US, Japan, the euro area and Norway's trading partners



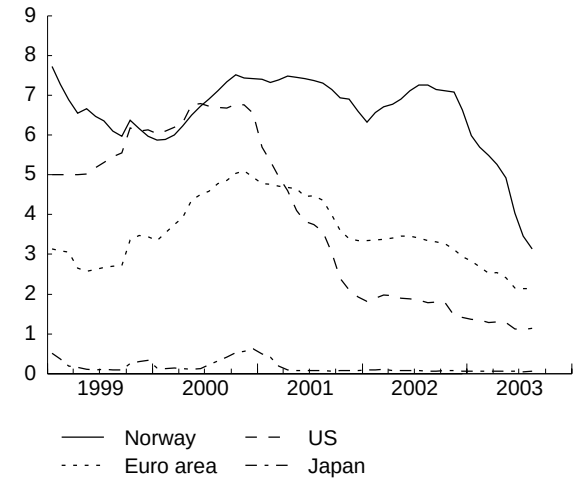
Sources: Average of projections from the NIESR in July 03, CF in August 03, the EC in April 03 and the OECD in June 03.

Consumer price inflation for the US, Japan, the euro area and Norway's trading partners



Sources: Average of projections from the NIESR in July 03, CF in August 03, the EC in April 03 and the OECD in June 03.

International interest rates
3-month Eurorate



Source: Norges Bank.

ECB's interest rate cuts so far this year will stimulate activity somewhat, and further cuts may be made during the autumn. However, the contribution from fiscal policy is of a limited nature. High unemployment is curbing income growth and household consumption, and the growth impetus will initially come from higher exports as activity in the global economy, and particularly in the US, picks up. There are thus few indications of a swift turnaround in the euro area. Growth is not expected to pick up until the first half of next year.

Outside the euro area, the UK has recorded sluggish growth in the first half of 2003, partly reflecting weak global demand. Heightened uncertainty concerning the war in Iraq may also have been of importance. The labour market is still buoyant. Unemployment has remained at a little more than 3 per cent over the past few years. Employment in service industries and the public sector has increased, while manufacturing is still shedding labour. Manufacturing is being adversely affected by sluggish developments in the euro area. The depreciation of the pound has led to improved competitiveness and industrial output appears to be stabilizing. After having declined for six consecutive months, industrial output rose by 0.1 per cent in June. Household consumption has remained buoyant through the international downturn, fuelled by the sharp rise in house prices. High debt levels and a slower rise in house prices since spring 2003 may curb household consumption in the period ahead. The strong labour market and low interest rates point to the opposite. The Bank of England has reduced its key rate by 0.25 percentage point on two occasions since the beginning of the year, most recently in June, and the key rate is now 3.5 per cent. The expansionary monetary policy, coupled with higher international demand, will fuel growth in the period ahead, and growth is expected to pick up from the first half of next year.

In Sweden, economic growth has been weak since the third quarter of 2002, but edged up during spring 2003. Household consumption and net exports contributed to stronger overall demand in the second quarter even though investment and public consumption had the opposite effect. Local government strikes led to a fall in public consumption in the second quarter. This will be compensated by higher consumption in the third quarter, but public consumption is expected to expand at a relatively slow pace thereafter. Consumer confidence indicators suggest optimism among households, and low interest rates will result in a continued rise in household consumption in the period ahead. Gross investment contracted in the second quarter and has moved on a sluggish trend over the past year. Weak developments in manufacturing are contributing to this picture. Growth in the service sector has held up, and manufacturing output is ex-

pected to rise as global growth gradually picks up. The Swedish central bank reduced its key rate by one percentage point from March to July. This must be seen in connection with a slower rate of inflation, which is now close to the target of 2 per cent. The Swedish krona has appreciated, but is not back to the level recorded in 2000 when the krona began to depreciate. The krona is expected to appreciate further irrespective of the outcome of the referendum on participation in EMU on 14 September. A mild global upturn and a stronger krona will result in only a moderate rise in exports. All in all, the growth outlook has improved somewhat since spring. This primarily reflects a brighter global outlook and higher household consumption.

Japan

In Japan, GDP growth picked up in the second quarter, to 0.6 per cent, or 2.3 per cent at an annual rate, after having slowed gradually through the previous three quarters. Higher exports made the most important contribution. Household consumption is also showing a positive trend, and rose for the second consecutive quarter. Bond yields have also risen in Japan as a result of positive key figures in recent months. Developments in the stock market also indicate expectations of higher growth. Since the beginning of May, the Nikkei index has climbed by 25 per cent. However, structural problems in the Japanese economy are still unresolved, implying that a robust turnaround is still not imminent.

Norwegian economy

Output in the Norwegian economy, as measured by GDP, has fallen over the past year. The decline continued in the first quarter of 2003, albeit at a slower pace than earlier. On the other hand, the decline in mainland GDP appears to have levelled off. The decline in output reflects both reduced resource-based production (oil and electricity production) and a clear fall in manufacturing output. The fall in electricity production is temporary and production is expected to be higher this winter than last winter. However, the decline in manufacturing output is ascribable to many factors, not least the deterioration in cost competitiveness. Competitiveness has improved somewhat as a result of a weaker krone. Moderate inflation and wage growth ahead, combined with a steady krone exchange rate and the projected cyclical turnaround abroad, will probably reverse the trend in the manufacturing sector.

Unemployment has continued to rise in 2003. Employment has been falling, and even if labour force participation has declined, it has not prevented a rise in unemployment. Evidence suggests that unemployment will edge up in the period ahead even with higher growth in the Norwegian economy in 2004 and 2005. This is because it will take some time before

Macroeconomic indicators 2001-2003
Growth from previous period unless otherwise noted. Per cent

			Seasonally adjusted			
	2001	2002	02.3	02.4	03.1	03.2
Demand and output						
Consumption in households and non-profit organizations	2.6	3.6	0.8	1.3	- 0.4	1.3
General government consumption	2.7	3.2	2.3	- 0.2	0.3	0.8
Gross fixed investment	- 4.2	- 3.6	- 6.9	6.6	- 1.1	- 4.0
- Mainland Norway	0.7	- 4.6	- 1.2	1.5	- 1.7	- 0.2
-Extraction and transport via pipelines	- 1.0	- 4.6	2.3	5.6	6.6	6.5
-Service activities incidential to extraction	..	..	..	..	..	..
Final domestic demand from Mainland Norway[1]	2.3	2.1	0.9	1.0	- 0.4	0.9
Exports	4.1	- 0.5	- 3.4	- 1.2	- 1.9	2.6
- Crude oil and natural gas	5.2	0.2	- 7.2	- 0.6	- 2.6	1.7
- Traditional goods	3.7	1.3	2.3	- 3.8	- 0.2	4.7
Imports	0.9	1.7	- 3.1	2.1	1.4	- 2.3
- Traditional goods	2.9	4.7	1.2	3.1	- 0.3	1.0
Gross domestic product	1.9	1.0	- 1.5	- 0.2	- 0.2	- 0.1
- Mainland Norway	1.7	1.3	0.3	- 0.5	- 0.3	0.3
Labour market[2]						
Man-hours worked	- 1.0	- 0.9	- 0.2	- 0.4	- 0.3	- 0.3
Employed persons	0.5	0.2	- 0.2	- 0.3	- 0.3	- 0.5
Labour force	0.7	0.6	- 0.2	0.0	- 0.3	0.0
Unemployment rate, level[3]	3.6	3.9	3.8	4.1	4.1	4.6
Prices						
Consumer price index (CPI)[4]	3.0	1.3	1.4	2.2	4.5	2.2
CPI adjusted for tax changes and excluding energy products (CPI-ATE)[4]	2.6	2.3	2.4	2.0	1.8	1.2
Export prices, traditional goods	- 2.9	- 8.7	- 4.1	0.3	0.5	- 0.5
Import prices, traditional goods	- 0.2	- 8.0	- 0.8	- 1.0	1.2	- 0.6
Balance of payment						
Current balance, bill. NOK	238.5	200.6	46.5	47.2	54.9	43.0
Memorandum items (Unadjusted, level)						
Money market rate (3 month NIBOR)	7.1	6.9	7.2	7.0	5.7	4.7
Lending rate, banks	8.8	8.4	8.1	8.6	7.6	6.7
Crude oil price NOK[5]	220.2	197.4	202.3	196.1	222.1	183.1
Importweighted krone exchange rate, 44 countries, 1995=100	100.2	91.6	89.1	87.7	88.7	91.9
NOK per euro	8.1	7.5	7.4	7.3	7.6	8.0

[1] Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.
[2] Figures for 2001 and 2002 are from national accounts. The quarterly figures are from Statistics Norway's Labour force survey (LFS), since the new quarterly national accounts series for employment are too short for seasonal adjustment.
[3] According to Statistics Norway's labour force survey (LFS).
[4] Percentage change from the same period the previous year.
[5] Average spot price, Brent Blend.
Sources: Statistics Norway and Norges Bank.

labour demand starts to pick up in the business sector. We believe that unemployment will peak this winter and may edge down through 2004 and 2005.

Inflation has declined in the third quarter of this year. This primarily reflects the lagged effects of the krone appreciation in 2002. When the weakening of the krone in 2003 gradually feeds through to import prices, consumer price inflation is expected to edge up. Low domestic inflation will, however, restrain overall inflation. Moreover, last winter's record-high electricity prices will hardly be witnessed again this winter, which will contribute to subdued overall inflation ahead.

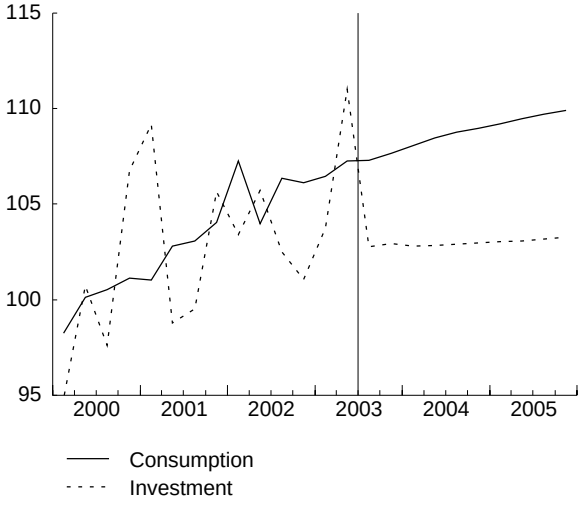
The pronounced shift in monetary policy since the end of last year is expected to lead to a marked upswing in domestic demand. According to our projections, this will lead to a marked increase in output growth in the coming quarters. Moreover, petroleum investment now appears to be higher than previously assumed, which will also boost output growth. Even if an international cyclical turnaround will also fuel growth in Norway, the recovery is expected to be moderate with only a small increase in key interest rates in Europe and the US. We have assumed that this will also be the case in Norway in 2004 and 2005. Our calculations indicate that this is consistent with a more or less unchanged nominal krone exchange rate (import-weighted) and inflation in line with the target.

Fiscal policy – moderate impulses

Preliminary quarterly national accounts figures (QNA) show growth in public consumption of goods and services in the first half of this year. Gross public investment showed the strongest growth at 2.7 per cent higher in the first half of 2003 compared with the same period of 2002. Public spending is also rising, primarily on defence and health, not least in the hospital sector. The deficits in the regional health enterprises in 2003 imply that growth will probably slow in the period ahead. We assume that growth in public consumption of goods and services will be moderate in the period ahead.

There is no new information on fiscal policy since the June *Economic Survey*. The estimates for 2003 and 2004 therefore remain virtually unchanged. The current cyclical downturn is contributing to a deterioration in the budget balance. This is not due to policy changes. It is the regulatory framework, in conjunction with developments in the Norwegian economy, that is weakening the budget balance. The pronounced expansionary shift in monetary policy in the course of 2003 will stimulate the economy both this year and next. We have therefore assumed that the central government budget for 2004 will not provide further stimulus to the economy beyond the approved reforms in 2003. This was also the assumption underlying our projections for tax rates, consumption and gross public investment in the June report.

General government
Seasonally adjusted volume indices, 2000=100



Source: Statistics Norway.

Developments in crude oil prices in NOK imply in isolation that the government's cash flow from petroleum activity will be somewhat higher than assumed in the Revised National Budget for 2003 (RNB) in both 2003 and 2004. This implies an increase in the Petroleum Fund's capital. Higher-than-expected petroleum investment in 2004 and 2005 has the opposite effect. Developments in international financial markets are generating capital gains that will result in higher values for the Fund than previously estimated. Some of these gains have already been realized in 2003. We now expect the capital in the Petroleum Fund to be higher at the end of 2004 than previously assumed. This provides room for increasing the structural deficit in 2005, in line with the guideline on the use of the return on the Petroleum Fund. We have therefore assumed personal tax cuts of around NOK 5 billion in 2005 compared with unchanged (real) tax rates from 2004. This implies an impulse in 2005 of about 0.4 per cent to mainland GDP growth in Norway. This means that fiscal policy is more expansionary in 2005 than previously assumed.

Expansionary monetary policy

Since the June report, Norges Bank has lowered its key policy rate by 2 percentage points. The most recent interest rate cut came on 13 August, and the key rate now stands at 3 per cent. Norges Bank has also signalled further interest rate cuts. Since the easing of monetary policy started in December last year, the three-month money market rate has fallen by a little more than 4 percentage points to about 2.9 per cent at the beginning of September.

The interest rate differential against Norway's trading partners has narrowed considerably in the course of the year. This has contributed to the depreciation of

Effects of interest rates and the krone exchange rate on the Norwegian economy

During the summer, Statistics Norway's macroeconomic model KVARTS has been re-estimated on the basis of data from the latest revised national accounts figures. In this work, special emphasis has been placed on quantifying the importance of interest rates and the exchange rate for price developments. In the standard version of the model both these variables are determined exogenously, ie they must be determined by the model user. Table 1 shows average effects over three years of a lasting shift in one of them, given that the other is kept constant. In the estimation period, unemployment in the baseline scenario is about 4½ per cent. The interest rate is increased by 2 percentage points and the value of the krone is increased by 10 per cent (ie the price of foreign currency is reduced by 10 per cent). As a result of both shifts, mainland GDP is reduced by an average 1 per cent over the three-year period. Otherwise, the effects of the two shifts are entirely different.

With a constant exchange rate, a higher interest rate primarily curbs domestic demand, particularly private consumption and housing investment. This has the strongest impact on sheltered industries even though manufacturing is also influenced by lower demand. Unemployment rises and wages are reduced, although this effect is not seen clearly until the third year. Lower wages and reduced capacity utilization gradually result in lower prices. In spite of this, consumer prices increase the first year and a half, and the rise in prices is higher in the first two years as a result of the interest rate increase (see figure 1). This is because higher interest rates have historically tended to push up house rents (which have a high weight in the consumer price index) and to increase mark-ups in retail trade (due to higher inventory costs and costs associated with overdrafts). In the first two years, the direct cost effects dominate over the indirect effects via wages and capacity utilization.

With lower wages and higher prices, real wages are reduced, thereby resulting in a further weakening of domestic demand. At the same time, lower wages lead to an improvement in manufacturing industry's cost competitiveness, which curbs the effect of the fall in demand on manufacturing. Lower real wages also curb the supply of labour, with the result that labour is to some extent replaced by other factor inputs in enterprises, which in turn limits the effect on unemployment.

With a constant interest rate, a stronger krone has a direct impact on prices and wages through a fall in export and import prices. The feed-through takes place gradually, but the effect on inflation is clearly strongest the first year (see figure 1). Because it takes a long time before prices and wages adapt to the change in the exchange rate, the result is a sharp deterioration in Norwegian enterprises' competitiveness accompanied by a pronounced fall in manufacturing output. This reduces domestic demand, and hence also production in sheltered enterprises, but this is offset to some extent by an increase in real wages, which in isolation contributes to increasing demand. At the same time, higher real wages lead to an increase in the supply of labour and shifts factor inputs away from labour, which amplifies the effect on unemployment.

In brief, the KVARTS model, as it is now constructed, indicates that the interest rate primarily steers domestic demand and mainland GDP, while the krone exchange rate primarily steers inflation and manufacturing output. The isolated effect of an interest rate change on inflation, measured by the CPI-ATE, is in the short term the opposite of what one wishes to achieve. This means that the way in which interest rates influence the exchange rate will be absolutely decisive for monetary policy's ability to achieve the inflation target. The stronger the interest rate change that is required to change the exchange rate, the less effective monetary policy will be for inflation targeting within a two-year horizon.

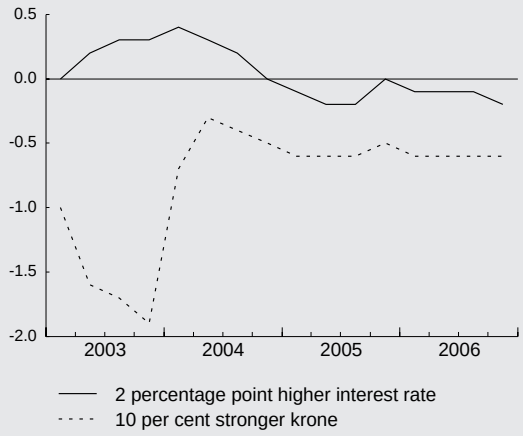
We have not yet established any relationship between the interest rate and the exchange rate that we have decided to include in the standard version of the model, but Bjørnland and Hungnes (2003) have quantified a relationship that is now being tested. It is based on the assumption that the exchange rate in the long term is determined by purchasing power parity ((PPP), but in such a way that a lasting interest rate increase has a lasting effect on the exchange rate. Purchasing power parity means that prices for Norwegian and foreign products must shadow each other when converted into a common currency. The following presents some calculations based on an expansion of the KVARTS model using this relationship. These are compared with a set of KVARTS calculations based on the exchange rate following uncovered interest rate parity (UIP) in the short term. Uncovered interest parity means that a (surprising) increase in interest rates - which entails a higher return on NOK in relation to foreign investments - must result in an immediate appreciation of the krone to the extent that it is expected to depreciate again, so that the expected

Tabell 1. Average effects for years 1-3 of higher interest rates and stronger krone. Per cent/percentage point

	Higher interest rates	Stronger krone
Interest rate	2	0
Exchange rate	0	-10
Final domestic demand from Mainland Norway	-1.7	-0.1
GDP Mainland Norway	-1.0	-1.0
Manufacturing	-0.4	-3.5
Unemployment rate	0.2	0.4
Wages	-0.2	-2.0
Real wages[1]	-0.5	0.6
Consumer price index[1]	0.3	-2.6
Consumer price growth[1]	0.1	-1.1

[1] Measured by the CPI-ATE

Figure 1. Effect on consumer price inflation of higher interest rates and stronger krone



Source: Statistics Norway.

Table 2. Average effect for years 1-3 of higher interest rate with endogenous exchange rate. Per cent/percentage point

Exchange rate relationship	UIP[2]				PPP[3]		
2 percentage point higher interest rate for:	1 year	2 years	3 years	4 years	1 year	2 years	3 years –
Interest rate	0.7	1.3	2.0	2.0	0.7	1.3	2.0
Exchange rate	-0.3	-1.3	-3,0	-5.0	-5.6	-6.5	-6.5
Final domestic demand from Mainland Norway	-0.7	-1.3	-1.7	-1.7	-0.9	-1.5	-1.8
GDP Mainland Norway	-0.5	-0.9	-1.3	-1.5	-1.0	-1.5	-1.7
Manufacturing	-0.3	-0.8	-1.5	-2.2	-2.2	-2.5	-2.6
Unemployment rate	0.1	0.2	0.3	0.4	0.3	0.4	0.5
Wages	-0.2	-0.5	-0.9	-1.3	-1.2	-1.3	-1.3
Real wages[1]	-0.2	-0.4	-0.3	-0.2	0.1	0.1	0.0
Consumer price index[1]	0.0	-0.1	-0.6	-1.1	-1.4	-1.4	-1.3
Consumer price growth[1]	-0.1	-0.0	-0.1	-0.3	-0.6	-0.7	-0.6

[1] Measured by the CPI-ATE.
[2] Uncovered interest parity
[3] Purchasing power parity, modified using the interest rate variable in the long term (Bjørnland and Hungnes, 2003).

future return on investments in NOK does not change as a result of the interest rate increase. The results of the calculations are presented in table 2.

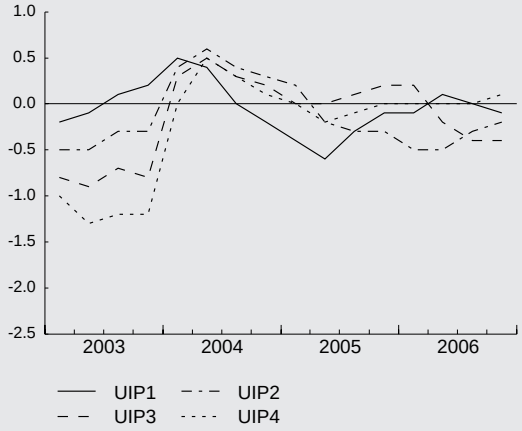
The effect of an interest rate increase will clearly depend on the duration of the interest rate increase, and the table shows calculations of interest rate increases over one, two, three and four years. With uncovered interest parity, the effects for earlier years will change as a result of an expected increased duration for the interest rate shift (see figure 2). This is because the immediate appreciation of the krone is not only dependent on how much interest rates rise, but also on how long a period exchange market participants assume that the interest rate increase will last. With the purchasing power parity equation, the effects for earlier years of a longer duration for an interest rate increase do not change; an interest rate increase for more than three years thereby has the same effect as an interest rate increase for three years, when we confine our study to average effects for the first three years. However, the fourth year differs, as will be seen in figure 3.

With uncovered interest parity, the effect on inflation occurs swiftly as a result of the immediate appreciation of the krone. The effect is stronger, the longer the interest rate increase is expected to last because it results in a stronger immediate appreciation. The second year is marked by a depreciation of the krone again, which means that inflation will be higher than without the interest rate change. The effects in subsequent years vary somewhat, but it is generally the case that the decline in inflation achieved in the first year will be negated by higher inflation in subsequent years (since it is assumed that the long-term exchange rate is unchanged).

With modified purchasing power parity in the long term, both the dynamics and long-term effects are different. The krone appreciates gradually through the first year, and this pushes down inflation. The fall in the inflation rate is strongest in the fourth, fifth and sixth quarters. The effect is weaker thereafter, but does not disappear entirely; as long as the interest rate is kept at a high level, the krone remains strong and inflation lower than previously. This contributes to reducing the level of Norwegian prices and thereby to a further appreciation of the krone. In other words, this initiates a process, which lasts until the interest rate increase is reversed. Inflation then returns to the starting point, while the krone stabilizes at a stronger level then before interest rates were increased.

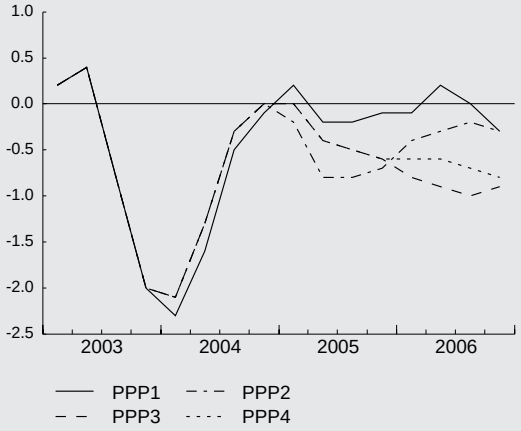
Reference: Bjørnland, H. and H. Hungnes (2003): "The importance of interest rates for forecasting the exchange rate", DP 340, Statistics Norway.

Figure 2. Effect on consumer price inflation of 2 percentage point higher interest rate for 1-4 years, UIP



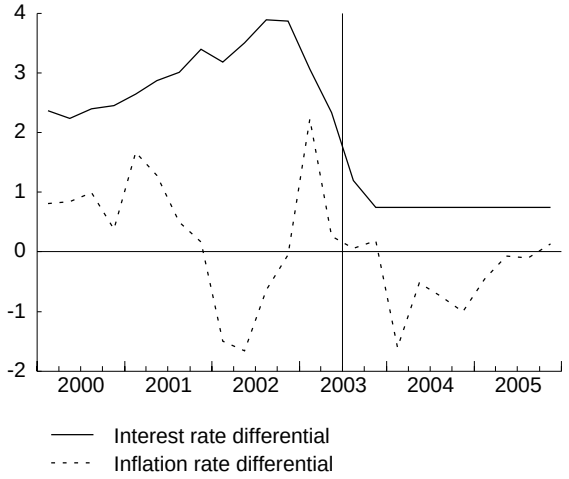
Source: Statistics Norway.

Figure 3. Effect on consumer price inflation of 2 percentage point higher interest rate for 1-4 years, modified PPP



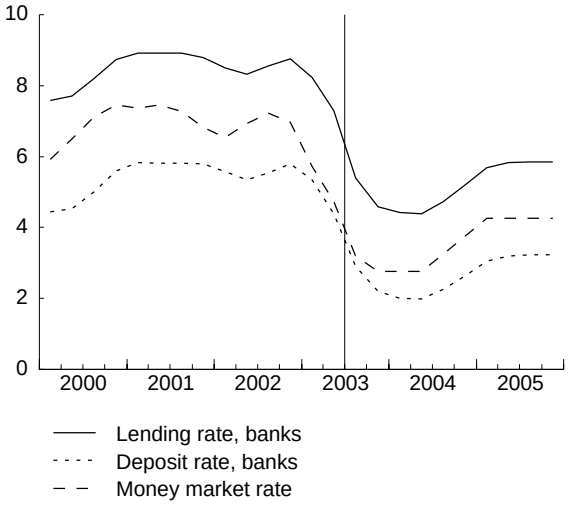
Source: Statistics Norway.

Interest rate and inflation differential between NOK, and the euro
Percentage points



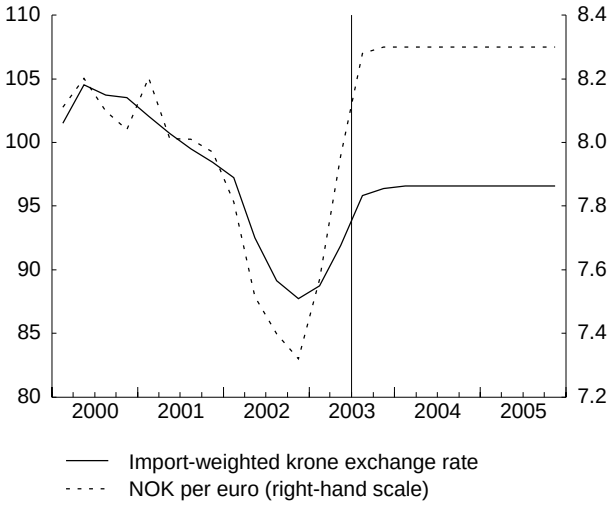
Sources: Norges Bank and Statistics Norway.

Lending rate and deposit rate
Per cent



Source: Norges Bank.

Development in import-weighted krone exchange rate and NOK per euro



Source: Norges Bank.

the krone. After appreciating markedly over the past years, the import-weighted exchange rate weakened by about 8 per cent between mid-January and mid-March this year. Thereafter, the krone appreciated by a few per cent up to end-May, primarily reflecting a depreciation of the US dollar. After the central bank governor issued strong signals that the interest rate would be reduced further than expected earlier, and Norges Bank followed up with two interest rate cuts of 1 percentage point each in the course of the summer, the krone depreciated by about 12 per cent against the US dollar and 4 per cent against the euro. The import-weighted exchange rate has depreciated by about 7 per cent in the same period. Since January, the import-weighted exchange rate has weakened by a total of 13 per cent. At the beginning of September, the krone stood at 8.20 against the euro. We assume that the krone will depreciate to 8.30 against the euro through the autumn, and remain steady at this level to the end of the projection period. This is in line with the forecasts from Consensus Forecasts.

Continued low activity levels and the absence of inflationary pressures point to a further cut in Norges Bank's key rate. Brighter prospects for the world economy would indicate the contrary. Developments in the exchange rate ahead are important for interest rate developments. The weakening of the krone so far this year represents a considerable monetary policy easing in itself. If the krone appreciates again, the need for lower interest rates will increase.

We assume that money market rates will fall to 2.75 per cent through autumn. This is broadly in line with money market expectations at the beginning of September, and implies that Norges Bank will cut the key rate by a further half percentage point. This will result in an interest rate floor that is 1 percentage point lower than assumed in the June *Economic Survey.* It is also assumed that money market rates will edge up from the first quarter of next year, to 4.25 per cent in the first half of 2005. A comparable increase in interest rates is assumed for the euro area, given a pick-up in growth in the euro area economy next year so that the interest rate differential stabilizes at around 0.75 percentage point.

Upward revision of estimates for petroleum investment in 2004 and 2005

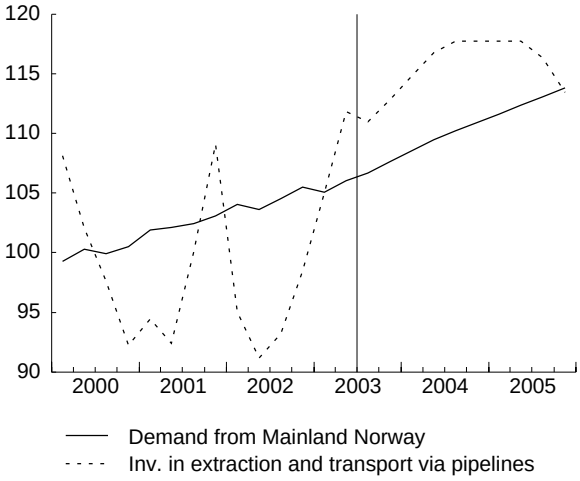
Provisional national accounts figures show that value added for the petroleum industry measured at constant prices remained virtually unchanged from 2001 to 2002. This year value added is expected to fall by close to 2 per cent before edging up again in 2004 and 2005.

Oil prices averaged USD 25 per barrel in 2002, which translated into approximately NOK 200. Oil prices have been higher than this level so far this year, and we assume that the average oil price for 2003 will be

USD 28.4 per barrel. With the exchange rate assumptions above, this implies that oil prices in NOK will be at last year's level, i.e. a good NOK 200 per barrel. From the first quarter of 2004, a constant oil price of USD 25 is assumed, bringing the average price in NOK to 180 per barrel in both 2004 and 2005.

Provisional, seasonally adjusted QNA figures show that the level of production of crude oil and natural gas remained virtually unchanged form the fourth quarter of 2002 to the first quarter of this year. This was followed by a fall of a good half per cent to the second quarter, which was due to temporary production disturbances owing to maintenance work on several fields. Oil production is assumed to remain unchanged from the first to the second half-year, with production falling by 2.5 per cent between 2002 and 2003. Gas production is assumed to increase somewhat, but not to the extent that total production of oil and gas will not show a fall. Gas production is expected to increase further in 2004 and 2005,while oil

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



Source: Statistics Norway.

Effects of upward revisions in petroleum investment

Historically, there has been considerable uncertainty associated with petroleum investment. Compared with the June report, our projections for petroleum investment have been revised upwards sharply in both 2004 and 2005. The level in 2004 has been revised up by about 8 per cent, while the projection for 2005 is about 20 per cent higher than in June. In order to shed light on the importance of petroleum investment for the Norwegian economy, we have carried out stylized calculations using Statistics Norway's macroeconometric model KVARTS. In the calculations, petroleum investment is increased by NOK 6.1 billion in 2004 and 2005, which is estimated to correspond to 10 per cent of the level in 2003. The increase is assumed to be evenly spread among different types of petroleum investment. It is assumed that fiscal and monetary policy are unaffected. The results of the calculations are shown in the table below.

Higher production in the supplier industry to cover higher deliveries of capital goods to the petroleum industry increases the need for labour as well as for capital. This results in higher employment and higher investment. Higher employment leads to lower unemployment and higher wages. Household real disposable income thereby increases, which in turn leads to higher consumption of both imported and domestically produced goods. Higher demand for domestically produced goods is general and amplifies the impact on wages, which gradually translates into higher prices. The results show that both wages and employment increase by 0.1 per cent in 2004 and that unemployment is reduced by 0.1 percentage point. Domestic prices remain unchanged, so that nominal wage growth of 0.1 per cent is the same as real growth. As a result of this, along with higher income from self-employment, household real disposable income rises by 0.2 per cent. This leads to an increase in consumption of 0.1 per cent and a rise in imports of traditional goods of 0.5 per cent. The latter includes imports of intermediate goods for private mainland enterprises. The increase in income leads to a rise in house prices of 0.1 per cent, while housing investment is 0.3 per cent higher than in the baseline scenario. Investment in private mainland industries rises by 0.4 per cent.

Effects of increasing petroleum investment by NOK 6.1 billion in 2004 and 2005
With the exception of the unemployment rate, all figures are percentage deviations from the baseline scenario

	2004	2005	2006
Consumption in households	0.1	0.1	0.1
Gross fixed investment, Mainland Norway	0.3	0.5	0.3
Exports	0.0	0.0	0.0
Imports	0.6	0.6	0.1
- Traditional goods	0.5	0.5	0.2
GDP	0.3	0.3	0.0
- Mainland Norway	0.3	0.3	0.1
- Manufacturing	0.3	0.3	0.0
Man-hours worked	0.1	0.2	0.1
Total employment	0.1	0.2	0.1
Unemployment rate, percentage points	-0.1	-0.1	0.0
Wages	0.1	0.2	0.1
CPI	0.0	0.0	0.1
Household real disposable income	0.2	0.2	0.1
Housing prices	0.1	0.4	0.7

In 2005, the effects are broadly the same as in the previous year, with the exception of house prices, which rise by an additional 0.3 per cent, and mainland investment, which rises by a further 0.2 per cent.

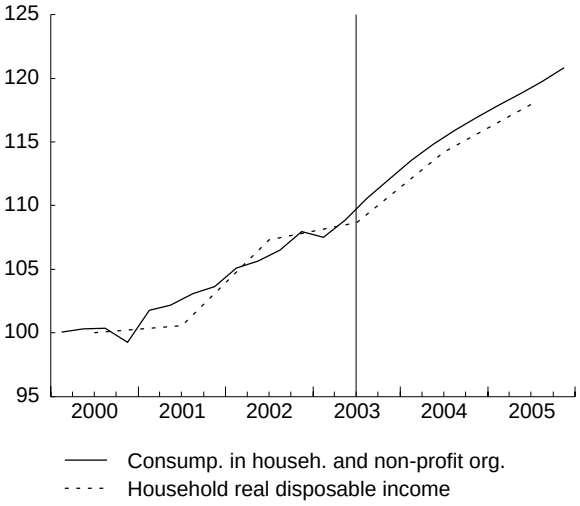
In 2006, we have reversed petroleum investment, with investment returning to the level in the baseline scenario. The activity level in the economy is nevertheless higher than in the baseline scenario. This is the result of delayed responses and multiplier effects. The effects on consumer prices have now reached 0.1 per cent.

The calculations show that our upward revisions in petroleum investment have, in isolation, contributed to boosting our growth projection for the mainland economy by about 0.3 per cent next year and in 2005. This has also increased the projection for consumption growth somewhat, whereas most nominal effects, except for house prices, are small.

production will edge up in 2004 followed by a decline again in 2005. Total production is assumed to fall by 1 per cent between 2002 and 2003, and then to increase by 1 per cent in 2004. In 2005, production is assumed to show a moderate fall. These estimates are in line with the estimates in the Revised National Budget.

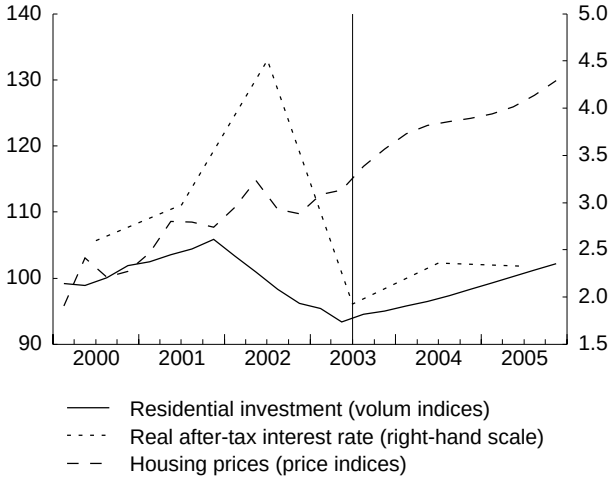
According to QNA figures, gross investment in oil extraction and pipeline transport showed a seasonally adjusted increase of a good 5 per cent from the fourth quarter of 2002 to the first quarter of this year, and an increase of about 5 per cent to the second quarter. As a result, for the year as a whole gross investment will be a good 16 per cent higher than in 2002. A further increase is expected next year, with the investment level at 7 per cent above this year's level. In 2005, the level is expected to be virtually the same as in 2004. This represents a clear upward revision of the investment projections for 2004 and 2005 compared with the estimates in the June report (see box on the effects of the upward revision). The projections are broadly in line with Statistics Norway's investment intentions survey for the industry. Historically, these projections have shown a clear tendency to underestimate investment levels six months before the investment year. Several recent discoveries have prompted us to take this tendency seriously. We still expect activity to be high as a result of several major development projects and upgrading of fields in operation. We also assume that investment in pipeline transport and exploration will pick up through 2004 and 2005. Investments associated with the development of the Snøhvit field are expected to increase further from 2003 to 2004, particularly for on-shore installations.

Income and consumption in households
Seasonally adjusted volume indices, 2000=100



Source: Statistics Norway.

Residential investment and housing prices
Seasonally adjusted indices, 2000=100



Source: Statistics Norway.

Interest rate reductions rapidly fuels consumption growth

According to seasonally adjusted QNA figures, consumption growth for households and non-profit institutions was 1.3 per cent at constant prices between the first and the second quarter of 2003. The marked increase from the first to second quarter may reflect difficulties in adjusting for seasonal and calendar effects, but may also be a normalization from the low growth in the first quarter. The high electricity bills had largely been paid in the second quarter and the uncertainty surrounding electricity prices had subsided. Developments in goods consumption would indicate that this was a normalization. According to the seasonally adjusted goods consumption index, goods consumption grew by 3.0 per cent at constant prices in April and has since showed more moderate growth (-0.2 in May, 1.0 in June and –0.1 in July).

Growth in household real disposable income is projected at a moderate 1.2 per cent this year, at as high as 5.1 per cent next year and 3.3 per cent in 2005. The projection for 2003 is based on moderate growth in households wage income as a result of some decline in employment, a more moderate wage settlement than last year and weak growth in household income from enterprises' operating results. Developments in net capital expenditure are also pushing down growth in household income, in spite of the marked interest rate cuts. The explanation is that the high dividend payments in 2002 are not expected to recur this year. Consumer price inflation appears to be relatively high this year, which is also pushing down growth in household real disposable income. The high growth in real income in 2004 reflects somewhat stronger growth in wage incomes, lower capital expenditure and low consumer price inflation. Income growth is projected to be somewhat lower in 2005 compared with 2004 because capital expenditure is expected to increase as a result of higher interest rates than in 2004 and consumer price inflation is projected to edge up.

Growth in consumption for households and non-profit institutions is projected at 3.3 per cent in 2003, 5.0 per cent in 2004 and 3.4 per cent in 2005. This is broadly in line with the projected path for real income, and implies that the saving ratio will remain approximately constant in these years. The projected path for consumption can be explained by the fairly rapid impact of changes in nominal interest rates on consumption, while the impact on income growth occurs with a longer lag. This means that the interest rate reductions in the first half of 2003, combined with strong income growth last year, will translate into higher consumption growth in 2003, especially towards the end of the year. Against this background, consumption growth is projected to pick up relatively sharply in the third and fourth quarter of 2003. In the somewhat longer term, consumption growth will primarily be determined by income growth, asset price developments and the real interest rate. The wealth effects are relatively moderate, however, and the real interest rate is expected to remain fairly constant in 2004 and 2005. The main determinant behind the decline in consumption growth from 2004 to 2005 is thus developments in real income.

House price inflation boosts housing investment

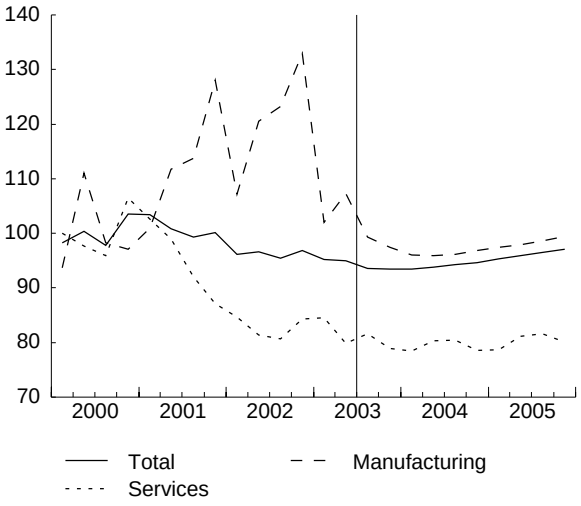
Seasonally adjusted QNA figures indicate that housing investment, at constant prices, fell by 2.1 per cent in the second quarter. This means that the negative trend observed since the fourth quarter of 2001 has continued. Seasonally adjusted housing start figures show a fall in housing starts of 2.9 per cent, measured in square metres, in the period from May to June this year. This is in line with developments so far this year. Housing investment is now projected to fall by 5.1 per cent in 2003. However, the underlying tendency indicates a reversal to positive growth in the latter half of 2003. Housing investment is projected to increase by 2.5 per cent in 2004 and 3.9 per cent in 2005.

This primarily reflects the projected rise in house prices. The rise in prices for owner-occupied dwellings is projected at 3.5 per cent this year. Although price developments appear to have been weak in the first half of the year, the fall in interest rates is expected to push up prices in the latter half of 2003. Annual house price inflation is projected at 6.8 per cent in 2004 and 2.5 per cent in 2005.

Decline in mainland business investment

Mainland gross business investment has declined since the investment peak about two years ago, primarily reflecting the decline in investment in service industries. Manufacturing investment showed growth up to the end of 2002, but has fallen markedly so far this year. Investment in other goods-producing industries has increased and has been on the rise so far in 2003, but the magnitude is fairly moderate and has little influence on macroeconomic figures.

Investment, Mainland Norway
Seasonally adjusted volume indices, 2000=100



Source: Statistics Norway.

The decline in manufacturing investment will continue in the period ahead and is not likely to show a reversal before the end of 2004. The high investment activity in 2002 primarily reflects a few large projects that are nearing completion. The fall in manufacturing production implies that there is no need for any substantial capacity increases in the short term. A substantial production increase will probably have to occur in manufacturing industry for a period, before a new investment upswing takes place. This is not likely to occur before the end of 2004 or in 2005. As regards other goods-producing industries, investment in electricity production is expanding, fuelled by both high capacity utilisation and solid profitability. Primary industries are not expected to contribute to an investment upswing.

Weak growth in the Norwegian economy in 2002 and 2003 will have an impact on investment developments in service industries in the period ahead. The cyclical downturn has resulted in considerable spare capacity, for example in the commercial property market, where investments were high during the period of expansion. The effects of a new upturn will only be felt once a substantial share of this spare capacity is utilized. Admittedly, low interest rates may stimulate investment, but we do not believe that the isolated effect of low interest rates will have a substantial impact here compared with, for example, the interest rate effects on housing investment.

On balance, mainland business investment is now projected to fall by 2 per cent in 2003, after shrinking by a good 6 per cent in 2002. Investment will then edge down in 2004, but pick up towards the end of the year, bringing the increase in investment to 2 per cent in 2005.

Main economic indicators 2001-2005. Accounts and forecasts
Percentage change from previous year unless otherwise noted

	Accounts 2002	Forecasts 2003			2004			2005	
		SN	MoF	NB	SN	MoF	NB	SN	NB
Demand and output									
Consumption in households and non-profit organizations	3.6	3.3	2.9	3 1/4	5.0	2.8	4 1/2	3.4	4 1/4
General government consumption	3.2	1.4	0.3	3/4	1.4	0.8	1 1/2	0.9	1 3/4
Gross fixed investment	-3.6	0.8	1.1	..	2.9	1.0	..	1.1	..
Extraction and transport via pipelines[1]	-4.6	16.4	13.3	15	7.0	1.0	0	0	0
Mainland Norway	-4.6	-1.8	-3.4	-5	0.5	1.0	3	2.3	5 1/4
Firms	-6.4	-2.0	-6.0	..	-0.3	1.3	..	2.5	..
Housing	-4.2	-5.1	-1.1	..	2.5	0.7	..	3.9	..
General government	0.0	2.6	0.1	..	0.3	0.2	..	0.3	..
Demand from Mainland Norway[2]	2.1	2.0	1.8	1 1/4	3.4	1.9	3 1/2	2.6	3 3/4
Stockbuilding[3]	0.4	-0.5	..	..	0.0	..	..	0	..
Exports	-0.5	-1.4	0.0	..	2.4	2.8	..	1.4	..
Crude oil and natural gas	0.2	-1.9	0.5	..	1.3	1.6	..	-1.3	..
Traditional goods	1.3	0.4	-2.2	-2	3.3	4.1	1	4.2	2 1/2
Imports	1.7	3.0	1.3	2	3.7	2.8	2 1/4	3.1	4 1/4
Traditional goods	4.7	3.1	1.9	..	3.7	3.1	..	3.7	..
Gross domestic product	1.0	-0.1	1.1	..	3.0	2.0	..	1.6	..
Mainland Norway	1.3	0.4	0.7	1	3.3	1.9	2 1/2	2.3	3
Labour market									
Employed persons	0.2	-0.7	-0.6	-3/4	0.0	0.0	1/4	0.4	3/4
Unemployment rate (level)	3.9	4.5	4.4	4 1/2	4.6	4.6	5	4.4	4 3/4
Prices and wages									
Wages per standard man-year	5.4	4.4	4 1/2	4 1/2	4.1	4 1/4	4 1/2	3.9	5
Consumer price index (CPI)	1.3	2.7	2 3/4	2 1/4	1.0	1 1/2	1 1/2	1.9	2 1/2
CPI adjusted for tax changes and excluding energy products (CPI-ATE)	2.3	1.2	1 3/4	1 1/4	1.4	2 1/4	2	2.1	2 1/2
Export prices, traditional goods	-8.7	0.7	..	..	7.2	..	..	1.8	..
Import prices, traditional goods	-8.0	2.2	..	..	4.0	..	..	0.6	..
Housing prices[4]	4.0	3.5	..	..	6.8	..	..	2.5	..
Balance of payment									..
Current balance (bill. NOK)	200.6	167.1	203.7	..	156.0	190.1	..	165	..
Current balance (per cent of GDP)	13.2	10.8	..	..	9.8	..	..	10	..
Memorandum items:									
Household savings ratio (level)	7.2	5.2	6.8	..	5.4	6.6	..	5.4	..
Money market rate (level) [5]	6.9	4.1	5.1	4 1/2	3.1	5.0	3 1/2	4.3	4
Lending rate, banks (level)[6]	8.5	6.4	..	..	4.7	..	..	5.8	..
Crude oil price NOK (level)[7]	197.4	202.2	190.0	..	180.4	172.0	..	180.4	..
Export markets indicator	0.2	3.0	..	..	5.6	..	..	6.5	..
Importweighted krone exchange rate (44 countries)[8]	-8.6	2.0	..	1/2	3.4	..	3	0	1 1/4

[1]Forecasts from Ministry of Finance and Norges Bank Incl. service activities incidential to extraction.
[2] Consumption in households and non-profit organizations + general government consumption + gross fixed capital formation in Mainland Norway.
[3] Change in stockbuilding. Per cent of GDP.
[4] Freeholder.
[5] NB use their sight deposit rates.
[6] Households' borrowing rate in private financial institutions.
[7] Average spot price Brent Blend.
[8] Increasing index implies depreciation.
Sources: Statistics Norway (SN), Ministry of Finance, St.meld. nr 2, 2002-2003 (MoF), Norges Bank, forecasts based on forward interest and exchange rates, Inflasjonsrapport 2/2003 (NB).

Increased market growth fuels upswing in exports

Following the slump in export growth over the preceding six quarters, the volume of traditional merchandise exports showed a pronounced increase in the second quarter of this year. Seasonally adjusted growth in traditional merchandise exports was as high as 4.7 per cent from the previous quarter. Growth was particularly strong for different industrial commodities and semi-finished goods, excluding pulp and paper, i.e. products that tend to react rapidly to an international cyclical turnaround. The strong growth figures are thus a reflection of the signs of a strengthening recovery in the US economy.

The general improvement in competitiveness in the Norwegian business sector as a result of the marked depreciation of the krone over the past half-year has

not yet had a significant impact on export volumes. However, the depreciation has started to have an impact on export prices in NOK. For traditional goods as a whole, seasonally adjusted export prices fell by 0.5 per cent from the first to the second quarter, but excluding refined petroleum products, prices rose by 1.8 per cent after falling markedly in the preceding quarters. For the cyclically sensitive groups metals and chemicals, prices rose both in the first and second quarter.

Market growth for Norwegian export goods is expected to increase from about 3 per cent this year to around 6 per cent over the next two years. For cyclically sensitive intermediate goods, export growth may be in line with this, particularly as regards metals where new and efficient capacity is now being put into production. In general, however, Norwegian export growth is expected to be lower than market growth, with 3-4 per cent growth for traditional goods as a whole.

In line with the assumption that the international recovery is now gaining ground, export prices for cyclically sensitive goods are expected to continue to rise through the remainder of the year and into 2004. For traditional merchandise exports as a whole, the rise in prices may reach 7 per cent next year, following a subdued rise this year and a price decline of close to 9 per cent in 2002.

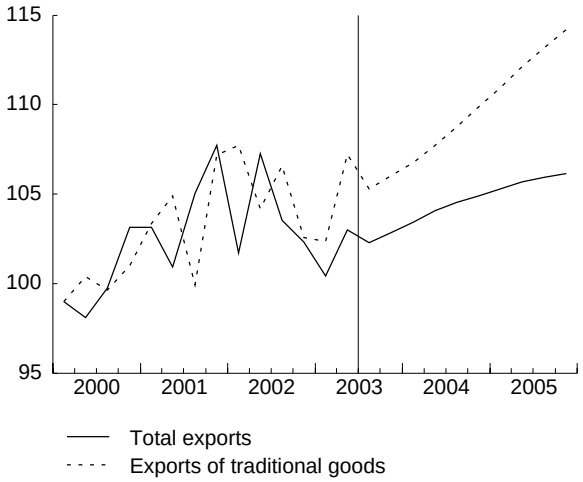
Given a normal business cycle, it could be expected that world market growth would again slow towards the end of 2005 and 2006. Consensus forecasts have not incorporated such a renewed decline and nor have our forecasts as yet.

Weak import growth in spite of marked increase in import shares

The volume of traditional merchandise imports expanded by a seasonally adjusted 1 per cent in the second quarter following a moderate decline in the previous quarter. Excluding refined petroleum products, the volume of imports remained virtually unchanged through the first six months. The change in imports of refined petroleum products is primarily ascribable to technical factors, while cyclical developments have only a very limited impact. Weak import growth must be seen against the background of weak domestic demand growth and a shift in demand away from investment, which normally has a relatively high import content. Norwegian enterprises have witnessed a fall in imports of these goods of more than 10 per cent over the last half-year. Import shares have thus increased sharply in this period, reflecting the preceding deterioration in competitiveness in the Norwegian business sector.

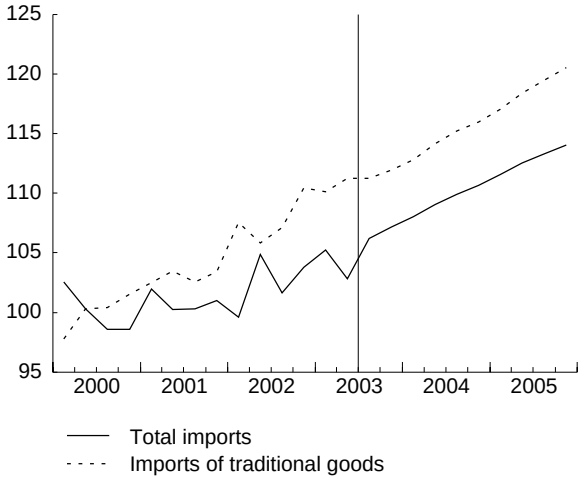
However, the depreciation of the krone over the past six months has led to a gradual improvement in business sector competitiveness in Norway. In the second

Exports
Seasonally adjusted volume indices, 2000=100



Source: Statistics Norway.

Imports
Seasonally adjusted volume indices, 2000=100

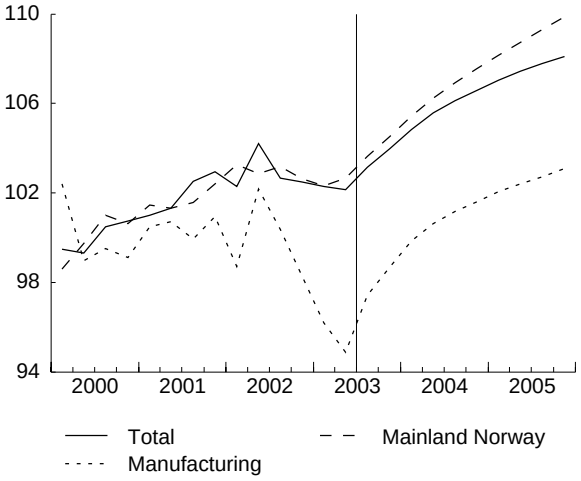


Source: Statistics Norway.

quarter, seasonally adjusted prices for traditional merchandise imports dropped by 0.5 per cent, in line with the fall in domestic prices. In the first quarter, these prices also moved more or less in tandem. In the coming year, import price inflation is expected to be higher than the rise in Norwegian prices. In 2003, annual import price inflation is projected at 2.2 per cent, after falling by 8.5 per cent last year. For 2004, the rise in import prices is projected to move up to 4 per cent, and then level off in 2005.

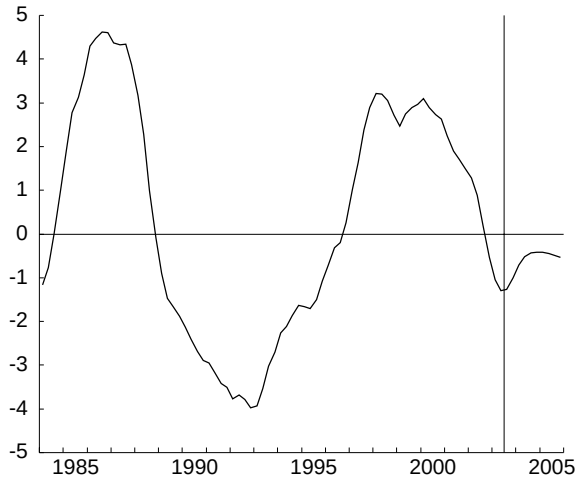
The improvement in competitiveness in the Norwegian business sector implies that the sharp increase in import shares will also level off. In volume terms, imports are projected to grow by 3-4 per cent this year and in the next two years. This is clearly higher than growth in the Norwegian market, but not higher than normal growth in import shares as a result of increased international trade.

Gross domestic product
Seasonally adjusted volume indices, 2000=100



Source: Statistics Norway.

Output gap
Per cent



Source: Statistics Norway.

Output growth will pick up markedly ahead

Total GDP continued to fall in the first two quarters of 2003, after reaching a temporary peak in the second quarter of 2002. However, the decline in mainland GDP came to a halt in the second quarter of this year, when QNA figures showed a moderate increase. Manufacturing production has shown a sharp decline over the past year, and production has also been falling in other goods-producing industries. In service industries, growth was sluggish through 2002, but has picked up in 2003 according to provisional QNA figures.

A fairly broad-based upswing in the mainland economy is expected in the period ahead. The effects of extraordinary developments that have pushed down production, such as electricity production, will subside. A more important factor is higher demand growth in the wake of the expansionary shift in monetary policy in 2003. Household demand is expected to show a particularly strong increase according to our calculations. This will not only affect service industries, where there are already emerging signs of an increase in production in the last quarter, but will also have a favourable impact on the manufacturing sector. Other factors will also have an impact on manufacturing production. First, the international recovery is expected to boost demand for Norwegian manufacturing products, with renewed growth in traditional merchandise exports. Second, parts of manufacturing industry will start using newly established production capacity and increase their production of export goods. The decline in manufacturing production will thus be reversed to growth in the period ahead.

In the public sector, production will not increase to the same extent owing to budget constraints. Production is measured from the cost side here, so that, for example, increased efficiency in the hospital sector will be reflected in the national accounts as an increase in production. Moreover, institutional changes in public agencies mean that production is being transferred from the public sector to mainland enterprises. An increase in purchases of services from private enterprises at the expense of public service production will in isolation translate into lower production in the public sector (without an attendant impact on mainland GDP in the short term).

While total GDP appears to remain steady between 2002 and 2003, growth in the mainland economy is now projected at a little more than 0.5 per cent. The projection is based on the assumption that the recession comes to a halt in the summer of 2003, followed by a moderate upswing that continues into 2004. However, according to our calculations, the upswing will be so moderate that the Norwegian economy can still be said to be in a slump in both 2004 and 2005. This is reflected in unemployment, which will be clearly higher throughout the projection period than the levels recorded over the last six years. An upswing in the international economy, higher petroleum investment and an expansionary monetary stance will thus not suffice – according to our calculations – to return the Norwegian economy to a neutral cyclical situation in 2005.

Unemployment peak reached in the course of this winter

According to seasonally adjusted figures from the Directorate of Labour, the number of unemployed rose by close to 27 000 from January 2002 to August 2003. Unemployment rose steadily up to June of this year. In July, the seasonally adjusted number of registered unemployed fell by about 2 000, followed by a renewed rise in August by close to 3 000 persons. The

number of registered unemployed now accounts for 4.3 per cent of the labour force, or an increase of 0.8 percentage point compared with one year earlier. Measured in terms of the number of unemployed, unemployment has risen in particular among manufacturing workers, health workers and in service and commercial occupations.

Statistics Norway's Labour Force Survey (LFS) shows a similar tendency in unemployment, but the increase is less pronounced. From the first quarter last year to the average for May to July this year, seasonally adjusted unemployment rose by 18 000 persons, and came to 4.6 per cent of the labour force.

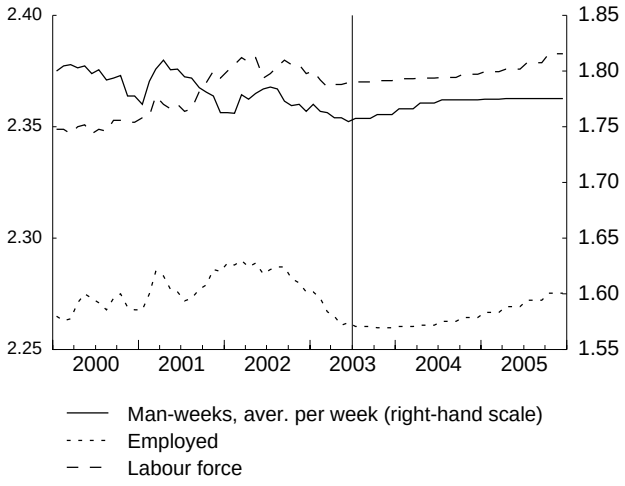
From the second quarter of last year to the second quarter of this year, the number of underemployed, i.e. the number of part-time employees who are seeking increased employment, increased by 16 000. At the same time, overall employment fell by 28 000. The strongest decline in employment was in manufacturing, postal and telecommunication services and education.

It would appear that hidden unemployment has increased markedly when taking into account that the labour force has contracted by 11 000 persons from the second quarter of last year while the population aged 16-74 increased by 28 000 in the same period. Many unemployed choose not to participate in the labour force when the labour market is weak. Not since 1997 has total labour force participation been lower than it was in the second quarter of this year. An average labour force participation rate of 73.2 per cent for the age group 16-74 is, however, still high both from a historical and international perspective.

A turnaround in the economy feeds through to employment with a considerable lag and with an even longer lag to unemployment statistics. In sluggish periods, many enterprises have spare capacity and available labour even if the workforce is scaled down. When activity picks up again, it is primarily productivity that increases in the first round. Thereafter, when employment starts to rise, the labour force expands when previously discouraged workers become more active on the labour market. Finally, unemployment shows a marked decline.

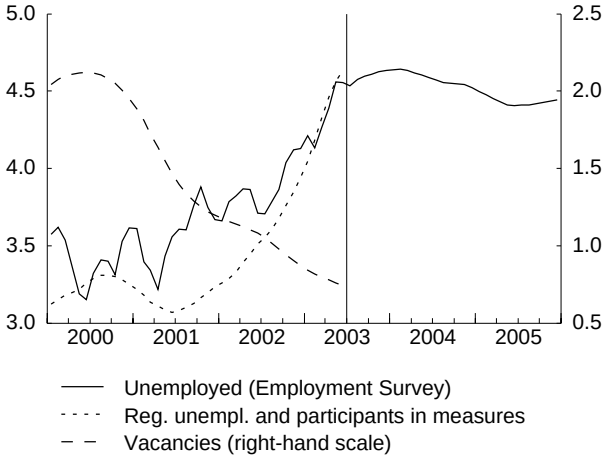
The cyclical upturn ahead implies an increase in productivity growth for the private mainland business sector from 1.0 per cent this year to 2.6 per cent in 2004 and 2.5 per cent in 2005. On the other hand, growth in the public sector is expected to be weak which implies that overall employment will be moderate. Stronger growth in employment is not expected until 2005. In line with this, we assume that unemployment will first stabilize at the current level. The unemployment peak is likely to be reached in the coming winter half-year. Average LFS unemployment is projected at 4.6 per cent in 2004 and 4.4. per cent in 2005.

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



Source: Statistics Norway.

Unemployed and number of vacancies
Per cent of labour force
Seasonally adjusted and smoothed



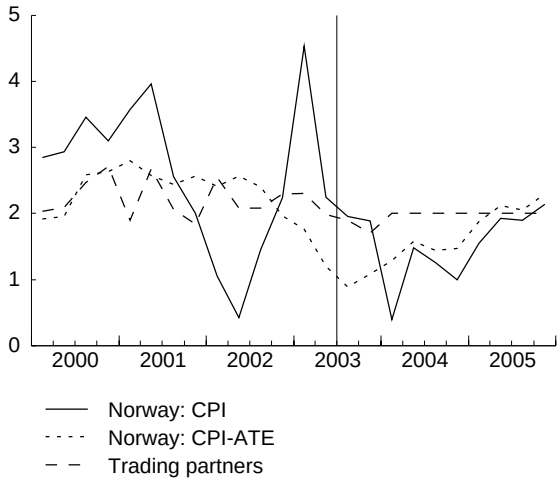
1) Backwards adjusted for breaks in the series from january 1999.
Sources: The Directorate of Labour and Statistics Norway.

Moderate wage growth

High pay increases in all the centralized wage settlements since 1997 were followed by very moderate centralized settlements in 2003. Many employees were not awarded pay increases this year. These developments reflect the situation in the labour market. Norwegian wage formation is very flexible in several areas. About half of total pay increases for private enterprises are awarded at the local or individual level. This provides a high degree of individual flexibility. Moderate negotiated pay increases in a downturn also provide a high degree of collective flexibility, which contributes to stabilising developments in unemployment for example.

Even with moderate pay increases this year, the high pay increases awarded in part late in 2002 imply a continued high level of annual wage growth. This applies in particular to central and local government employees. On the other hand, wage growth is being restrained by a considerable decline in extraordinary increases, bonuses and commissions, etc, particularly in the distributive trades, transport and business services. For the distributive trades, the year-on-year increase in monthly profits moved down from 4.2 per cent in the first quarter to 3.1 per cent in the second quarter. This tendency is expected to continue, bringing growth in wages per normal man-year to 4.4 per cent in 2003 compared with 5.4 per cent in 2002. The carry-over from previous increases awarded in 2002 will account for as much as 2.5 percentage points. Some of the increases for 2003 were already agreed in 2002, which makes a contribution of about 0.5 per cent to average wage growth.

Consumer price indices
Percentage growth from the same quarter previous year



Sources: Statistics Norway and Norges Bank.

The projection for the growth in wages per normal man-year is 4.1 per cent in 2004 and 3.9 per cent in 2005. The low carry-over from 2003 provides room for markedly higher negotiated increases in the main settlement in 2004, which will lead to a higher carry-over in 2005. Given a moderate cyclical upswing in the Norwegian economy during this period, total wage growth must be said to be moderate in these years. The projections reflect historical relationships indicating that wage growth reacts to changes in unemployment with a considerable lag. In addition, unemployment responds with a lag to cyclical turnarounds so that wage growth does not always reflect the current economic situation.

Inflation remains subdued

Underlying inflation, as measured by the year-on-year rise in the consumer price index adjusted for tax changes and excluding energy products (CPI-ATE), was 0.7 per cent in July. CPI-ATE inflation had exhibited a downward tendency over the past year. In the first seven months of this year, inflation fell by 1.1 percentage points after decreasing by 0.9 percentage point in the last six months of 2002. However, developments in electricity prices have made a considerable contribution to the sharp rise in the consumer price index (CPI). While CPI inflation was record low at 0.4 per cent in May and June 2002, it rose to 5.0 per cent in January 2003. Falling electricity prices, coupled with lower underlying inflation, pushed down total CPI inflation to 1.5 per cent in July.

Developments in the krone exchange, particularly the appreciation during the first half of 2002, have been an important factor behind the fall in underlying inflation over the past year. According to QNA figures, prices for traditional merchandise imports were 10.1 per cent lower in the second quarter of 2002 than in the same quarter one year earlier. Thereafter the fall in import prices compared with the same quarter one year earlier has been more moderate, and in the second quarter of 2003, the decline was 1.1 per cent. However, it takes time for a change in import prices to translate into lower consumer prices. In May, the CPI's price index for imported consumer goods for households showed a decline of only 0.9 per cent on the same month one year earlier. This was followed by a steadily steeper decline in the rate of inflation up to June of this year. Against the background of the krone depreciation so far this year and the developments in import prices mentioned above, it is likely that the rise in prices for imported consumer goods will accelerate in the period ahead.

Exchange rate developments are not the only factor behind the fall in prices for imported consumer goods in the CPI. Excise duties and mark-ups in Norway account for a considerable share of the prices for these goods. In the short term, mark-ups are expected to be reduced as a result of a weaker krone, taking into account that they increased when the krone appreciated last year. Another important factor is the global downturn, which has resulted in low international inflation. In addition, there has been a shift in imports to lower cost countries, which has reduced import prices further. The relationship between import prices and the exchange rate is not entirely simple. Future import deliveries can be agreed in Norwegian kroner and remain unaffected by exchange rate developments. In addition, foreign exporters may be inclined to reduce their prices to boost their competitiveness when the Norwegian krone is «weak» and increase prices when the krone is «strong». Various forms of currency hedging can also make it possible for Norwegian importers not to pass on the entire increase in costs in the short term, and in the same way they can wait for a period before passing on cost reductions.

Effects of "abnormally" high electricity prices

The dry autumn of 2002 contributed to a sharp rise in electricity prices at the end of 2002 and beginning of 2003, to levels far higher than observed earlier. The period of abnormally high electricity prices has persisted through the first eight months of 2003 and is expected to continue the rest of the year. Electricity expenses account for a noticeable share of households' total expenses and are an important cost factor for many parts of the business sector. In the short term, there is limited scope for shifting the use of energy away from electricity. Price developments for electricity are therefore also important in a macroeconomic context.

The macroeconomic effects of abnormally low electricity production and abnormally high electricity prices in 2003 are estimated using the econometric model KVARTS. Actual prices and production are seen in relation to prices and production that must be considered more normal. We have applied an overall price for households of 67.7 øre/kWh as a normal annual average and compared this with an estimate of 88.3 øre/kWh, which is our estimate for 2003. Normal electricity production is assumed to be 118 TWh, compared with an estimate of 107 TWh for 2003. The results are shown in the table below.

The largest effects of high electricity prices on the Norwegian economy probably arise through the impact on household behaviour. Households do not have favourable long-term supply contracts and have not hedged against price increases through fixed-price contracts to the same extent as the business sector. It is estimated that electricity prices for households (including grid rent and taxes) are about 30 per cent higher in 2003 than the normal level.

The direct contribution from abnormally high electricity prices to the rise in the CPI in 2003 may be estimated at 1.0 percentage point. Because electricity is a factor input in most parts of the business sector, production costs will rise. This increase in costs will be passed on to prices for almost all goods and services, but this indirect effect is far less than the direct impact. The calculations show a rise in the CPI-ATE of 0.3 per cent and an overall effect on the CPI of 1.3 per cent.

Higher consumer prices imply that nominal wages must be expected to increase slightly more than would otherwise have been the case, but real wages will nevertheless be appreciably lower. High electricity prices directly reduce real income for households, which leads to lower household demand than would otherwise have been the case. This reduces the level of activity in those sectors of the economy that directly and indirectly provide goods and services to households.

Macroeconomic effects of abnormally high electricity prices in 2003
Deviations in 2003 from a scenario with a normal path in per cent unless otherwise specified

Consumption in households and non-profit organizations	-0.3
Household real disposable income	-0.9
Gross fixed investment, Mainland Norway	-0.3
Exports, traditional goods	-0.4
Imports	0.5
GDP Mainland Norway	-0.5
Unemployment rate, percentage points	0.0
CPI	1.3
CPI-ATE	0.3
Wages	0.4

According to the calculations, high electricity prices reduce household real disposable income by 0.9 per cent. As a result, consumption is 0.3 per cent lower than would normally be the case. Housing investment is reduced by 0.4 per cent.

Higher electricity prices and slightly higher nominal hourly labour costs reduce cost competitiveness, with a fall in net exports. The negative effects on activity are amplified. Profitability is reduced in all sectors. Household income from self-employment is thereby reduced in relation to a situation with normal electricity prices, which also exacerbates the initial negative effect on household demand.

Demand for labour is influenced through two channels: lower activity levels push down demand, while demand is pushed up as labour becomes cheaper in relation to the factor input electricity. According to the calculations, the overall effect is that employment is reduced by about 1000. Lower employment in turn leads to lower household real income, thereby amplifying the negative impact on the Norwegian economy. However, lower real wages reduce the supply of labour at the same time, with unemployment approximately unaffected by the higher electricity prices.

In the calculations, it is assumed that the electricity prices paid by power-intensive industries are only to a limited extent influenced by fluctuations in the spot market for electricity. Domestic deliveries from these manufacturing sectors are also fairly modest, and deliveries for household consumption in particular are marginal. Power-intensive industries are therefore relatively unaffected by lower domestic demand.

Other industries, however, face noticeably higher electricity prices, and thereby deteriorating cost competitiveness in addition to lower domestic demand. In spite of lower domestic demand, total imports rise by 0.5 per cent. This is largely due, quite naturally, to considerably higher electricity imports, but imports of other energy products also rise. Moreover, as a result of the deterioration in cost competitiveness, imports, excluding energy products, are 0.1 per cent higher than in a normal situation. Higher production costs lead to a 0.4 per cent decline in exports of traditional goods. Mainland enterprises' investment is reduced by 0.3 per cent. All in all, this means that mainland GDP falls by 0.5 per cent. About 0.2 percentage point of the fall, however, is directly ascribable to abnormally low electricity production. Mainland GDP, excluding the power supply sector, is thus reduced by 0.3 per cent as a result of abnormally high electricity prices. National real disposable income is reduced by NOK 6.6 billion (2000-prices), which corresponds to 0.5 per cent.

In the calculations, it is assumed that the orientation of monetary and fiscal policy is not influenced by high electricity prices. Exchange rates and all other variables that are determined outside the model are also assumed to be unaffected. A change has been made in relation to the standard version of the model; market participants' expectations concerning current and future real interest rates are assumed to be unaffected by a (temporary) change in electricity prices. For a further discussion of methodology and assumptions in the calculations as well as a thorough review of the results, see Eika and Jørgensen (2003).

Reference: T. Eika and J.A. Jørgensen (2003): Makroøkonomiske virkninger av høye strømpriser i 2003. En analyse med den makroøkonometriske modellen KVARTS. Notater 62/2003. Statistics Norway (Macroeconomic effects of high electricity prices in 2003. An analysis using the macroeconometric model KVARTS. Notater 62/2003. Statistics Norway).

The fall in underlying inflation over the past year cannot solely be attributed to the direct effects of lower prices for imported consumer goods. Imported goods and services account for a substantial share of inputs in Norwegian production of goods and services. Import prices also influence the competitiveness of Norwegian enterprises and thereby pricing. Therefore, a fall in import prices will also have a dampening impact on the rise in prices for Norwegian products.

Developments in house rents have also contributed to reducing inflation over the past year. The year-on-year rise in house rents has decelerated by 2.2 percentage points in the year to July 2003 and has contributed to reducing inflation by about 0.4 percentage point.

Underlying inflation is primarily influenced by labour costs, productivity and import prices. Over the past 5 years, the increase in hourly labour costs in the private sector has been relatively stable at around 6 per cent. As a result of this, the rise in prices for services, excluding house rents, has been high in this period, generally between 4-5 per cent. However, the rate of increase in prices for these services showed a clear fall, and has since stabilized at around 3 per cent.

Somewhat lower wage growth in 2002 than in the previous year, combined with this year's moderate wage settlement, has led to lower inflation, and will probably continue to exert downward pressure on inflation for a period ahead. Productivity growth will normally pick up in a cyclical upturn, which may also suggest low inflation.

Electricity prices are projected based on forward prices at the end of August. It appears that electricity prices for households will continue to rise through the remainder of the year and into next year. Electricity prices may show sharper than normal fall in the spring, while price developments are expected to normalize thereafter. The annual average increase in electricity prices is projected at about 36 per cent in 2003, followed by a decrease of about 12 per cent in 2004. In 2005, electricity prices for households were projected to fall by about 4 per cent. The surge in electricity prices in December 2002 and in January of this year may contribute to reducing the year-on-year rise in the CPI towards the end of this year and particularly in January next year.

Oil prices, measured in NOK, are projected to rise by an annual average of 2 per cent in 2003, but to fall by 11 per cent in 2004 and remain unchanged in 2005. The projections are not based on any real indirect tax changes in 2004 and 2005. Nor have we incorporated any explicit price changes as a result of the introduction of a maximum price for day-care places.

CPI inflation is projected to remain around 2 per cent this autumn. In January, CPI inflation may show a clear negative rate and reach the lowest level recorded in almost 50 years. Thereafter, CPI inflation will increase and show a more stable trend as the impulses from electricity prices are expected to subside.

Towards the end of the projection period, CPI inflations is projected to be between 2.0 and 2.5 per cent. Underlying inflation is projected to edge up in the period ahead. Annual CPI-ATE inflation is projected to average 1.2 per cent in 2003, rising to 2.1 per cent in 2005.

Balance of payments

Preliminary balance-of-payments figures show a current account surplus of NOK 97.9 billion in the first half of 2003, or a decrease of NOK 9 billion on the same period one year earlier. While the trade surplus of NOK 110.5 billion was virtually unchanged on the figure for the first six months of 2002, the deficit on the interest and transfers balance was far higher at NOK 12.7 billion. The increase in this deficit primarily reflects developments in net value for reinvested earnings abroad. However, the data for calculating the item reinvested earnings are weak and the figures for the interest and transfers balance are thus more uncertain than previously.

On an annual basis, the current account surplus is estimated at NOK 167 billion in 2003, i.e. a decrease of NOK 34 billion on the previous year. The decline primarily reflects strong growth in the volume of imports and a decline in the volume of exports. Moreover, it appears that import prices are on average rising at a somewhat faster pace than export prices. It also appears that the interest and transfers balance will weaken to a considerable extent. The current account balance is expected to show little change over the next two years.

National accounts: Final expenditure and gross domestic product
At fixed 2000-prices. Million kroner

	Unadjusted		Seasonally adjusted					
	2001	2002	02.1	02.2	02.3	02.4	03.1	03.2
Final consumption exp. of housh. and NPISHs	641 829	664 700	164 204	165 118	166 482	168 713	167 997	170 169
Household final consumption expenditure	615 225	638 102	157 601	158 512	159 936	161 859	161 411	163 462
Goods	342 546	356 706	88 461	88 649	88 722	90 816	90 063	92 197
Services	263 866	270 251	67 099	67 143	67 849	68 360	67 720	68 209
Direct purchases abroad by resident househ.	27 131	28 901	6 634	7 305	7 560	7 154	7 837	7 434
Direct purchases by non-residents	-18 317	-17 755	-4 592	-4 585	-4 195	-4 471	-4 209	-4 379
Final consumption exp. of NPISHs	26 605	26 598	6 603	6 605	6 546	6 854	6 587	6 707
Final consump. exp. of general government	288 592	297 914	75 414	73 108	74 793	74 625	74 864	75 431
Final consump. exp. of central government	115 101	161 052	40 563	39 771	40 371	40 353	40 844	41 081
Central government, civilian	88 521	133 445	33 672	32 838	33 494	33 448	33 873	34 066
Central government, defence	26 579	27 606	6 891	6 933	6 877	6 904	6 971	7 015
Final consump. exp. of local government	173 491	136 862	34 851	33 336	34 422	34 273	34 020	34 349
Gross fixed capital formation	261 191	251 728	60 898	65 327	60 795	64 805	64 117	61 570
Extraction and transport via pipelines	54 837	52 312	13 154	12 619	12 907	13 632	14 536	15 481
Service activities incidential to extraction	-797	5 427	61	4 198	99	1 079	508	-325
Ocean transport	10 886	6 663	887	1 485	1 330	2 961	2 750	170
Mainland Norway	196 265	187 326	46 795	47 026	46 459	47 133	46 323	46 243
Mainland Norway ex. general government	156 189	147 269	36 733	36 738	36 484	37 299	36 228	35 442
Manufacturing and mining	21 163	22 614	5 004	5 630	5 753	6 209	4 760	5 010
Production of other goods	16 070	16 790	3 942	4 225	4 282	4 236	4 657	4 715
Dwellings	49 475	47 395	12 313	12 018	11 705	11 452	11 362	11 124
Other services	69 481	60 469	15 473	14 865	14 744	15 402	15 448	14 593
General government	40 077	40 058	10 063	10 287	9 975	9 834	10 096	10 801
Changes in stocks and stat. discrepancies	27 176	29 985	8 365	8 505	7 143	4 904	10 143	2 352
Gross capital formation	288 367	281 713	69 264	73 832	67 938	69 710	74 260	63 922
Final domestic use of goods and services	1 218 805	1 244 296	308 882	312 057	309 212	313 048	317 121	309 522
Final demand from Mainland Norway	1 126 687	1 149 940	286 414	285 251	287 734	290 471	289 184	291 843
Final demand from general government	328 668	337 972	85 477	83 395	84 768	84 459	84 960	86 232
Total exports	713 743	709 868	174 234	183 683	177 362	175 249	172 005	176 430
Traditional goods	222 201	225 163	57 644	55 750	57 023	54 877	54 779	57 371
Crude oil and natural gas	322 590	323 206	75 354	87 079	80 806	80 362	78 239	79 601
Ships and oil platforms	15 716	9 941	3 460	3 287	2 043	1 151	2 304	2 592
Services	153 236	151 558	37 776	37 567	37 489	38 860	36 683	36 866
Total use of goods and services	1 932 548	1 954 164	483 116	495 740	486 574	488 297	489 126	485 952
Total imports	435 146	442 534	107 383	113 026	109 567	111 889	113 433	110 815
Traditional goods	282 860	296 144	73 852	72 684	73 546	75 838	75 631	76 382
Crude oil	1 852	1 021	298	338	319	73	735	161
Ships and oil platforms	14 365	11 171	766	6 615	1 538	2 252	3 374	1 230
Services	136 068	134 198	32 468	33 388	34 165	33 726	33 693	33 042
Gross domestic product	1 497 385	1 511 661	375 733	382 714	377 007	376 408	375 693	375 137
Mainland Norway (market prices)	1 119 842	1 134 240	284 424	283 294	284 123	282 657	281 814	282 727
Petroleum activities and ocean transport	377 543	377 422	91 308	99 420	92 884	93 751	93 879	92 410
Mainland Norway (basic prices)	971 558	982 428	246 681	245 394	245 895	244 805	244 176	244 545
Mainland Norway ex. general government	754 528	765 297	191 147	192 121	191 578	190 651	190 214	190 406
Manufacturing and mining	145 143	144 126	35 632	36 878	36 228	35 475	34 725	34 241
Production of other goods	100 576	102 110	25 762	25 290	25 635	25 198	24 900	24 368
Service industries	508 808	519 061	129 753	129 953	129 715	129 979	130 589	131 797
General government	217 030	217 131	55 534	53 273	54 317	54 154	53 962	54 139
Correction items	148 284	151 811	37 743	37 899	38 228	37 852	37 638	38 181

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product
At fixed 2000-prices. Percentage volume change from previous period

	Unadjusted		Seasonally adjusted					
	2001	2002	02.1	02.2	02.3	02.4	03.1	03.2
Final consumption exp. of housh. and NPISHs	2.6	3.6	1.4	0.6	0.8	1.3	-0.4	1.3
Household final consumption expenditure	2.6	3.7	1.5	0.6	0.9	1.2	-0.3	1.3
Goods	2.8	4.1	1.8	0.2	0.1	2.4	-0.8	2.4
Services	2.4	2.4	0.7	0.1	1.1	0.8	-0.9	0.7
Direct purchases abroad by resident househ.	-1.1	6.5	3.7	10.1	3.5	-5.4	9.5	-5.1
Direct purchases by non-residents	-3.8	-3.1	-2.4	-0.2	-8.5	6.6	-5.8	4.0
Final consumption exp. of NPISHs	1.7	0.0	-1.9	0.0	-0.9	4.7	-3.9	1.8
Final consump. exp. of general government	2.7	3.2	3.1	-3.1	2.3	-0.2	0.3	0.8
Final consump. exp. of central government	2.5	39.9	39.7	-2.0	1.5	0.0	1.2	0.6
Central government, civilian	4.5	50.7	50.4	-2.5	2.0	-0.1	1.3	0.6
Central government, defence	-3.7	3.9	3.8	0.6	-0.8	0.4	1.0	0.6
Final consump. exp. of local government	2.8	-21.1	-21.0	-4.3	3.3	-0.4	-0.7	1.0
Gross fixed capital formation	-4.2	-3.6	-6.3	7.3	-6.9	6.6	-1.1	-4.0
Extraction and transport via pipelines	-1.0	-4.6	-12.9	-4.1	2.3	5.6	6.6	6.5
Service activities incidential to extraction	-118.6	-780.6	-103.8	..	-97.6	989.8	-52.9	-163.9
Ocean transport	-40.0	-38.8	-68.8	67.3	-10.4	122.7	-7.2	-93.8
Mainland Norway	0.7	-4.6	-3.9	0.5	-1.2	1.5	-1.7	-0.2
Mainland Norway ex. general government	0.1	-5.7	-4.4	0.0	-0.7	2.2	-2.9	-2.2
Manufacturing and mining	13.6	6.9	-16.3	12.5	2.2	7.9	-23.3	5.2
Production of other goods	-2.2	4.5	0.3	7.2	1.4	-1.1	9.9	1.2
Dwellings	3.7	-4.2	-2.4	-2.4	-2.6	-2.2	-0.8	-2.1
Other services	-5.1	-13.0	-2.8	-3.9	-0.8	4.5	0.3	-5.5
General government	2.9	0.0	-2.1	2.2	-3.0	-1.4	2.7	7.0
Changes in stocks and stat. discrepancies	-22.3	10.3	251.3	1.7	-16.0	-31.3	106.8	-76.8
Gross capital formation	-6.3	-2.3	2.8	6.6	-8.0	2.6	6.5	-13.9
Final domestic use of goods and services	0.4	2.1	2.1	1.0	-0.9	1.2	1.3	-2.4
Final demand from Mainland Norway	2.3	2.1	0.9	-0.4	0.9	1.0	-0.4	0.9
Final demand from general government	2.7	2.8	2.4	-2.4	1.6	-0.4	0.6	1.5
Total exports	4.1	-0.5	-5.6	5.4	-3.4	-1.2	-1.9	2.6
Traditional goods	3.7	1.3	0.5	-3.3	2.3	-3.8	-0.2	4.7
Crude oil and natural gas	5.2	0.2	-9.2	15.6	-7.2	-0.6	-2.6	1.7
Ships and oil platforms	51.5	-36.7	-35.2	-5.0	-37.8	-43.7	100.1	12.5
Services	-1.0	-1.1	-2.7	-0.6	-0.2	3.7	-5.6	0.5
Total use of goods and services	1.7	1.1	-0.8	2.6	-1.8	0.4	0.2	-0.6
Total imports	0.9	1.7	-1.4	5.3	-3.1	2.1	1.4	-2.3
Traditional goods	2.9	4.7	4.0	-1.6	1.2	3.1	-0.3	1.0
Crude oil	2.5	-44.9	-43.1	13.7	-5.8	-77.0	900.0	-78.1
Ships and oil platforms	-45.4	-22.2	-81.1	763.6	-76.7	46.4	49.8	-63.5
Services	6.0	-1.4	-2.5	2.8	2.3	-1.3	-0.1	-1.9
Gross domestic product	1.9	1.0	-0.6	1.9	-1.5	-0.2	-0.2	-0.1
Mainland Norway (market prices)	1.7	1.3	0.8	-0.4	0.3	-0.5	-0.3	0.3
Petroleum activities and ocean transport	2.7	0.0	-5.0	8.9	-6.6	0.9	0.1	-1.6
Mainland Norway (basic prices)	1.6	1.1	0.8	-0.5	0.2	-0.4	-0.3	0.2
Mainland Norway ex. general government	1.8	1.4	0.5	0.5	-0.3	-0.5	-0.2	0.1
Manufacturing and mining	0.5	-0.7	-2.2	3.5	-1.8	-2.1	-2.1	-1.4
Production of other goods	-3.2	1.5	2.1	-1.8	1.4	-1.7	-1.2	-2.1
Service industries	3.2	2.0	1.0	0.2	-0.2	0.2	0.5	0.9
General government	1.0	0.0	1.5	-4.1	2.0	-0.3	-0.4	0.3
Correction items	2.1	2.4	1.4	0.4	0.9	-1.0	-0.6	1.4

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product
Price indices. 2000=100

	Unadjusted		Seasonally adjusted					
	2001	2002	02.1	02.2	02.3	02.4	03.1	03.2
Final consumption exp. of households and NPISHs	102.4	103.1	102.0	102.6	103.3	104.0	105.7	105.0
Final consumption exp. of general government	107.3	111.6	108.6	111.2	113.0	113.1	114.8	115.0
Gross fixed capital formation	103.6	103.0	103.5	104.2	106.5	99.8	100.6	104.8
Mainland Norway	103.4	103.5	103.5	104.1	107.2	101.9	100.6	103.2
Final domestic use of goods and services	103.7	104.9	102.8	106.7	105.1	105.1	105.7	108.2
Final demand from Mainland Norway	103.8	105.3	104.0	105.1	106.5	106.0	107.2	107.3
Total exports	97.7	88.8	89.2	87.2	88.2	91.0	93.9	85.1
Traditional goods	97.1	88.7	90.3	90.5	86.9	87.1	87.5	87.1
Total use of goods and services	101.5	99.1	97.9	99.5	98.9	100.0	101.6	99.8
Total imports	100.0	93.8	96.0	94.2	93.1	92.1	92.6	93.7
Traditional goods	99.8	91.9	94.4	91.9	91.1	90.2	91.2	90.7
Gross domestic product	102.0	100.6	98.4	101.0	100.6	102.4	104.3	101.6
Mainland Norway (market prices)	103.8	106.4	103.4	107.4	106.8	108.0	106.7	108.8

Source: Statistics Norway.

National accounts: Final expenditure and gross domestic product
Price indices. Percentage volume change from previous period

	Unadjusted		Seasonally adjusted					
	2001	2002	02.1	02.2	02.3	02.4	03.1	03.2
Final consumption exp. of households and NPISHs	2.4	0.7	-0.2	0.6	0.7	0.6	1.6	-0.7
Final consumption exp. of general government	7.3	4.0	-1.1	2.4	1.6	0.1	1.5	0.2
Gross fixed capital formation	3.6	-0.6	1.2	0.7	2.2	-6.3	0.7	4.2
Mainland Norway	3.4	0.1	0.5	0.5	3.0	-4.9	-1.3	2.6
Final domestic use of goods and services	3.7	1.1	-1.1	3.9	-1.6	0.0	0.6	2.3
Final demand from Mainland Norway	3.8	1.5	-0.3	1.0	1.3	-0.5	1.2	0.0
Total exports	-2.3	-9.1	-1.7	-2.2	1.2	3.1	3.2	-9.3
Traditional goods	-2.9	-8.7	-2.5	0.2	-4.1	0.3	0.5	-0.5
Total use of goods and services	1.5	-2.4	-1.1	1.7	-0.6	1.1	1.5	-1.8
Total imports	0.0	-6.2	-1.8	-1.9	-1.2	-1.0	0.5	1.2
Traditional goods	-0.2	-8.0	-2.3	-2.7	-0.8	-1.0	1.2	-0.6
Gross domestic product	1.9	-1.3	-0.8	2.7	-0.4	1.7	1.9	-2.6
Mainland Norway (market prices)	3.8	2.5	-1.7	3.8	-0.6	1.2	-1.2	2.0

Source: Statistics Norway.

Technical comments on the quarterly figures

Quarterly calculations: The calculations are made on a less detailed level than the calculations for the annual national accounts, and are based on more simplified procedures.

Base year and chain linking of the data: In the quarterly national accounts (QNA) all volume measures are currently calculated at constant 2000 prices using weights from that year. The choice of base year influences the constant price figures and thus the annual rates of change in volume (growth rates). For the sake of comparison, all tables present growth rates with 2000 as the base year (common year of recalculation). The recalculation of prices is carried out at the sectoral level of the quarterly national accounts.

Inter-regional migration in labour market change: a vacancy accounting approach applied to three Nordic countries

Lasse Sigbjørn Stambøl, Elli Heikkilä, Mats Johansson and Lars Olof Persson

This article discusses and compares the extent of regional labour mobility in Finland, Norway and Sweden. A regional labour market indicator, a concise regional "vacancy-account", is introduced as a tool for analysing the relationship between the level of intra- and interregional labour market mobility across regions, sectors and segments. The use of turnover rates in regional labour markets, expressed as formation and filling in of vacancies in different sectors and segments, are expected to rise information how the regional labour mobility functions and especially how different sectional job possibilities give rise to different geographical mobility. The current study analyses regional labour mobility by using gross-stream-data broken down by the persons' labour market statuses, sectors and segments. Two periods of investigation are chosen to cover the regional labour mobility under rising and downward tendencies in the national business cycles. The analysis shows that the labour migration was visibly higher in Norway than in Finland and Sweden. There were distinct variations between economic sectors, both with respect to exits from and entries to employment as well as through geographical mobility in and out of the sectors. There were in some contexts good correspondence between the level of labour migration and the level of total turnover both between economic sectors and regions, though somewhat better in Norway and Sweden than in Finland. The labour migration process did, however, contribute to a certain displacement of labour between the regions, but it was only in Norway that labour migration contributed to growth in the national employment during the period of economic upswing.

Introduction*

One main target of this analysis has been to establish suitable mechanisms for measuring regional labour market change. The analysis goes beyond traditional means of measuring net employment change by using gross-stream data covering the entire population of working age. Putting these measures together should give some information about how supply-and-demand mechanisms are functioning in the regional labour markets generally, and how job possibilities give rise to different geographical mobility patterns specifically.

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This analysis thus uses gross-stream data, following the individuals included through different periods. This has enabled the investigation of gross streams in and out of different sectors and segments, and to what extent vacancies are opened up and filled in the regional labour markets, in a concise regional "vacancy-account". The use of gross-stream data and analysis is, however, not a new phenomenon in the migration and labour market mobility research (see e.g. Hägerstrand, 1970, Greenwood, 1985, Molho, 1986, Greenwood et al., 1991, and more recent studies such as e.g. Burda and Wyplosz, 1994, Burgess, Lane and Stevens, 1994, Davis and Haltiwanger, 1998). The richness, extent and quality of the data sources being used in this analysis, and the organisation of data in concise regional "vacancy-accounts" made operative for comparable investigations within and across regions and nations should, however, give some contributions to the literature on this field.

* An initial stage of this Nordic research project included descriptive analyses of employed and unemployed migrants and their employment adjustments (supply-side adjustments) in the regional labour markets (see Johansson et al.1997, Stambøl et al., 1996,1997, Stambøl, 1999, Heikkilä and Stambøl, 1999). Recent studies includes as well gross-stream analyses of geographical mobility and labour market mobility connected to the demand side in the regional labour markets, expressed as employment changes, leaving of previous employment and employment recruitment in different sectors and segments (see e.g. Heikkilä et al., 1999, Johansson and Persson, 1999, Stambøl et al., 1999, Persson ed., 2001, Edvardsson et al. 2002, Stambøl, 2000,2002,2003).

Many projects analysing labour migration processes and regional labour market transitions are, however, carried out separately, where the results are grounded on unequal criteria. Different approaches, different definitions and use of variables, different data sources, different methods and different classifications of regions represent some examples. This makes it often difficult to carry out exact comparisons between the results of regional migration processes and local labour market transitions both within and across countries due to differences between the projects. One important aim of this current international project is thus to establish more homogeneous criteria concerning approaches, data, concepts, regional and sector classifications, socio-economic divisions and the periods of the empirical investigations.

The international literature on job-mobility and labour force mobility (as exemplified above) includes a series of different ways of using the mobility concepts. It is thus of immense importance to harmonise the different mobility concepts used in the project for both national and especially international comparisons. In this respect the project basically deals with intra- and inter-regional labour mobility, which means how each person move between jobs and between jobs and different labour market statuses both within and across regions. The analysis do to a certain extent also handle approaches dealing with job mobility, but then simply reduced to the net effects of the total gross labour mobility.

Against this background the purpose of this article is as well to explore and compare the extent and structure of gross labour mobility. For example its composition in terms of local labour market mobility and interregional migration, its functioning in different phases of the business cycle, its relation to the structure of the regional economies and its variation between segments of the labour force. On behalf of statements in the regional and labour market policy, this investigation illuminates approaches as follows: (1) How extensive is the intra- and interregional labour market mobility? (2) Are there any differences in the sector specific labour mobility? (3) Does interregional migration reveal differences in the sector specific labour mobility? (4) To what extent does regional labour migration contribute to growth in the overall and sector specific employment? and (5) Does the relative level of gross migration to and from employment reflects the relative total labour mobility in the regions?

Emphasis is placed on comparative approaches discussing the results generated by investigations carried out by researchers in each country. Finland, Norway and Sweden have experienced different economic development during the recent decade. National budget crises forced the Finnish and Swedish governments to cut back in their welfare systems during the 1990s. Structural changes introduced high levels of unemployment in most regions. In Norway, a boom in the economy in the middle of 1980s was replaced by downward tendencies in the national economy lasting until the first years of the 1990s. Later, slower wage increases; low inflation and an expanding oil industry have formed the basis for a new growth in the economy. Currently, unemployment rates in Norway are among the lowest in Europe. Against this background, we have made comparisons of labour migration and regional labour mobility between the Nordic countries.

Section two presents a short description of the various definitions and the use of data and methods in this study. In the third section the results are in part presented and compared at a general regional level, with most regional figures aggregated to represent national averages. Two periods of investigation were chosen in each country to cover the labour mobility under upswings and recession in the national economic cycle. The final section outlines some main findings.

Data and definitions

The project basically deals with intra- and inter-regional labour mobility, which means how each person move between jobs and between jobs and different labour market statuses both within and across regions. The project do to a certain extent also handle approaches dealing with job mobility, but then simply reduced to the annual net reallocation effects of job changes.

A particular aspect of this analysis is the classification of individuals according to their labour market status. In earlier migration analyses, we have used such divisions on cross-sectional data (see Stambøl, 1995), and on gross-flow data analysing supply-side adjustments (Johansson et al. 1997, Stambøl et al., 1997, Heikkilä and Stambøl, 1999 and Stambøl, 1999). In this article the aim is primarily to analyse the change of labour market status, sector and segment connected to the migrants and the mobile persons within local labour markets. An important aspect of the analysis is thus to compare the changes of labour market status and sector among migrants with corresponding changes among the non-migrants. Necessary data covering the entire population of working age are therefore established. The data are collected from register-based data sources at Statistics Finland, Statistics Norway and Statistics Sweden. These registers are acknowledged as very good data sources for research with possibilities to link different kinds of information, and are thus among the best covering registers on this field in Europe.

Traditional labour market statistics operates with the number of employed, unemployed and individuals outside the labour force, where the annual differences express the net change of all gross-streams at the la-

Figure 1. A "vacancy-account" for gross labour flows in regional labour markets

E (t). Starting stock: The stock of employed persons in sector s in region r at a certain point of time in year t

EX. Employment exits:

- To other employment (job-to-job mobility)	
- To unemployment	(1) Out-migrated from the region (geographical mobile)
- Out of the labour force	
(Further education)	(2) Not migrated from the region (local mobile)
(Retirement - Age)	
(Pre retirement insurances)	
(Emigration)	
(Dead)	

= Total employment exits

EN. Employment entries:

- From other employment (job-to-job mobility)	(1) In-migrated to the region (geographical mobile)
- From unemployment	
- From education	(2) Living in the region (local mobile)
- From others outside the labour force	

= Total employment entries (represents in this analysis the filled vacancies from year t to year t+1)

E (t+1). Ending stock: The stock of employed persons in sector s in region r at a certain point of time in year t+1

bour market. Consequently full knowledge of the gross-streams will also give full knowledge of the net change, while the opposite is obviously not the case. One basic aspect of this analysis has then been to establish a regional labour market indicator illuminating the annually gross-flows to, from and between the status of employment. Figure 1 illustrates how this regional labour market indicator is measured in a concise regional "vacancy account" from year t to year t+1.

The vacancy accounting

The vacancy account is basically established as an ordinary account, showing individuals who have left and entered a job between two periods of time. When we have full knowledge of the number of employed and the status of each individual person in each region both at a certain point of time in year t and a corresponding point of time in year t+1, we can measure each individual movement at the labour market between these two periods of time. The number of entries (filled vacancies) (EN) in each region, sector and segment appear as follows:

$$EN = E(t+1) - E(t) + EX$$

Where

E(t+1): is the number of employed persons at a certain point of time in year t+1,

E(t): is the number of employed persons at a certain point of time in year t and

EX: is the number of employed persons at a certain point of time in year t that left a job before the corresponding point of time in year t+1.

In upswing periods $E(t+1) > E(t)$, and the number of vacancies that has to be filled in appears from the total number of those who left a job (EX) plus the net increase of employed persons from E(t) to E(t+1). In recession periods E(t+1) might be lower than E (t), and the number of vacancies that has to be filled in is thus less than EX. The number of vacancies accounted in this way is definitely much more comprehensive than the average number of not filled in vacancies which is often used to represent the concept of vacancies in regional labour market studies. Concerning the "vacancy accounting", we thus deal with the filled in vacancies in the regional labour markets, which means that the average stock of not filled in vacancies is not directly taken into consideration in this stage of the project.

The exit (EX) from job is measured as follows: a) Employed persons changing their sectors within the local labour markets. b) Employed persons changing to another status group within the region; unemployed, under education or other statuses outside the labour force. c) Employed persons migrating to another region and finally d) Employed in year t who are not observable in the data register in year t+1. The majority of persons in this group consist of employed that have emigrated, but cover as well some employed who died or left the working age.

Correspondingly the entry to job (filled vacancies) (EN) is measured as follows: a) Employed persons changing their sector in the local labour market. b) Employed recruited from another status group within the region; unemployed, under education or other statuses outside the labour force. c) Employed in-migrated from another region. d) Employed in year t+1 who are not observable in the data register in year t. The majority of persons in this group consist of employed that have immigrated, but cover as well

some young persons that enter the employment age in year t+1 as employed.

In this analysis we then only deal with local mobility and migration that is associated with employment. Thus we exclude mobility and migration of individuals that are not economically active in any of the two years studied, i. e. in education, permanently unemployed or depending on social benefits, and other persons outside the labour force.

Vacancies appear in different ways. Partly they are opened up through establishment of new jobs, either as a result of enlargements of already existing firms or by establishment of completely new firms. There are, however, reasons to expect that most vacancies appear when employed exit from a job and leave behind vacancies in the labour markets, e.g. the real vacancy chains. In this analysis we have, however, not included information that split vacancies descending from new establishments of jobs and those descending from vacancy chains. On the other hand not all exits from employment result in vacancies due to firm closures or employment reductions within companies. In the vacancy account the effect of such job mobility is not taken into consideration in the detailed gross streams, but due to an entire measure of labour flows to, from and between sectors, the net results of the labour flows shows the annual net reallocation of job mobility between sectors.

In spite of good register based data sources it is not a simple task, and not even possible, to establish a regional vacancy account that gives a complete measure of absolutely all mobility at the labour market. Due to a rather aggregated sector division (see below), this analysis excludes labour market mobility within each sector. Due to the fact that the vacancy accounting measures the annual gross flows between two certain point of time each year, some of the gross flows that occur in the labour market during the year are not taken into consideration.

Classifications and definitions

The regional classification follows the county level, which divides Finland and Norway into 19 regions and Sweden into 24 regions. In a European context this represent regions at the NUTS 3 level of regional classifications. In analysing geographical labour mobility it is of importance if we use an aggregated or disaggregated regional division. Many local migrations do not involve any job change or change of regional labour markets (e.g. Greenwood, 1985, Gordon, 1991). The aggregated county level is thus more suitable for this analysis than more disaggregated regional levels, for example the municipality level. Earlier investigations of geographical mobility have, however, also shown that the labour markets have a tendency to become increasingly important factors in explaining migration at a higher geographical level compared with more disaggregated regional divisions (see e.g. Stambøl, 1991, and Stambøl et al., 1998).

Thus migrants are defined as individuals living in different counties in the first and second year of each period. Definitions of changes of labour market status and sectors follow similar patterns, where the data show the labour market status and the sector of each individual in the first and second year of each period. A definition of socio-economic and socio-demographic groups includes the variables gender, age and education. Individuals of working age are in Finland defined as persons 15-74 years, in Norway 16-74 years, and in Sweden 16-64 years. Education is divided into three categories; low (primary school), intermediate (secondary school) and higher education (post secondary school). The marginal status group of emigrants, dead persons and immigrants appear only in the Norwegian and Swedish data. As mentioned above these are individuals only obtainable the first or the second year in each investigation period.

The job-to-job mobility (cross-sector exchange) is defined as mobility among employed between nine economic sectors and one unspecified sector. A definition of only nine economic sectors does certainly underestimates the job-to-job mobility (see above). On the other hand, a more disaggregated division would, however, be more vulnerable regarding statistical replacements and even misplacements of employed between sectors.

Due to different economic development in the Nordic countries, the periods used in the analysis for each country differ. While the years 1988-89 represent a rising business cycle in Finland, this period represents a clear cyclical downturn in the Norwegian economy. On the other hand, the period 1991-92 represents an economic downturn in Finland and the years 1994-95 a period of economic upturn in Norway. In Sweden the period 1992-93 represents an economic recession, while 1994-95 was a time of initial economic growth. Essential for the comparison of the migration analyses, the results are based on changes during two two-year periods in each country, representing recession and economic upswing.

Labour mobility results

Total labour mobility

An introducing target of this analysis was to measure how much the employment transition gives rise to employment possibilities in the regional labour markets. There were put forward hypotheses expecting that a clear majority of vacancies in the regional labour markets is most frequently appearing as a result of the labour market mobility. Thus, the employment exits are expected to be of crucial importance for the vacancy potentiality (e.g. through vacancy chains). On the other hand, the analyses should give a meas-

Table1. Employment exits and entries broken down by migrants and non-migrants in periods of economic boom and recession in Finland, Norway and Sweden. Per cent. Differences in per cent point

Period and country	Emploment in year t	Employment exits			Employment entries			Net employment changes			Employment in year t+1
		Total employment exit rates	Changes due to Out-migration rates	Changes due to Local exit rates	Total employment entry rates	Canges due to In-migration rates	Canges due to Local entry rates	Total net employment change	Changes due to Net-migration	Changes due to Local net change	
Boom											
Finland	100	21.0	2.1	18.9	21.6	2.1	19.5	0,6	0.0	0.6	100.6
Norway	100	18.6	2.8	15.8	20.7	3.0	17.7	2.1	0.2	1.9	102.1
Sweden	100	16.0	1.9	14.1	17.3	1.9	15.4	1.3	0.0	1.3	101.3
Recession											
Finland	100	21.1	1.5	19.6	13.9	1.4	12.5	-7.2	-0.1	-7.1	92.8
Norway	100	23.0	3.1	19.9	19.0	3.0	16.0	-4.0	-0.1	-3.9	96.0
Sweden	100	23.3	1.8	21.5	15.3	1.3	14.0	-8.0	-0.5	-7.5	92.0
Differences:											
Boom-recession											
Finland	-	-0.1	0.6	-0.7	7.7	0.7	7.0	7.8	0.1	7.7	7,8
Norway	-	-4.4	-0.3	-4.1	1.7	0.0	1.7	6.1	0.3	5.8	6,1
Sweden	-	-7.3	0.1	-7.4	2.0	0.6	1.4	9.3	0.5	8.8	9,3

ure of how much the geographical labour mobility (the labour migration process) contributes both to the formation and the filling in of vacancies. The overall labour market mobility is expected to increase in times of economic upswings, due to higher job-to-job mobility, higher migration propensities, and an increasing contingent of total number of job possibilities. From the same reasons, the labour market mobility is expected to decrease in periods of recession, although the transition rate from employment to non-employment is expected to increase. As mentioned in section two above there are, however, several factors that might have hampered the extent of labour mobility and especially labour migration in the Nordic countries

Taking as point of departure mobility from, between and into nine economic sectors and one unspecified sector, as well as between regions, in Norway and Sweden employment exits amounted to about 23 per cent of the stock of employed during the recession period, but somewhat lower in Finland (see table 1). During the economic upswing, employment exits was clearly reduced in Norway, and even more so in Sweden, while Finland somewhat surprisingly had about the same employment exits during the upswing period as during the recession. In spite of somewhat lower employment growth; the overall employment recruiting was rather stronger in Finland during the upswing period towards the end of the 1980s than under the corresponding upswing period in Norway and Sweden. An important reason for this can be found in the high employment exit that took place in Finland towards the end of the 1980s, which then made room for considerable new entries during a period with an increase in employment.

Not surprisingly all results reveal the fact that the total labour mobility was remarkable higher than the total net changes of employment. This was true even under the strong recession periods in Finland and Sweden both considering employment entries but mostly then for employment exits.

There were clear differences between the countries with respect to how large part of the employment exits and entries can be attributed to out-migration from and in-migration to employment and how much can be attributed to labour mobility within the local labour markets. The geographical labour mobility was visibly higher in Norway, both with respect to out-migration from employment and in-migration to employment during both investigation periods. Somewhat surprisingly Finland clearly had the lowest geographical mobility linked to out-migration from employment during the recession period, while Sweden had a somewhat lower geographical mobility linked to entries to employment. During the upswing period, Sweden had the lowest geographical mobility, both with respect to out-migration from and in-migration to employment. While both Finland and Sweden showed higher migration propensity in the economic upswing than in the recession, there were small differences between the time periods in Norway. An important factor in explaining the difference between the countries can be found in the varying strength of the economic cycles across the nations.

Labour mobility in and out of nine economic sectors

Obviously there are reasons to expect different labour mobility across economic sectors. This might be due to different compositions of the employment staff concerning gender, age and the educational level, but

Table 2. Relationships between relative gross out-migration rates from jobs and relative total employment exit rates by sector in the period of recession in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative out-migration rates	II Relative emplyment exit rates	III*	I Relative out-migration rates	II Relative emplyment exit rates	III*	I Relative out-migration rates	II Relative emplyment exit rates	III*
Primary sectors	0.33	0.74	0.45	0.61	0.82	0.75	0.72	1.08	0.67
Manufacturing	0.67	0.89	0.75	0.74	0.84	0.88	0.89	0.85	1.04
Energy	0.53	0.60	0.88	0.55	0.47	1.16	0.61	0.85	1.07
Construction	0.67	1.67	0.40	0.77	1.04	0.74	0.67	1.18	0.57
Commerce	1.07	1.09	0.98	1.03	1.11	0.93	1.22	1.13	1.08
Transport	0.60	0.68	0.88	1.00	0.79	1.26	0.94	0.96	0.99
Finance	0.93	1.01	0.92	1.32	0.98	1.35	1.00	1.17	0.86
Public services	1.47	0.85	1.73	1.19	0.93	1.28	1.06	0.84	1.26
Other services	1.60	0.98	1.63	1.07	1.19	0.90	1.17	2.04	0.57
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.38	0.23	0.34	0.22	0.17	0.21	0.18	0.26	0.20

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

Table 3. Relationships between relative gross out-migration rates from jobs and relative total employment exit rates by sector in the period of economic upswing in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative out-migration rates	II Relative emplyment exit rates	III*	I Relative out-migration rates	II Relative emplyment exit rates	III*	I Relative out-migration rates	II Relative emplyment exit rates	III*
Primary sectors	0.29	0.67	0.43	0.61	1.18	0.52	0.63	1.19	0.53
Manufacturing	0.86	0.90	0.96	0.71	0.83	0.86	0.89	0.74	1.20
Energy	0.57	0.88	0.65	0.46	0.58	0.79	0.68	0.70	0.97
Construction	0.86	1.09	0.79	0.61	0.98	0.62	0.63	1.06	0.59
Commerce	1.10	1.01	1.09	1.04	1.18	0.88	1.26	1.28	0.98
Transport	0.62	0.82	0.76	0.93	0.98	0.95	0.95	0.90	1.06
Finance	1.14	1.01	1.13	1.29	1.14	1.13	1.11	1.21	0.92
Public services	1.29	0.98	1.32	1.14	0.76	1.50	1.00	0.91	1.10
Other services	1.43	1.10	1.30	1.00	1.33	0.75	1.26	1.34	0.94
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.31	0.11	0.25	0.24	0.19	0.25	0.21	0.20	0.16

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

also different employment change and regional location patterns might have impact on the level of local and geographical labour mobility. In our investigations there has thus been essential to analyse the level of labour mobility in and out of employment in different sectors. To illuminate if the sectors have sufficient or insufficient geographical mobility, we chose to investigate to what extent the relative level of out-migration from and in-migration to employment corresponds to the relative total level of labour mobility in and out of each sector. Is the relative geographical labour mobility higher or lower than could be expected from the relative total gross-flows in each sector?

To analyse these topics and to make international comparisons, gross-flows in the regional labour markets obtained from the regional vacancy account (see figure 1) in each country are collected for each sector and period as presented in the tables 2-5. First, the tables show the relative level of gross labour migration rates and the relative level of total labour mobility rates in each sector, expressed as proportions in relation to the average level of labour migration and total flows in all sectors in each country. The average level of both gross-migration rates and total labour mobility rates for all sectors is here given by an index set at 1 respectively. (Notice column (I) and column (II) for each country). The third column for each country shows the relationship between the relative level of gross migration rates and the relative level of total labour mobility rates in each sector, expressed as the index-values in column (I) divided by the index-values in column (II).

Table 4. Relationships between relative gross in-migration rates to jobs and relative total employment entry rates by sector in the period of recession in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative in-migration rates	II Relative emplyment entry rates	III*	I Relative in-migration rates	II Relative emplyment entry rates	III*	I Relative in-migration rates	II Relative emplyment entry rates	III*
Primary sectors	0.36	0.65	0.55	0.40	0.91	0.44	0.69	1.12	0.62
Manufacturing	0.64	0.68	0.94	0.80	0.76	1.05	0.85	0.65	1.31
Energy	0.57	0.73	0.78	0.63	0.84	0.75	0.54	0.56	0.96
Construction	0.57	1.06	0.54	0.63	0.97	0.65	0.54	0.93	0.58
Commerce	1.07	0.96	1.11	1.20	1.26	0.95	1.38	1.36	1.01
Transport	0.57	0.58	0.98	0.93	0.76	1.22	0.85	0.65	1.31
Finance	0.93	0.99	0.94	1.23	0.96	1.28	1.31	1.95	0.67
Public services	1.57	1.13	1.39	1.33	1.07	1.24	1.00	0.69	1.45
Other services	1.64	1.31	1.25	1.20	1.44	0.83	1.15	1.52	0.76
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.40	0.21	0.22	0.26	0.17	0.24	0.26	0.39	0.28

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

Table 5. Relationships between relative gross in-migration rates to jobs and relative total employment entry rates by sector in the period of economic upswing in Finland, Norway and Sweden. All regions. Index: Average rates for all sectors in each country=1

Sectors	Finland			Norway			Sweden		
	I Relative in-migration rates	II Relative emplyment entry rates	III*	I Relative in-migration rates	II Relative emplyment entry rates	III*	I Relative in-migration rates	II Relative emplyment entry rates	III*
Primary sectors	0.33	0.52	0.63	0.50	0.99	0.51	0.58	0.98	0.59
Manufacturing	0.86	0.76	1.13	0.87	0.86	1.01	0.95	0.94	1.01
Energy	0.57	0.76	0.75	0.50	0.51	0.98	0.58	0.49	1.18
Construction	0.90	1.32	0.68	0.63	1.12	0.56	0.53	1.01	0.52
Commerce	1.14	1.06	1.08	1.07	1.15	0.93	1.26	1.31	0.96
Transport	0.67	0.86	0.78	0.90	0.93	0.97	0.89	1.01	0.88
Finance	1.24	1.24	1.00	1.30	1.08	1.20	1.26	1.28	0.98
Public services	1.19	0.84	1.42	1.10	0.74	1.49	0.89	0.62	1.43
Other services	1.52	1.28	1.19	1.07	1.29	0.83	1.26	1.34	0.94
Index: Average rates for all sectors	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Average value deviation from 1	0.31	0.24	0.22	0.24	0.18	0.21	0.26	0.21	0.19

* The figures for each sector in column III is calculated by the index-values in column I divided by the index-values in column II.

While the columns (I) and (II) express the range of variations of migration and total labour mobility across the sectors, the column (III) gives an expression of the relationship between the relative level of gross migration and the relative level of total labour mobility in each sector. A calculated value at 1 in the third column reveals thus a good correspondence between the relative level of gross migration rates and the relative level of total labour mobility rates in each sector. Values above 1 indicate a higher migration level than the total labour mobility suggests, and vice-versa values below 1 indicate a lower than "expected" level of migration correspondingly.

The last row in each table expresses the average value deviation from 1 for all sectors in each of the columns. In column (I) and (II) the average value deviation from 1 expresses the range of variations of labour migration and total labour mobility across all sectors within each country. In the third column, the average value deviation from 1 expresses the relationship between relative gross labour migration rates and relative total labour mobility rates across all sectors in each country. The average value deviation from 1 in the third column is thus essential for international comparisons showing the adjustment between the level of gross labour migration rates and the total level of gross labour mobility rates across all sectors within each country.

The results show distinct variations between economic sectors, both with respect to exits from and entries

Table 6. Net changes in employment broken down by migration and local changes by sector in the periods of recession in Finland, Norway and Sweden. All regions. Per cent

Sectors	Finland			Norway			Sweden		
	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change
Primary sectors	0.0	-6.7	-6.7	-0.8	-3.5	-4.3	-0.4	-7.7	-8.1
Manufacturing	-0.1	-9.2	-9.3	0.1	-5.9	-5.8	-0.5	-9.5	-10.0
Energy	0.0	-2.6	-2.6	0.2	2.6	2.8	-0.4	-4.4	-4.8
Construction	-0.3	-20.3	-20.5	-0.5	-7.3	-7.8	-0.5	-12.7	-13.2
Commerce	-0.1	-9.5	-9.6	0.4	-2.1	-1.7	-0.4	-5.2	-5.6
Transport	-0.1	-6.3	-6.4	-0.3	-5.5	-5.8	-0.6	-11.8	-12.4
Finance	-0.1	-7.6	-7.7	-0.4	-4.9	-5.3	-0.1	2.8	2.7
Public services	0.0	-2.4	-2.4	0.3	4.4	4.7	-0.6	-8.6	-9.2
Other services	-0.1	-7.6	-7.7	0.3	-5.3	-5.0	-0.6	-23.7	-24.3
Total	-0.1	-7.1	-7.2	-0.1	-3.8	-3.9	-0.5	-7.5	-8.0

Table 7. Net changes in employment broken down by migration and local changes by sector in the periods of economic upswing in Finland, Norway and Sweden. All regions. Per cent

Sectors	Finland			Norway			Sweden		
	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change	Net in-migration	Local net change	Total net change
Primary sectors	0.1	-2.9	-2.8	-0.3	-1.2	-1.5	-0.1	-2.1	-2.2
Manufacturing	0.0	-2.2	-2.2	0.6	1.6	2.2	0.1	4.3	4.4
Energy	0.0	-2.1	-2.1	0.1	-0.3	-0.2	-0.2	-2.4	-2.6
Construction	0.1	5.7	5.8	0.2	4.8	5.0	-0.2	0.7	0.5
Commerce	0.1	1.5	1.6	0.2	1.8	2.0	0.0	2.2	2.2
Transport	0.0	1.2	1.2	0.1	0.8	0.9	-0.1	2.9	2.8
Finance	0.2	5.3	5.5	0.3	1.0	1.3	0.3	2.3	2.6
Public services	-0.2	-2.3	-2.5	0.1	1.0	1.1	-0.2	-3.6	-3.8
Other services	0.2	4.3	4.5	0.4	1.7	2.1	0.0	1.5	1.5
Total	0.0	0.6	0.6	0.2	1.8	2.0	0.0	1.2	1.2

to employment. Some of these differences were connected with different employment change, but as noticed in the section above, the total net-change in employment comprises, however, a small number when compared with the total gross streams in and out of the sectors. In all countries the building and construction sector, commerce, finance, and other services showed considerable employment exits during both the recession and upswing periods (see tables 2 and 3). These sectors were, however, also characterised by considerable employment entries, especially during the upswing period (see tables 4 and 5).

In all countries public services were characterised by a lower than average employment exit (tables 2 and 3), while employment entry was relatively stronger during the recession period than during the upswing period (tables 4 and 5). This illuminates a tendency to make use of the employment in public sector in counter-cyclical policy response to recession periods to reduce the decrease in employment and serve as a buffer against increasing unemployment. Opportunities for carrying out such policy appear, however, to have been considerably better in Norway than in Finland and Sweden in these periods.

The results indicate that it was a fairly good correspondence between the relative level of total gross streams in the labour market and the relative level of out-migration from and in-migration to employment in most of the economic sectors. The correspondence appears, however, to have been somewhat better in Norway and Sweden than in Finland. Some sectors showed, however, considerable deviation from this pattern. The greatest discrepancy was found in primary industries, building and construction activities and public services, with the two former showing clearly lower geographical mobility than would be expected based on the total employment exit and entry, while the situation was clearly opposite in public services. In the primary industry this might partly reveal the ageing processes where the employment exit to a minor degree ends up in out-migration, and the recruitment is normally locally based. As the building and construction sector is heavily vulnerable to cyclical changes, low geographical mobility might increase the local unemployment in periods of recession as well as hamper the necessary recruitment in periods of economic upswings. Low migration propensity in this sector might, however, be compensated by special arrangements of long distance commuting. In public services

higher than average migration is mainly due to high percentage of employed with higher education and a decentralised location pattern. More detailed results obtained from the Norwegian analyses showed, however, that a large part of the total labour mobility and a major part of the geographical mobility in public services were due to job-to-job mobility within this sector (see Stambøl et al.,1999). An observed tendency to increased job-to-job mobility between the regions also within manufacturing industries and private services might indicate an increased tendency to use migration as a tool in career-mobility within multi-regional localised companies.

Net effects of the labour mobility

Due to the introduction of a concise regional vacancy account (see figure 1), we are in a simple way able to measure if the migration process contributes to net growth or decline in the overall and sector specific employment level.

Based on these relatively broad economic sectors, it was a fairly good correspondence between the net effect of labour migration and the direction of changes in employment, with some exceptions, though. The labour migration processes contributed less to employment entries than to employment exits during the recession period in all the countries (table 6). Finland was distinguished, however, by a relatively low net out-migration from employment seen in light of the considerable drop in employment, which was observed during this period. In relation to Sweden, which had a similarly strong drop in employment during the recession period, it was primarily lower out-migration from employment that contributed to the relatively lower net effects of the labour migration processes.

It was only in Norway that the migration processes contributed to employment growth during the economic upswing (table 7). In Finland and Sweden out-migration from employment contributed just as much as in-migration to employment, with the result that the migration processes as a whole contributed to zero growth in employment.

The net results in Norway clearly reveals the tendency to make use of the employment in public services in counter-cyclical policy response to recession periods, showing considerable employment growth in the public services during the recession period (table 6). This is partly due to employment growth in the energy sector, which includes oil production, and increases the opportunities for carrying out such policy in Norway compared with Finland and Sweden. The positive net migration figures also reveal the employment growth in energy and public services in Norway during the recession period, while the situation was the opposite in Sweden. In Finland the net labour migration in the public services was in balance during the recession in spite of employment decrease.

Labour mobility among different demographic groups

During the upswing periods there were clear variations in labour migration in relation to total mobility between different person groups (see table 8). The column (I) and (II) are here calculated in the same way as the column (III) in the tables 2-5, and show high (excess) or low (deficit) relative labour migration rates in relation to the relative level of total labour mobility rates for each person group. The third column shows the differences between the first and second columns, and indicates if the migration process has contributed to growth or decline in employment.

In average it was a marked excess of migration among men and women with higher education in all countries as compared with the total gross streams in the labour market, while there was a clear deficit of migration among persons with lower education. The middle educational group had a slight excess of migration in Finland, while this educational group showed a deficit of migration both with respect to in-migration to and out-migration from employment in Norway and Sweden. With respect to the labour market balances (third columns), it was in average good connection between in- and out-migration for lower educated persons in Finland, while it was a remarkable excess of in-migration to employment for this group in Norway and Sweden. In the middle educational group, it was in average excess of out-migration from employment with an exception for females in Finland. Among higher educated persons, there was in average an excess of in-migration to employment in Finland and Sweden, but a slight deficit in Norway correspondingly. Considering the age groups, the excess of migration was mostly in reverse ratio to the level of age. The average value deviation from 1 (the last row) is considerably higher in Finland compared with Norway and Sweden, indicating a stronger connection between the relative level of migration and the relative level of total labour mobility in the person groups in Norway and Sweden.

Labour mobility within and between regions

In this final section, we have compared the level of gross migration rates to and from employment in the regional labour markets and the corresponding total labour mobility rates in the regions. The comparisons are made for total labour market flows without any further division by sector or segment. Considering regional labour market policy, labour migration revealing the level of total employment exits and entries in each region should obtain the most “ideal” correspondence. Regions with higher than average total labour mobility in each country are thus expected to show higher than average labour migration, while all

Table 8. Relationships between relative in-migration rates to jobs and total employment entry rates and relative out-migration rates from jobs and total employment exit rates by gender, age and education in periods of economic upswing in Finland, Norway and Sweden. All regions

Sectors		Finland			Norway			Sweden		
		I Relative in-migration rates/ total entry rates	II Relative out-migration rates/ total exit rates	Differences I-II	I Relative in-migration rates/ total entry rates	II Relative out-migration rates/ total exit rates	Differences I-II	I Relative in-migration rates/ total entry rates	II Relative out-migration rates/ total exit rates	Differrences I-II
Men										
A1	L	0.32	0.47	-0.15	1.38	0.35	1.03	1.20	0.74	0.46
	M	0.90	1.05	-0.15	0.53	0.64	-0.11	0.80	0.86	-0.06
	H	3.33	5.19	-1.86	1.33	1.50	-0.17	1.78	1.45	0.33
A2	L	0.70	0.70	0.00	0.61	0.71	-0.10	1.15	0.73	0.42
	M	1.28	1.26	0.02	0.93	1.02	-0.09	0.82	0.91	-0.09
	H	2.64	2.67	-0.03	2.07	2.25	-0.18	2.23	1.99	0.24
A3	L	0.26	0.16	0.10	0.25	0.61	-0.36	0.39	0.63	-0.24
	M	0.46	0.39	0.07	0.44	0.69	-0.25	0.39	0.78	-0.39
	H	0.92	0.72	0.20	0.91	1.14	-0.23	0.79	1.30	-0.51
Women										
A1	L	0.39	0.55	-0.16	1.05	0.45	0.60	1.21	0.78	0.43
	M	1.41	1.50	-0.09	0.91	0.99	-0.08	1.16	1.15	0.01
	H	4.11	5.00	-0.89	1.41	1.43	-0.02	2.27	1.67	0.60
A2	L	0.57	0.52	0.05	0.40	0.51	-0.11	0.87	0.58	0.29
	M	1.10	1.14	-0.04	0.87	0.98	-0.11	0.78	0.75	0.03
	H	2.28	2.21	0.07	1.99	2.09	-0.10	1.91	1.52	0.39
A3	L	0.32	0.17	0.15	0.26	0.46	-0.20	0.29	0.49	-0.20
	M	0.55	0.36	0.19	0.45	0.61	-0.16	0.31	0.65	-0.34
	H	0.69	0.57	0.12	1.16	1.17	-0.01	0.65	1.34	-0.69
Average value deviation from 1		0.78	0.97	-	0.45	0.42	-	0.49	0.36	-

Age: A1 = 16-24 years (In Finland 15-24 years), A2 = 25-44 years, A3 = 45-74 years (In Sweden 45-64 years)
Education: L = Lower education, M = Middle education, H = Higher education

regions with lower than average total labour mobility are expected to show lower than average labour migration correspondingly. The results are presented in the figures 2 and 3. The figures are formed as x- and y-diagrams, where the x-axis represents the relative level of total labour mobility rates to and from employment in the regions and the y-axis represents the relative level of gross labour migration rates correspondingly.

In the recession period counties in Finland and Norway showed far better correlation between out-migration from jobs and total exit from jobs compared with the Swedish regions (see figure 2). Only three out of nineteen counties in Norway and four out of nineteen counties in Finland had negative correlation between the relative level of out-migration rates from jobs and relative total exit rates from jobs in this period, while the corresponding number in Sweden was nine out of twenty-four counties.

During the period of economic upswing the correlation between out-migration rates from jobs and total exit rates from jobs was rather weak in the counties of Finland and Sweden, while this correlation was very strong and positive for Norwegian regions. In Norway only one out of nineteen counties showed a negative correlation with a lower level of out-migration from jobs than the total employment exits would suggest. In Finland the majority of counties with lower than average total employment exits showed higher than average out-migration from jobs.

Finland and Norway did, however, clearly distinguish from Sweden, with a larger range of variation between the regions with respect to the relative level of out-migration rates from jobs. This was true both during the periods of recession and economic upswing.

Even more important is a good functioning labour migration with respect to the level of necessary employment recruitment. Regions with higher than average total employment entries are expected to be dependent on a higher than average in-migration to jobs. Figure 3 shows thus the correlation between the relative level of in-migration rates to jobs and the relative level of total employment entry rates. This correlation was rather weak in the regional labour markets of Finland both during the period of recession and economic upswing. About half of the Finnish

Figure 2. Relationships between the relative level of gross out- migration rates from jobs and the relative level of total employment exit rates in counties in Finland, Norway and Sweden. In periods of recession and economic upswing. Percentage deviation from the country specific average is set at zero

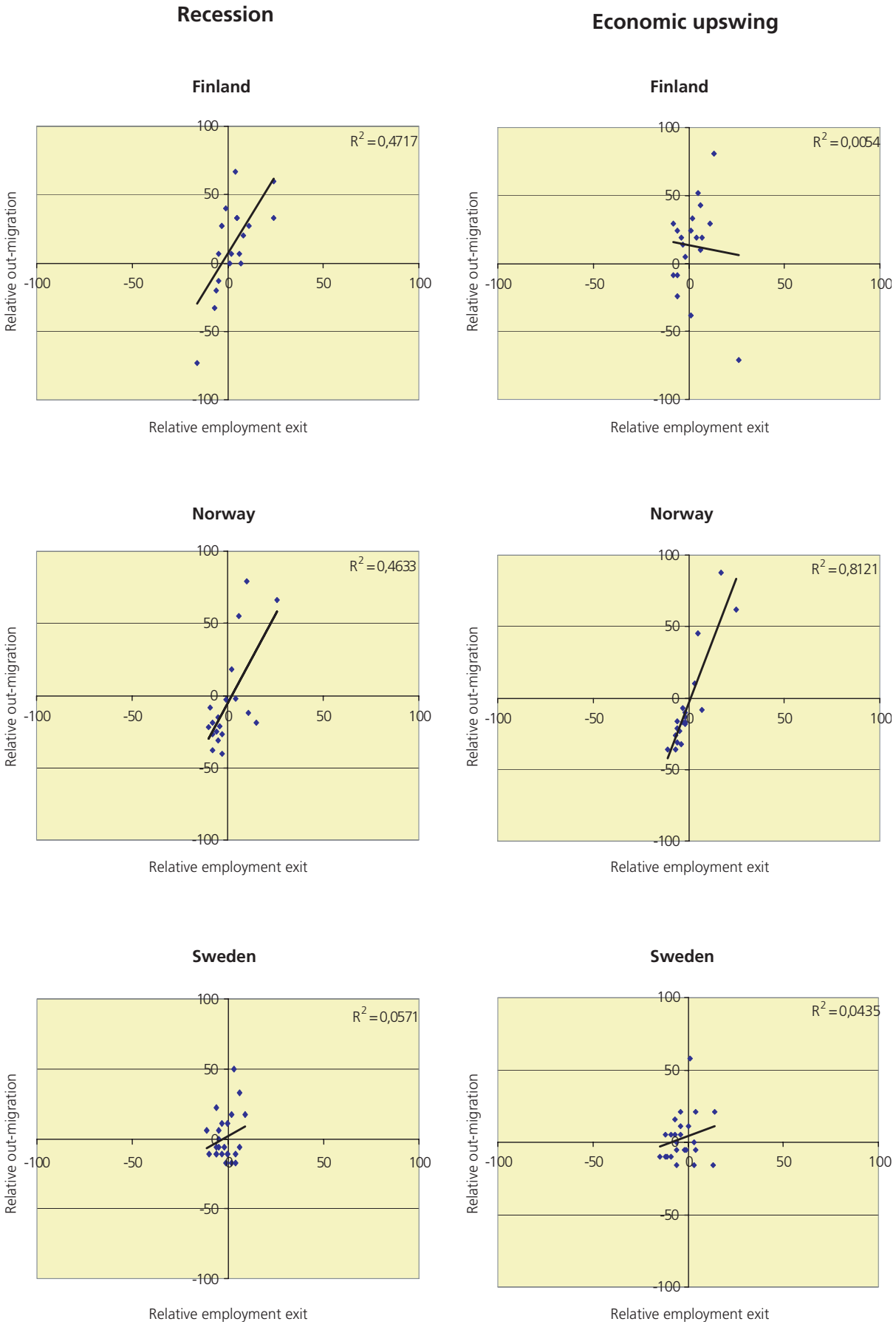
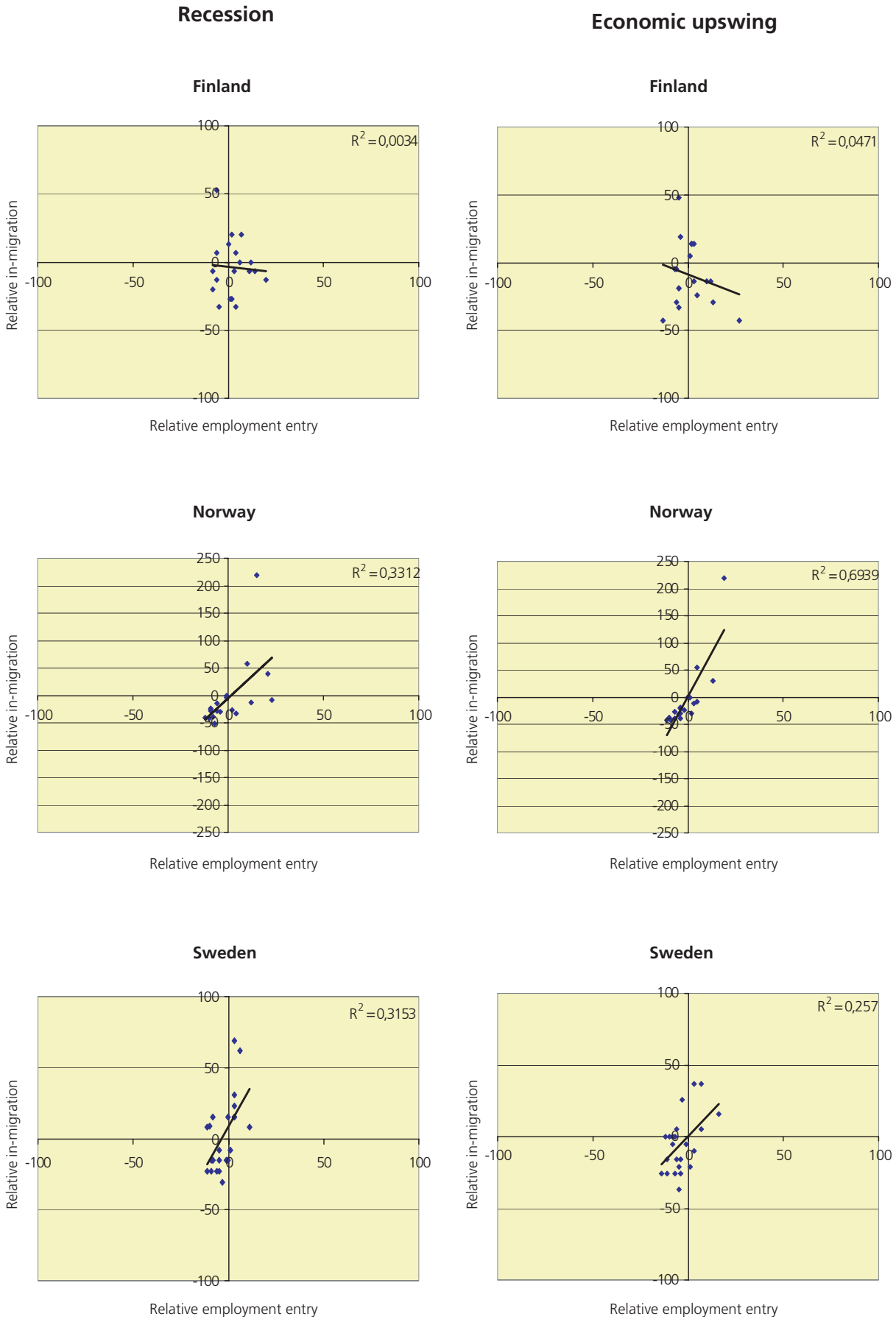


Figure 3. Relationships between the relative level of gross in-migration rates to jobs and the relative level of total employment entry rates in counties in Finland, Norway and Sweden. In periods of recession and economic upswing. Percentage deviation from the country specific average is set at zero



regions showed negative correlation in both periods. In Sweden the correlation between the level of in-migration rates to jobs and the level of total employment entry rates was, however, far better than the corresponding correlation between out-migration rates from jobs and total employment exit rates. In Norway it was a fairly good connection between the level of in-migration rates to jobs and the level of total employment entry rates. This connection was even better during the period of economic upswing than during the period of recession, indicating that the labour migration to a certain extent eased the employers' recruitment demand. In the period of economic upswing only three out of nineteen counties in Norway showed negative correlation between the level of in-migration rates to jobs and the level of total entry rates to jobs.

With respect to the balance of migration between regions, there were clear differences in the contribution from employment entries through in-migration compared with employment exits through out-migration. During the upswing period in Finland, migration contributed to more than the total employment growth in some central counties in Southern Finland. During the strong recession period migration still contributed to employment growth in these counties, and thus contributed to increasing local unemployment in a period with significant decrease in employment.

Some central regions in Southern Norway showed clearly higher recruitment through in-migration than exits through out-migration during the recession period towards the end of the 1980s, which contributed to increase the local unemployment in these regions in a period when all counties experienced a decrease in employment. During the upswing period it was the Oslo region, which had the largest growth of employment through the migration process, and the net effect of labour migration accounted for about 50 per cent of the total employment growth in this region. At the other end of the scale were the counties of Northern Norway, where the migration process alone accounted for 15-25 per cent of the total decrease in employment during the recession period, thus reducing the local employment turnover with a buffering effect on the increase in local unemployment.

In Sweden, out-migration from employment contributed somewhat more than in-migration to employment in 23 out of 24 counties during the recession period. During the upswing period, a number of counties experienced higher employment recruitment through migration than they lost through out-migration from employment. The migration process had strongest positive effect in the Stockholm region, where the net effect of geographical labour mobility contributed to about half of the entire employment growth.

Main findings

Taking as point of departure mobility from, between and into economic sectors as well as between regions, the results reveal the fact that total gross labour mobility is of immense importance for the formation of vacancies.

In Norway and especially in Sweden, it was a remarkable change in the level of employment exit between the economic upswing and recession, while the employment entries represented the main variable in the gross labour mobility change between these periods in Finland.

There were visible differences across the countries with respect to how large part of the employment exit and employment entry that is due to out-migration from and in-migration to jobs and how much that is connected to labour mobility within the local labour markets. The labour migration was visibly higher in Norway than in Finland and Sweden, and accounted for about 15 per cent of the total gross labour mobility.

There were distinct variations between economic sectors, both with respect to exits from and entries to employment as well as through geographical mobility in and out of the sectors.

There were in some contexts good correspondence between the relative level of geographical labour mobility and the relative level of total turnover in the economic sectors. This correspondence appears, however, to have been somewhat better in Norway and especially in Sweden than in Finland.

In Norway it was a fairly positive relationship between the level of labour migration and the level of total gross-streams in the regional labour markets, while in Sweden and especially in Finland there were some deviations from this pattern.

The labour migration process did, however, contribute to a certain displacement of labour between the regions. While the migration processes contributed to employment decrease in all countries during the recession period, it was only in Norway that labour migration contributed to growth in the national employment during the period of economic upswing.

The correspondence between the level of geographical labour mobility and total gross streams in the labour market appears to have been better when the regional labour markets were evaluated as a whole and divided by aggregated economic sectors than when the labour market was broken down by different person groups.

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Documents

Helge Brunborg, Svein Gåsemyr, Gotfred Rygh and Johan-Kristian Tønder: **Development of Registers of People, Companies and Properties in Uganda: Report from a Norwegian Mission.**
Documents 2003/4, 2003. 47 pages.

The document is the report from a two-week visit to Uganda in March 2003 to make an assessment of existing registers in Uganda and how they can be further developed. The Team found that there is considerable potential for improvement, modernisation and expansion of various registers in Uganda, in spite of Uganda being a very poor country. The Team recommends that:

- The Government of Uganda should aim at establishing central computerised registers of population, establishments and enterprises, and land titles and properties.
- Unique numbers of persons, enterprises and properties should be introduced and widely used.
- The registers should be the only administrative sources of such information and be used by all Ugandan organizations and institutions, both public and private.

- The registers would be central data sources and tools for the Ugandan system of official statistics.
- Various Government institutions need to collaborate on the establishment of and running of the central registers.
- After decisions on the design of the system have been made, the legal framework will most likely need to be amended.

Jørgen Aasness, Erik Biørn and Terje Skjerpen: **Supplement to "Distribution of Preferences and Measurement Errors in a Disaggregated Expenditure System".** Documents 2003/3, 2003. 37 pages.

This note includes supplementary results to Aasness, J., E. Biørn, and T. Skjerpen: "Distribution of preferences and measurement errors in a disaggregated expenditure system", to be published in the Econometrics Journal.

A complete system of consumer expenditure functions with 28 commodity groups is modeled and estimated by means of two-wave household panel data. Total consumption expenditure is treated as latent, with two income measures as observed indicators. The distribution of latent individual differences, interpreted as preference variation, is structured by a factor-analytic approach. Absence of measurement error in total expenditure is clearly rejected, as is also the standard assumption of uncorrelated measurement errors. The 2015 first- and second-order moments of the observed variables are modeled by means of 213 parameters in a reference model. Their maximum likelihood estimates have, with only a few exceptions, the expected sign and a reasonable magnitude. A notable finding is positive correlation between measurement errors of commodities belonging to major groups, e.g., foods, which may be explained by rational shopping behavior. The magnitude and ranking of the Engel elasticity estimates are not sensitive to whether the form of the Engel functions is linear or quadratic.

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List of tables **Page**