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Norway: Selected Issues

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INTERNATIONAL MONETARY FUND

NORWAY

Selected Issues

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Approved by European I Department

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Norway: Basic Data

Social and Demographic Indicators

Area	323,900 square kilometers
Population (end-1996)	4.39 millions
Population growth (1995-96)	0.5 percent
GDP per capita (1996)	US$ 35930

Population Characteristics and Health
(most recent estimates as of December 1989)

Life expectancy at birth: Overall	77
Female	80
Infant mortality (aged under 1, in percent)	0.8
Population per physician	451
Population per hospital bed	67

	1994	1995	1996	1997	1998 1/
	(Volume changes in percent)				
Private consumption	4.0	2.7	4.7	3.2	3.7
Public consumption	1.4	1.0	3.3	2.0	1.6
Gross fixed investment	4.5	3.7	4.8	11.6	2.8
Export of goods and services	8.7	3.6	10.0	5.9	8.1
Of which: Oil and gas	11.9	8.1	15.5	4.7	12.9
Import of goods and services	4.9	5.5	6.5	8.3	5.0
GDP	5.5	3.6	5.3	3.9	4.8
Mainland GDP 2/	4.1	3.1	3.7	3.5	3.2
	(In percent of labor force)				
Unemployment 3/	5.4	4.9	4.9	4.2	3.8
	(Percentage changes)				
Consumer prices	1.4	2.5	1.3	2.6	2.8
Hourly labor cost in manufacturing	2.8	5.0	4.5	4.3	4.0
Effective exchange rate					
Nominal	-1.3	2.5	-0.3	0.6	...
Relative normalized unit labor costs	0.8	5.2	2.2	2.3	...
	(Twelve-month percent change, end of period)				
Domestic credit	3.8	6.3	9.2	7.3 4/	...
Broad money	6.5	5.1	6.0	5.6 5/	...
	(In percent)				
Three-month Interbank rate	5.8	5.5	4.9	3.5	...
Ten-year government bond yield	7.5	7.4	6.8	6.0	...
State budget, including social security	(In percent of GDP)				
Revenues	40.7	41.2	42.5	43.7	42.9
Expenditures	44.1	40.8	37.9	37.9	37.1
Overall balance	-3.3	0.4	4.6	5.8	5.8
General government financial balance	0.4	3.3	5.9	7.1	7.7
Current account balance	2.6	3.1	7.1	6.2	7.5
International reserves (in months of imports of goods and services)	5.5	5.8	6.4	7.3 6/	...

Sources: Ministry of Finance; Norges Bank; Statistics Norway; IMF, *International Financial Statistics*; and staff estimates.

1/ Official estimates and projections as of December 1997.
2/ Excludes items related to petroleum exploitation and ocean shipping.
3/ From 1996, definitional changes result in a half percentage point increase in the reported unemployment rate.
4/ End-August 1997.
5/ End-October 1997.
6/ End-November 1997.

I. THE STATE PETROLEUM FUND–RECENT DEVELOPMENTS AND PROSPECTS[1]

"...Even though [oil] revenues may be substantial for many years, they cannot provide a durable basis for growth and employment.... Higher oil revenues should primarily be set aside so that coming generations also can benefit from the increase in the resource base."

The National Budget 1998, p.30.

A. Introduction

1.   This note examines the role of the State Petroleum Fund (SPF) in Norwegian economic policy, as a means to promote a sustainable long-run fiscal position and to help maintain the competitiveness of the non-oil ("mainland") economy in the face of high oil export revenues. In Norway's fiscal strategy, the SPF is to be used as a means to insulate the budget from the effects of large short- or longer-term changes in the level of petroleum revenues. During the ongoing period of high and rising oil production, this means that surplus petroleum revenues are transferred to the SPF, where they are used to acquire financial assets (and earn income) for use in later decades, when oil production will be lower and the aging of the population will have added to fiscal expenditures. To help minimize any tendency toward appreciation of the real exchange rate during the period of fiscal and external current account surpluses, the funds accumulated in the SPF are invested entirely in foreign currency-denominated assets abroad.

2.   The rate of accumulation of assets depends on the amount of fiscal surpluses transferred into the SPF, the timing of transfers, and the rate of return on investment. Using the approach and major assumptions presented in the National Budget for 1998, the first part of this note examines the sensitivity of the long-term fiscal position to the timing and amount of transfers into the SPF. The second section discusses the investment strategy of the SPF and the rationale for the authorities' recent decision to invest part of its resources in equities.

B. Rationale for the State Petroleum Fund

3.   Oil production began on the Norwegian continental shelf in the North Sea in 1971 and has expanded steadily since then; at present Norway is the world's second-largest oil exporter, after Saudi Arabia. However, the SPF was established only in 1990, and did not receive large transfers of oil revenues until 1996. The authorities effectively began setting aside part of the income generated in the petroleum sector almost from the outset, through increases in net foreign assets; but there was no perceived need for a formal mechanism for managing these assets, other than the general procedures for official foreign exchange reserves. What, then, precipitated a change in strategy?

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[1]Prepared by Natalia Koliadina.

4.   One factor was a sharp increase in oil production that began in the late 1980's. Prior to that time rates of oil production rose only gradually, reflecting the assessment that oil prices would rise more rapidly in the future than most other asset prices and that oil left in the ground was a good investment. However, the sharp decline in world oil prices in 1986 led to a reassessment of the relative attractiveness of other assets and this, in conjunction with pressures to capitalize on costly and short-lived investment, induced the authorities to raise the rate of extraction rapidly from the late 1980's onward.

5.   Another factor in the decision to establish the SPF was a realization of the dangers posed by the loss of competitiveness of the mainland economy. This "Dutch disease" was a side effect of the petroleum boom of the 1970's and early 1980's, and was reflected in a rise in Norwegian costs of 16–40 percent relative to its major trading partners.[2] The result was a sharp decline of production and employment in export-oriented and import-competing industries and a stagnation of the mainland economy (Figure 1). This was offset during the petroleum boom by a 70 percent increase in public sector employment in 1970–91 and a rise in budgetary expenditures for social transfers to 17 percent of GDP in early 1990s, which absorbed most of the government's oil revenues. The risks of excessive dependence on oil revenues were brought home following the 1986 oil price shock, which helped to precipitate a recession that lasted until 1993.

6.   These events helped to galvanize support for measures to insulate both the fiscal revenue base and employment in the mainland economy from developments in the oil sector. As one step in this process, in 1990 the authorities decided to establish a State Petroleum Fund (SPF) as a way to increase the transparency of utilization of petroleum revenues and facilitate decisions on setting aside a portion of current revenues. Resources were to be accumulated in the SPF during times of stable or rising oil prices and normal economic activity, and could be drawn upon either in the short run, as a buffer against oil price declines or recession, or in the longer run as oil production declined. In either event the SPF would not make expenditures, loans, or transfers directly to economic agents in Norway, but would transfer funds to the budget where the financing would be incorporated in normal budget procedures. Resources in the SPF were to be derived from surpluses in the central government budget, which would be transferred to the Fund, and its investment income. However, initially the ongoing recession made it difficult to attain the fiscal surpluses needed to activate the SPF.

7.   Even though the SPF could not be utilized at first, it remained an important component of Norway's long-run economic strategy. In late 1993 Norway adopted the "Solidarity Alternative," an economic strategy designed explicitly to promote competitiveness and employment in the mainland economy over the longer term. Under the Solidarity Alternative, labor unions agreed to accept relatively modest nominal wage increases, in exchange for the

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[2]The lower figure is for relative wage rates in manufacturing industry, while the higher figure is for relative unit labor costs. Developments in Norway's international competitiveness are summarized in a companion background paper on the wage determination system.

FIGURE 1
NORWAY

OUTPUT AND CONSUMPTION

GROWTH OF CONSUMPTION AND OUTPUT
(Annual percentage change)

norrd01a

Real GDP

Mainland GDP

Total
consumption

GROWTH OF CONSUMPTION AND OUTPUT
(Indices: 1978=100)

norrd01b

- GDP
-- Mainland GDP
- Private consumption
-- Public consumption
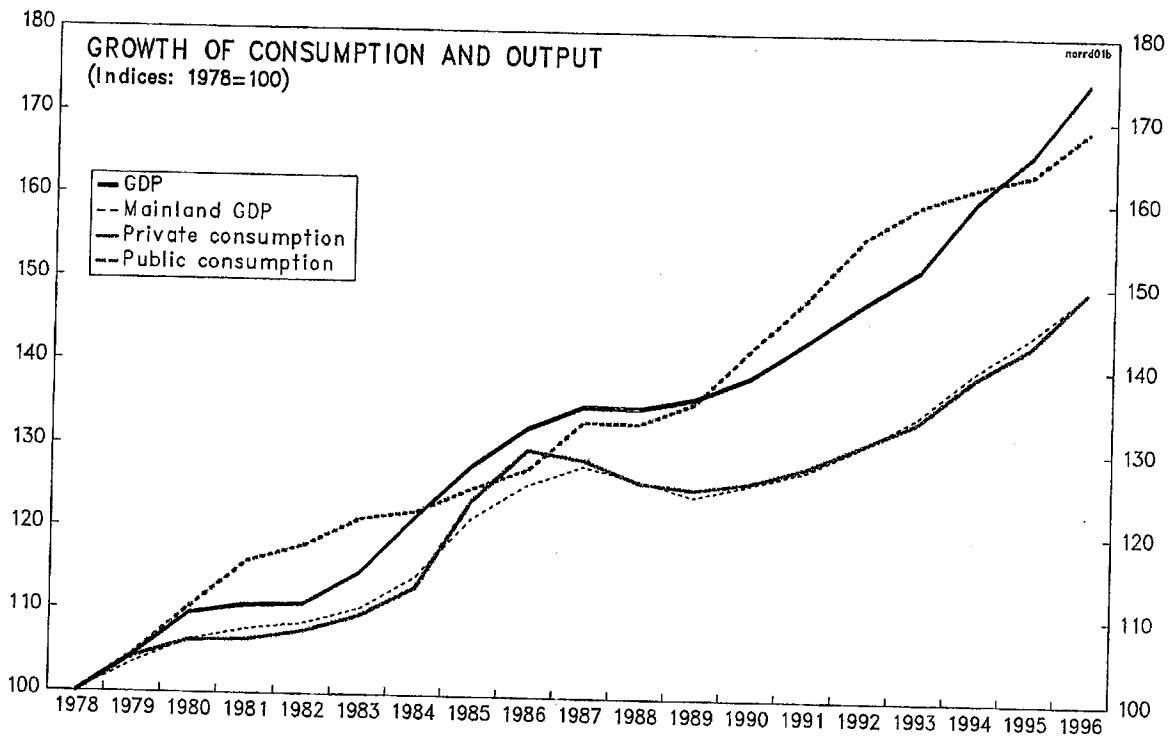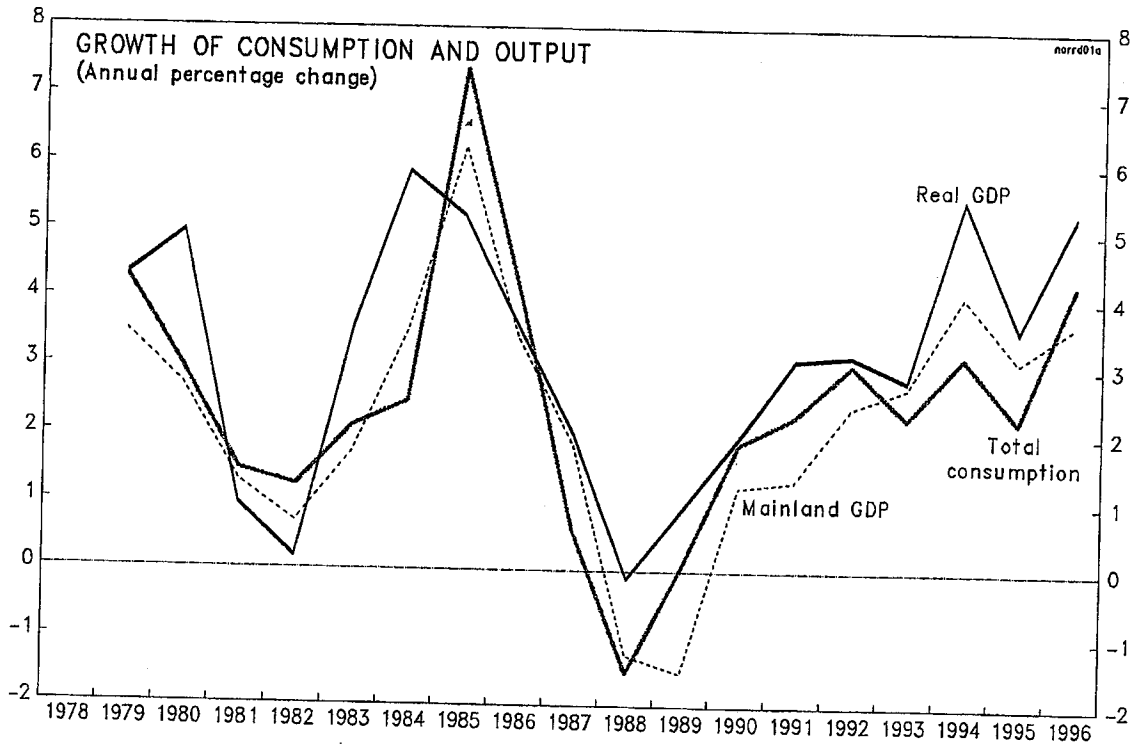
Source: Statistics Norway.

Table 1. Norway: State Budget Balance in 1993–98

(In percent of GDP)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 (proj.)
Revenues from petroleum activities	3.0	3.5	6.0	6.8	5.9	6.4	6.1	6.5	8.6	9.8	9.6
Non-oil revenues	39.0	37.7	36.5	35.4	35.1	33.6	34.6	34.7	33.9	33.9	33.3
Total revenues	42.0	41.3	42.5	42.2	40.9	40.0	40.7	41.2	42.5	43.7	42.9
Expenditure on petroleum activities	2.6	1.4	1.2	1.7	2.0	3.0	3.2	2.4	1.8	2.0	2.2
Non-oil expenditures	38.7	39.7	40.8	43.1	43.4	42.4	40.9	38.4	36.1	35.9	34.9
Total expenditure	41.2	41.1	42.1	44.8	45.4	45.4	44.1	40.8	37.9	37.9	37.1
Net revenues from oil activities and return	0.4	2.1	4.7	5.2	3.9	3.4	2.9	4.1	6.9	7.8	7.5
Balance, of which	0.7	0.2	0.4	-2.6	-4.4	-5.3	-3.3	0.4	4.6	5.8	5.8
Non-petroleum balance	0.3	-2.0	-4.3	-7.8	-8.3	-8.7	-6.3	-3.7	-2.2	-2.0	-1.7
Memorandum item: Cyclically adjusted non-oil balance	-1.4	-3.3	-5.4	-6.5	-7.8	-8.2	-7.8	-5.9	-4.6	-4.1	-3.9

Sources: The Ministry of Finance; and staff estimates.

authorities' commitment to use monetary policy to stabilize the exchange rate. Fiscal policy was to be used for demand management and to insulate the mainland economy from windfall oil revenues through transfers from the central government budget to the SPF.

8.   The continuing increase in oil export revenues during the 1990's, in conjunction with a recovery in mainland economic activity, facilitated preparations for active use of the SPF by 1996. Under the regulations adopted for this purpose, the SPF is managed by the Norges Bank. During 1996–97 the resources in the SPF were invested under guidelines based on the Norges Bank's procedures for management of official foreign exchange reserves, and thus were held in high-quality interest-bearing assets abroad. The investment abroad of SPF resources is intended to help ensure that the fiscal and current account surpluses that give rise to transfers to the SPF are matched by capital outflows, to promote the stability of the exchange rate and the competitiveness of the mainland economy. In commenting on its strategy for activating the SPF, the government stressed the important role that SPF resources could play in providing financing to the budget in the longer run, as oil production declines, thereby promoting inter-generational equity (see below).

9.   In order to generate a sizeable fiscal surplus, the increase in central government expenditure was held below that of mainland output (Table 1–see page 8). As a result, the budget swung into modest surplus in 1995. In 1996 the surplus ballooned to 4.6 percent of GDP and the authorities initiated corresponding transfers to the SPF (Table 2). The transfer increased to 5.7 percent of GDP in 1997 and a similar amount is envisaged for 1998. By the end of 1998, accumulated assets in the SPF (budgetary transfers plus investment income) are expected to reach 16.6 percent of GDP.

Table 2. Asset Accumulation in the State Petroleum Fund

As a percent of GDP

	1996	1997 (Est.)	1998 (Proj.)	1996–98 (Est.)
Total, of which:	4.6	6.0	6.0	16.6
Net transfers to the SPF	4.5	5.7	5.6	15.8
Dividends and interest on the SPF	0.1	0.3	0.4	0.8

Sources: National Budget 1998; and staff estimates.

C. Inter-generational Equity and Sustainability in the Use of Oil Revenues

10.   The exploitation of exhaustible resources, such as petroleum, differs from many other economic activities in that it represents a depletion of national wealth. If a society wishes to avoid excessive consumption from this source at the expense of future generations, it would be appropriate to limit current consumption to levels that can be financed indefinitely on the basis of a reasonable rate of return on the investment of the corresponding assets. Thus, one measure of sustainability in the use of oil revenues is whether the non-oil current account deficit is expected to exceed levels that could be financed on a permanent basis from the imputed income on Norway's oil wealth. During 1992–96, the non-oil current account deficit averaged about 7½ percent of GDP. Based on a discount rate of 4 percent in real terms, the net present value of Norway's present and future oil earnings is estimated at about 185 percent of GDP at 1998 prices. Assuming that the rate of return on oil wealth is equal to the discount rate, Norway would be able to finance the present level of the non-oil current account deficit indefinitely. In recent years the non-oil deficit has been considerably more than offset by a current account surplus on oil-related activities.

11.   In 1995 the Norwegian authorities started to produce generational accounts, which measure effects of alternative policies on different generations. Generational accounting indicates that policy measures that have only marginal, if any, effect on the current fiscal balance may have significant effects on inter-generational equity, given that government liabilities not paid by current generations must ultimately be paid by future generations. Based on the most recent calculations by the authorities, the generational accounts are roughly in balance. However, there is considerable uncertainty associated with these calculations, relating in particular to future petroleum prices and production, demographic trends, benefit levels and other features of the pension and health systems, output and productivity gains, and the level of interest rates.

12.   The effect of projected demographic trends and the design of the pension system on pension expenditures merits further elaboration, as this category of expenditures is similar in magnitude to petroleum revenues and is expected to begin rising sharply around the time that petroleum revenues begin to drop. As outlined in Norway's Long-Term Program for 1998–2001, real GDP growth is expected to slow in the coming decades as a result of the projected slowing of labor force after 2010 and the diminishing scale of petroleum activities. There is also expected to be a sharp jump in the number of pensioners after 2010, and overall the number of old-age and disability pensioners may grow by 560,000, or by about 65 percent, between 1995 and 2050. Based on these projections, there would be a sharp deterioration in the dependency ratio, from 2.5 employed persons per pensioner in 1997–2010 to only 1.7 by 2050. The average old-age pension is also expected to rise as an increasing number of recipients become eligible for supplementary pensions. This suggests that expenditures on old-age and disability pensions, which currently absorb just over 7 percent of GDP, may exceed 16 percent by 2050. These demographic changes would also lead to a greater need for health care services.

Box 1. Old-Age Pensions in Norway

The National Insurance Scheme operates on a pay-as-you-go basis and provides a minimum pension, guaranteeing basic security for all citizens who reach the retirement age, and a supplementary earnings-related pension. The government intends to maintain the National Insurance Scheme's major role in the pension system.

In anticipation of the expected deterioration of the dependency ratio after 2010, the government's ultimate objective is to raise the average retirement age—the effective average retirement age of 60 years old is far below the statutory retirement age of 67 years. This objective is also supported by an increased life expectancy, which has already reached 80 years and is expected to increase further, as well as by the fact that the effective working time was on average reduced by a longer period of education.

An early retirement provision—an agreement-based pension (AFP), allowing employees to retire at 64 years of age with the benefits approximately equal to disability benefits—was introduced in 1989 for large groups of employees. In the wage settlement for 1997 social partners agreed upon further reductions of the retirement age under the AFP to 63 years effective from October 1, 1997, and 62 years from March 1, 1998. A special committee, appointed by the government to examine the early retirement issue, and focusing particularly on incentives to work after the regular retirement age, is expected to report in late 1998.

D. Long-term Prospects for the SPF

13.   As noted above, accumulated assets in the SPF are expected to reach 16.6 percent of GDP by the end of this year. In this section, two alternative scenarios are examined for the evolution of the SPF in subsequent years, based on differing growth rates in fiscal expenditure during 1998–2000. These scenarios do not envisage any shocks to the economy, and share a number of common assumptions (Table 3). First, the government's oil revenues are expected to rise from 8 percent of GDP in 1997 to a peak of 11 percent of GDP in 2002, subsequently declining to less than 2 percent of GDP by 2050. These projections are based, inter alia, on the assumption used in Norway's 1998 budget that oil prices would fall from an average of NKr 135 per barrel in 1997 to NKr 125 this year, and further to NKr 100 per barrel (measured in 1998 kroner) by 2010, in part reflecting the recent international agreement to reduce carbon dioxide emissions.[3] Second, pension expenditures are assumed to reach 16 percent of GDP by

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[3]The agreement is intended to avert climate changes caused by increasing carbon dioxide emissions. It is likely that the need to reduce emissions would require a reduction in the world consumption of fossil fuels, which, in turn, would affect producer prices of crude oil. The oil price projections used in Norway's 1998 budget reflected the assumption that stabilizing carbon dioxide emissions at the 1990 level would reduce oil prices by 15–20 percent in real terms by 2010.

2040, for the reasons described above.[4] Third, real GDP growth is assumed to average about 2 percent per annum. Fourth, the ratio of nonpetroleum revenue to GDP is held constant in 1999–2050 at the level set in the 1998 budget. Finally, the real rate of return on SPF investments is set at 4 percent.

Table 3. Future SPF Assets: Underlying Assumptions and Results

(In percent)

	Scenario I	Scenario II
Assumptions for 1999-2050:		
Inflation	2.5	2.5
Real rate of return	4.0	4.0
Expenditure path:		
Annual real growth rate of underlying expenditure	1.0 in 1999-01	2.3 in 1999-01
Results in 2050:		
Non-pension expenditure-GDP ratio	26.4	28.0
SPF assets as a percent of GDP	102.0	-40.0

Sources: Ministry of Finance; and staff estimates.

14.   In the first scenario, fiscal expenditures in 1998 were assumed to be in line with the 1998 budget proposal of Norway's outgoing Labor government in October 1997, and the growth rate of "underlying" expenditures was assumed to be held to 1 percent a year in 1999–2001 and grow in line with output thereafter.[5] Budgetary expenditures, excluding pensions, would decline from 28.5 percent of GDP in 1997 to 26.4 percent in 2001 and remain constant at the level through the remainder of the scenario. On this basis, the fiscal surplus is expected to peak in 2002, and to turn into a deficit in 2015. However, assets in the SPF would continue to increase until 2025, when they would reach a peak of 185 percent of GDP. Thereafter the

[4]The scenarios implicitly assume that the increase in health care spending after 2010, caused by demographic trends, will be offset by an increase in taxes paid by pensioners.

[5]Underlying expenditure is equal to total fiscal expenditure minus spending on petroleum activities, unemployment benefits, interest payments, support to shipyards, and refugees. The excluded categories presently account for about 12 percent of fiscal expenditure.

transfers from the SPF to the budget would exceed its investment income, and SPF assets would decline gradually to just over 100 percent of GDP by 2050.

15.   The second scenario reflects the non-pension expenditures actually incorporated in the final 1998 budget, which implied a real growth rate of 2.3 percent. This growth rate is assumed to prevail again in 1999–2001, after which fiscal expenditure would rise in line with GDP. In this variant SPF assets would peak in 2018 at about 140 percent of GDP and would be exhausted by 2046. Thereafter the government would begin to incur debt to finance its fiscal deficits, which would cumulate to 40 percent of GDP by 2050. These results underscore the importance of continued expenditure restraint, in the period 1999–2001.

E. Return on the SPF Investment Portfolio

16.   In the long run, the rate of return on the SPF investment portfolio will have important implications for Norway's fiscal position. The first long-term scenario described above would be sustainable in the long run, assuming the 4 percent real rate of return on the SPF portfolio, but a 1 percentage point permanent reduction in the rate of return would reduce the SPF from over 100 percent of GDP to less than 20 percent by 2050 (Figure 2).

17.   Notwithstanding the estimated real rate of return of approximately 4.7 percent for the first nine months of 1997 (measured in Norwegian kroner), the rate of return reported by the budget category "Dividends and interest on the SPF" appears to be substantially lower. This was the result of the SPF's receipt of transfers in 1996–1997 on an annual basis—at the end of the period—which created a substantial lag between the time petroleum revenues were received by the government and the time they were transferred to the SPF.[6] Beginning from the second quarter of 1998, the transfers to the SPF will be made on a quarterly basis, which will reduce the lag between the accumulation of petroleum revenues by the government and their transfer to the SPF.

F. Investment Strategy of the SPF

18.   To date, all the assets of the SPF have been invested in low-risk, interest-bearing financial instruments, such as bonds and bills, issued by foreign governments or highly rated international institutions. The currency composition of the SPF investment portfolio was defined by Norway's import weights—about 75 percent of the Fund was invested in Europe, with one-third placed in Swedish and Danish assets.

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[6]Before the funds are transferred to the SPF, they are kept in the deposit account of the government with Norges Bank with an annual interest rate of 3¾ percent, which is reported as interest earnings in the budget.

FIGURE 2
NORWAY

THE STATE PETROLEUM FUND UNDER ALTERNATIVE SCENARIOS
(Percent of GDP)

COMPARISON OF BASELINE SCENARIOS

norrd02a

Old

New

OLD SCENARIO UNDER DIFFERENT RETURN ASSUMPTIONS

norrd02b

4 percent real
rate of return

3 percent real
rate of return
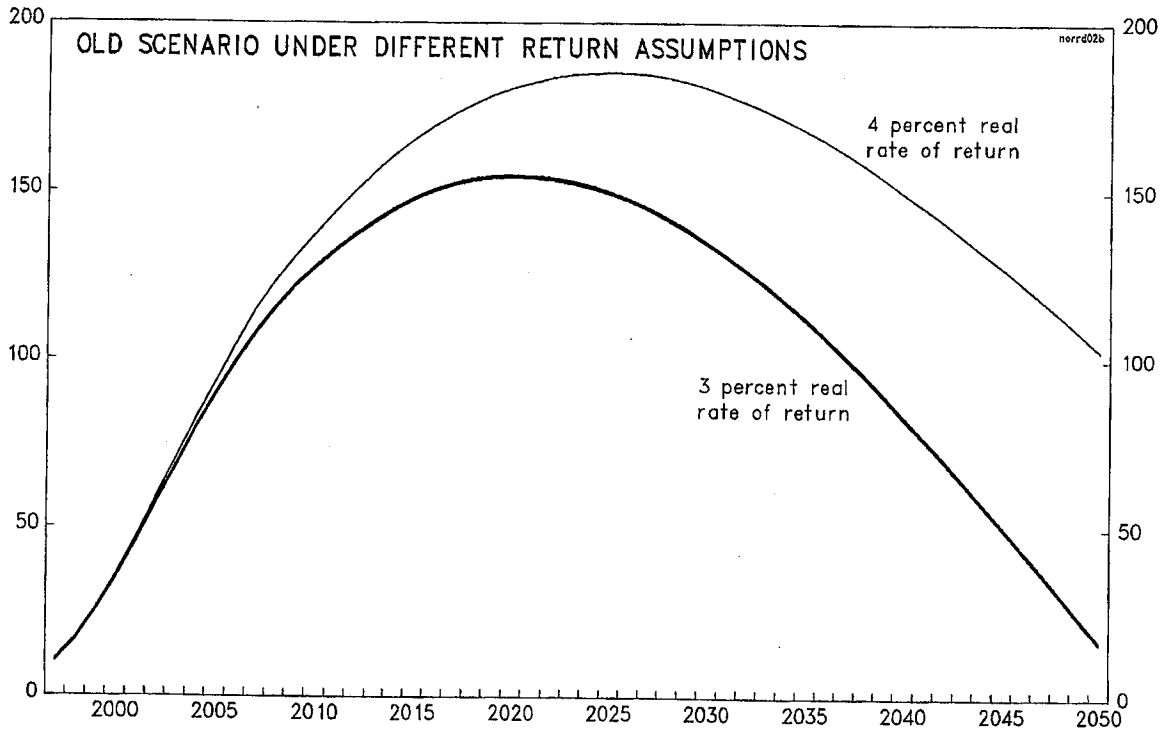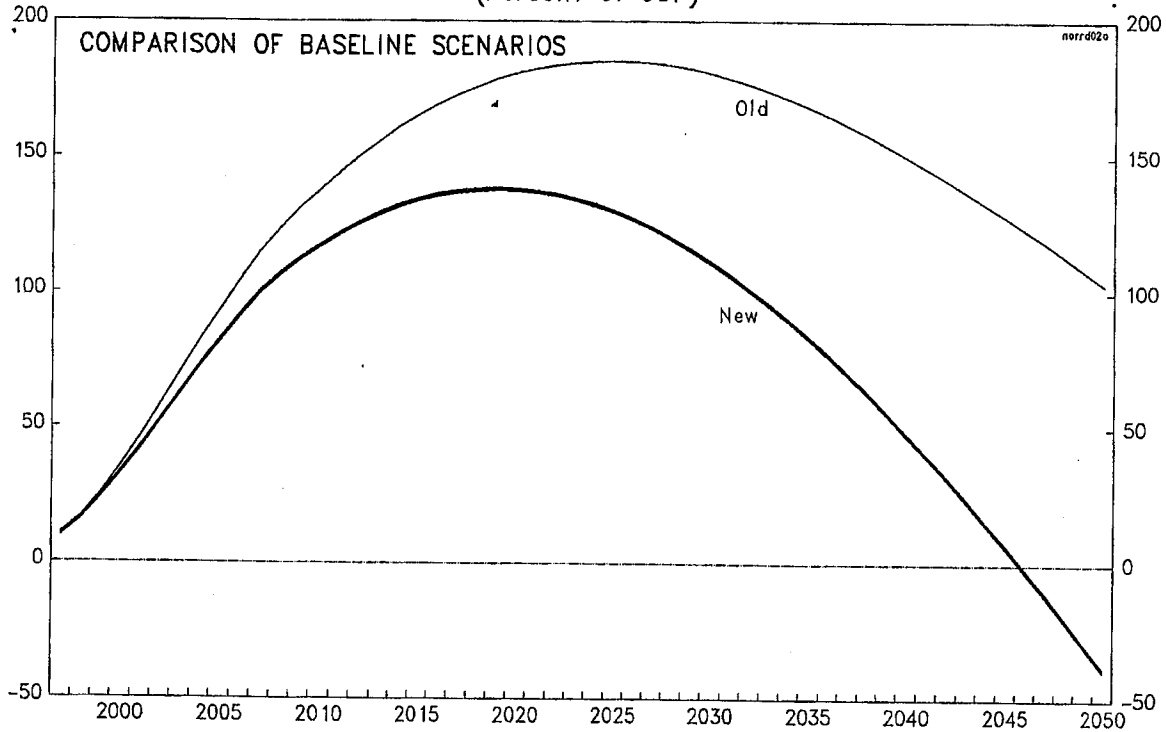
Sources: Ministry of Finance; and staff estimates.

19.   In 1997 the authorities reviewed the guidelines for management, investment strategy and currency distribution of the SPF's investment portfolio. To increase the geographical dispersion and thereby reduce the exposure to a number of relatively small markets, the SPF was instructed to reduce its exposure in Europe from 75 percent to 50 percent. The government also decided to require that some 30–50 percent of the SPF assets be invested in equities. This decision was supported by evidence that the rate of return on a portfolio containing both equities and fixed-income instruments is on average higher than the return on a fixed-income portfolio. The long-term investment horizon—the authorities do not expect to draw on the SPF until well after 2010—reduces risks associated with equity markets being more volatile than bond markets. Given that equities, unlike bonds, have a negative covariance with oil prices, investments in equities would also provide some cushion in case of petroleum price shocks.

20.   Norges Bank has supplemented import weights, which were previously used as a criterion for market distribution, with GDP weights for the bond portion of the portfolio and market capitalization weights for the equity portion. The currency distribution of investments will not differ from market distribution, since exchange rate risk is not considered important in the long run for the markets under consideration. These guidelines would allow Norges Bank to direct SPF investments into the largest and most liquid markets with low transaction costs.

21.   The equity part of the portfolio will be expanding gradually, since Norges Bank intends to avoid risks associated with the timing of an abrupt entry into equity markets. The SPF investment in equities will be limited to portfolio investment, with investments in individual companies not exceeding 1 percent of their share capital. Initially the SPF would be invested only in developed equity markets, including Europe (40–60 percent of the total); the United States and Canada (20–40 percent); and Asia and Oceania (10–30 percent).

22.   As a part of its role as the operational manager of the SPF, the Norges Bank is responsible for defining long- and short-term investment strategies. The former will be specified in a benchmark portfolio. The benchmark is a hypothetical portfolio, which would be used for assessment of actual investment decisions. At the initial stage the composition of the benchmark portfolio would be in line with the composition of recognized financial market indices, which would allow Norges Bank to minimize costs and contain investment risks. The benchmark portfolio would define a target rate of return, which should be comparable to returns on the petroleum part of wealth. Although in the short run, the return on investment could deviate from the benchmark portfolio, in the long run the two should be similar. The short-term investment strategy essentially allows some short-term variation from the benchmark portfolio, and thus is the degree of discretion the fund manager has in making investment decisions.

23.   The administration of the equity portfolio would evolve in three stages, depending on whether the investment strategy is passive or active, and whether the equity investment is managed externally or internally. During the first stage the equity portfolio will be managed externally, using a passive (indexing) strategy, since Norges Bank lacks the necessary in-house expertise to invest in equities. During the second stage Norges Bank would move toward an active investment strategy and external management. In the third stage, after Norges Bank has

gained certain experience in equity investment, this part of the SPF portfolio would be managed internally using active investment strategies.

24.   Norges Bank has already chosen four external managers and appointed a global custodian, which would be in charge of carrying out transactions related to the SPF investments and estimating the return on these investments. It is likely that Norges Bank would decide to move to a second stage in June 1998. The SPF exposure to risk of investing in individual companies would not be significant, given that its share in each company is limited by the guidelines to 1 percent, and it would not effectively exceed 0.3 percent by the end of 1998.

G. Conclusion

25.   The State Petroleum Fund has begun to play an important role in insulating Norway's mainland economy from cost pressures and the erosion of competitiveness related to high oil export revenues, and in preserving petroleum wealth to smooth inter-generational consumption. The ability of the SPF to fulfill these objectives depends primarily on the course of fiscal policy. In 1996–97 restraint in fiscal expenditure resulted in a sharp improvement in the central government surplus, which allowed the authorities to begin accumulating assets in the SPF. The long-term scenarios for possible accumulation of SPF assets underscore the importance of continued restraint in public expenditure, given the many risks and uncertainties associated with the level of oil and natural gas production, price fluctuations, and the level of pension and health expenditure over the long run.

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II. THE WAGE BARGAINING STRUCTURE IN NORWAY–ITS EFFECTS ON REAL WAGES AND ON COMPETITIVENESS[7]

A. Introduction

26.   Over the past ten years, considerable debate has arisen regarding the relationship between labor market institutions and employment performance. This debate was kindled by a seminal paper by Calmfors and Driffil (1988) showing that there was a inverted U-shaped cross-country relationship between the degree of centralization in wage bargaining and the unemployment rate, with the transmission mechanism occurring through real wage developments. Since the publication of this paper a number of researchers have tried to pinpoint weaknesses in the original analysis, in particular by pointing out the difficulty in ranking countries according to the degree of centralization because of the existence of multilevel bargaining. However, various alternative rankings for the degree of centralization have not been able to disprove the empirical connection between the variables (see in particular the work of Freeman (1988), Rowthorn (1992) and Bleaney (1996)). The purpose of this paper is to document the historical development of the wage bargaining framework in Norway, a country with a fairly centralized framework, and analyze the behavior of real wages within this framework. The paper will also compare recent wage developments in Norway with those of its trading partners to assess the implications for Norway's international competitiveness.

B. Theoretical Considerations

27.   One of the main benefits of a centralized bargaining framework is that it internalizes the negative externalities created when separate groups achieve independent wage increases. For example, when wage bargaining takes place at the industry level, there are significant possibilities to shift pay rises onto consumers through an increase in the relative output price. As a result, the increase in the real product wage and the resulting employment loss are moderated. However, consumers of the industry's products are worse off because they must pay higher prices for the products. When wage bargaining takes place at the central level, consumption wages are raised uniformly across all sectors and therefore there is no relative price change. Moreover, wage increases are moderated because unions recognize that higher wages raise product prices which have to be paid by their own members.

28.   Centralized bargaining units can also internalize unemployment and fiscal externalities. The unemployment externality results from workers who become unemployed making it more difficult for every unemployed person to find work. In a decentralized system, bargaining is by individual unions which are less likely to be concerned about the effects on other unemployed people of one of their own members becoming unemployed. In contrast, in a centralized system the unions bargain as a group, forcing them to recognize that their actions affect the probability

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that their own members become unemployed and incorporate this understanding in their wage bargaining strategy. The fiscal externality relates to the fact that high wage bargains which result in unemployment impose a cost to the union members if the unemployment benefit system is partially financed by employee contributions. Centralized bargaining units can internalize this externality whereas bargaining units at the industry level could free ride on the understanding that an increase in unemployment benefits would be financed by increased premiums paid by all workers.[8]

29.   One of the main disadvantages of centralized bargaining is that it cannot incorporate different labor market conditions on a regional and sectoral level and therefore does not reward work according to its market valuation. This problem is mitigated in centralized bargaining frameworks characterized by a multi-level system of wage setting, as in Norway, because central bodies determine aggregate wage changes on the basis of national economic conditions and local unions make further adjustments on the basis of local conditions. For example, in the public sector almost all of the increase in wage rates is decided in the central negotiations whereas in the oil sector, wage drift is an important element in the total wage increase. Given this structure it is not surprising that the local bargain rarely reverses the centralized bargain, which acts essentially as a floor to which the local wage bargain is added. Over the past 30 years, wage drift in Norway has typically averaged about half of the total wage increase in each year and Holden (1989) is unable to reject the hypothesis that there has been no wage drift offset of the centralized wage increase.

30.   Figure 3, panel 1 presents the total wage increase and the proportion attributable to wage drift received by private workers in firms which are associated with the employers' confederation. The peaks in wage growth are synchronous with a shift between main and intermediate negotiations. During the last cyclical upswing in the late 1980s, when local labor market conditions became important, annual increases in the total wage were dominated by wage drift. However, this situation was reversed in 1989 and 1990 when an upper limit was imposed on the centralized wage increase and local negotiations were prohibited. Since then, wage drift has been fairly stable at around 2 percent per year while the centrally-negotiated wage has risen more in line with cyclical developments.

31.   Another disadvantage of centralized bargaining is that it does not consider differences in productivity across major sectors of the economy. For example, productivity improvements are typically lower in the service sector than in the manufacturing sector. Therefore a centralized wage agreement that is based on developments in the manufacturing sector will result in uncompetitive wage increases in the service sector. In order to analyze these issues in more depth we propose to consider the determinants of real wages across the manufacturing and service sectors in Norway.

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[8]One way of addressing this problem is to set premiums in such a way that those industries which press for high wage bargains are forced to pay for the resulting increase in benefits.

FIGURE 3
NORWAY
WAGE DEVELOPMENTS
(Percent change from a year ago)
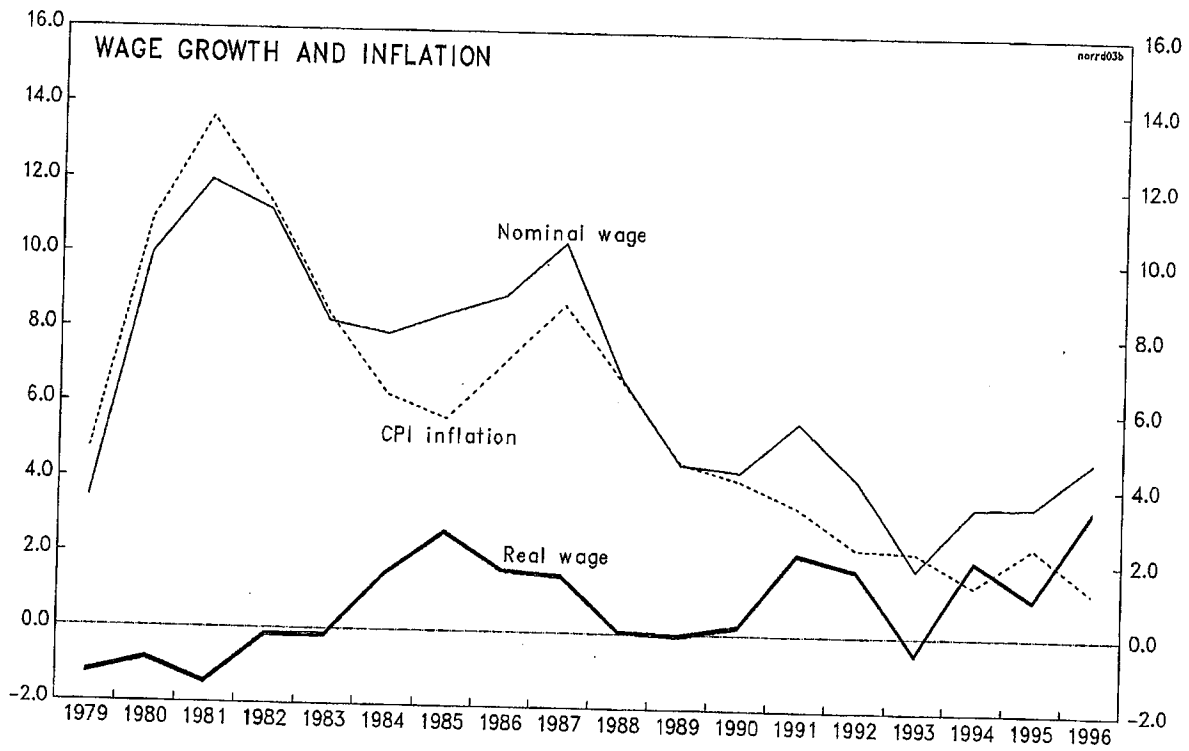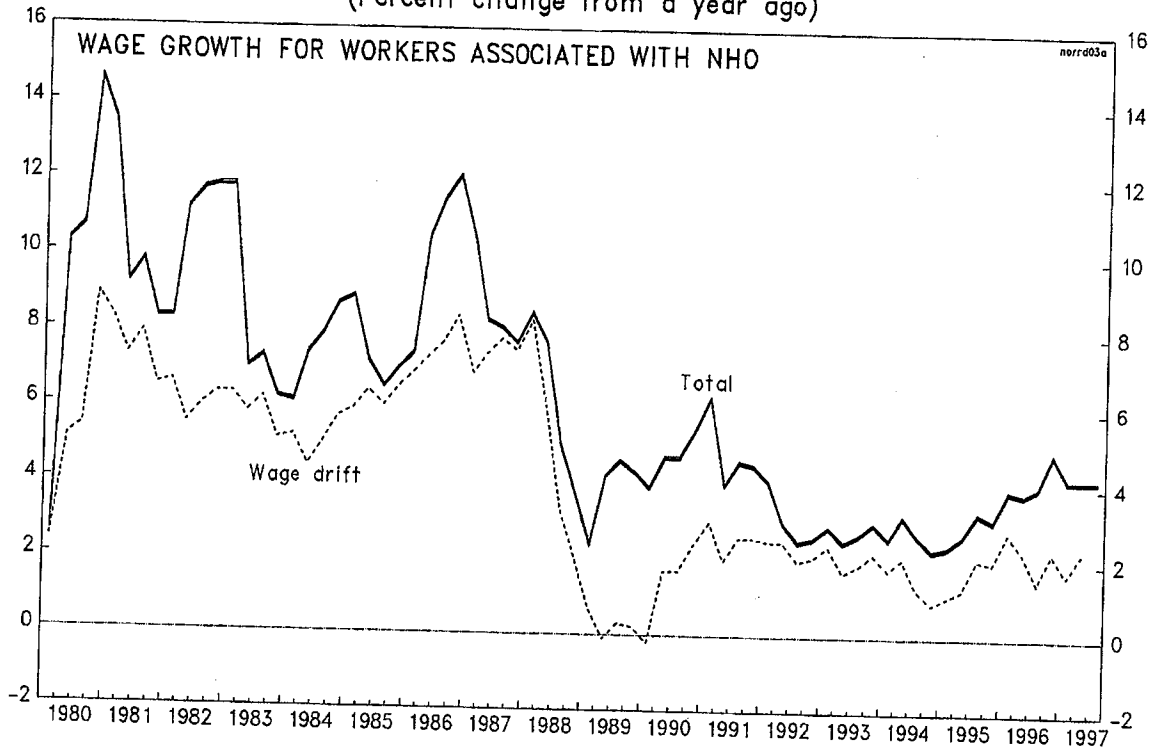
Sources: Employers' Confederation; and Statistics Norway.

C. Historical Perspective

32.   Centralized wage bargaining in Norway goes back to 1935 when the two main labor organizations, LO, the union confederation and NAF, the employers' confederation, agreed on a constitution which confirmed centralized bargaining as the integral mechanism to achieve wage agreements.[9] Members of LO and NAF account for roughly 55 percent of all workers, but their influence in wage agreements account for more than their share of workers because workers in other unions use the LO-NAF agreement as a benchmark. Unions outside LO are mainly professional and are members of either the Federation of Norwegian Professional Associations (AF) or the Confederation of Vocational Unions (YS). Public sector employees in the central and local governments are the other major employee group and their wage agreements are also determined in conjunction with the other union confederations.

33.   Since 1964 the length of contract period has been for two years, with strikes and lock-outs prohibited during the contract period. Intermediate bargaining adjusts for changes in the outlook for inflation but is only conducted at the LO-NAF level. Once the central negotiations have concluded, most firms have local negotiations which are added to the centrally determined wage rate.

34.   Over the past 30 years the degree of involvement of the central government in the wage bargaining process has varied. During the 1960s the central government played a passive role except for the wage council agreements in 1964 and in 1966.[10] In the mid and late 1970s however, the central government played a more active role in wage negotiations to help moderate the rapid wage increases that had taken place earlier in the decade to compensate for rapid inflation (Figure 3, panel 2).[11] To help induce the unions to accept moderate wage agreements, the government offered generous price subsidies and lower taxes. During the 1980s the government once again attempted to use wage councils to achieve acceptable wage agreements in both the public and private sectors and safeguard Norwegian competitiveness. This approach met with limited success, as between 1983 and 1988 the cumulative real wage increase was 7 percent. To reinforce wage discipline, during April 1988–April 1990, the labor unions agreed to an upper limit on nominal wage growth at the central level and the prohibition of local bargains. In return, the government provided a variety of incentives, including a

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[9]LO is politically affiliated with the social democratic party, Labor, and is a major financial contributor to the party. In return, every Labor government contains ministers who come from the leadership of LO.

[10]Any major dispute between the LO and NAF legally has to be referred to wage councils. This has occurred nine times since the second world war.

[11]In early 1997, Statistics Norway made major revisions to its series to comply with the 1993 System of National Accounts. As a result, consistent series are only available as far back as 1978.

reduction in the retirement age and in the interest costs of housing loans. This development led to flat real wages in 1988 and 1989.

35.   During the recession of the early 1990s, there was broad agreement among the unions, the employers and the government on the need for more cooperation in incomes policies. This led to the publication of a policy document in August 1992 that has set the tone for subsequent wage agreements. This policy, which is one element of a tripartite economic policy framework known as the Solidarity Alternative, targets lower wage growth in Norway than among its major trading partners.[12] Since the adoption of this approach nominal wage growth has been moderate but, because inflationary pressures have also been subdued, the recent pattern of real wage changes has not differed much from its profile during the mid–1980s.

36.   Norway, in common with the other Scandinavian countries, employs a large fraction of its workforce in the public sector. Currently, roughly 27 percent of working time is carried out in the public sector (Table 4). Hours worked in the other sectors are spread fairly evenly between manufacturing, retail and wholesale trade and business and personal services at 14–15 percent each, with 9 percent in natural resource industries, and 5–7 percent in communication and construction. The smallest categories are banking, shipping, and hotels and restaurants. In this paper the natural resource industries and public sectors are excluded from the analysis and the focus is on the different evolution of wages and employment in the manufacturing, construction, communication and services industries.

37.   Figure 4, panel 1 shows the evolution of the real consumption wage and productivity in the manufacturing, construction, and communication sectors relative to the economy–wide average over the 1978–96 period. There are strong similarities between the behavior of real consumption wages in manufacturing and in communication whereas the productivity profiles begin to differ in the mid–1980s. In particular, productivity in the communication sector relative to the economy–wide average shot up suddenly in 1987 and has maintained this rapid trajectory ever since, while the relative productivity profile in manufacturing has remained fairly steady over time. Real consumption wages in the construction sector followed a substantially different profile, falling in relation to the average. Moreover, in contrast to the other sectors, the construction sector has experienced no real wage increase since the late 1970s and was therefore eliminated from the analysis.[13] Real wages in the service sector have followed those in manufacturing and communication whereas relative productivity profiles in business and personal services have differed considerably, falling sharply in relation to the average (Figure 4, panel 2).

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[12]The other components of the framework include maintaining the exchange rate of the krone stable against European currencies and using fiscal policy to moderate cyclical imbalances in the economy.

[13]Stølen (1995), using a standard econometric formulation for wage behavior, also finds a very poor explanatory fit for wage developments in the construction sector.

FIGURE 4
NORWAY

WAGE AND PRODUCTIVITY DEVELOPMENTS 1/

WAGE AND PRODUCTIVITY ACROSS GOODS INDUSTRIES   norrd04a

— Wages: Industry
—   Construction
—   Communication
■ ■ Productivity: Industry
– –   Construction
■ ■   Communication

WAGE AND PRODUCTIVITY ACROSS SERVICE INDUSTRIES   norrd04b

— Wages: Trade
—   Business services
—   Personal services
■ ■ Productivity: Trade
– –   Business services
■ ■   Personal services
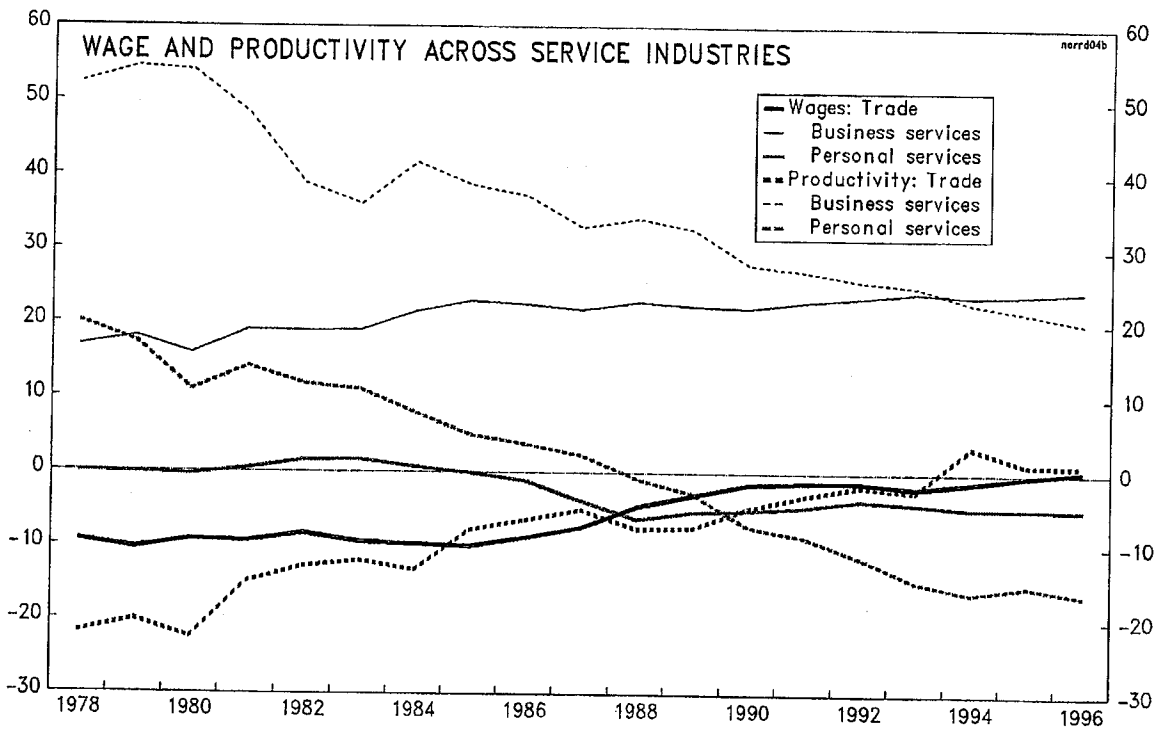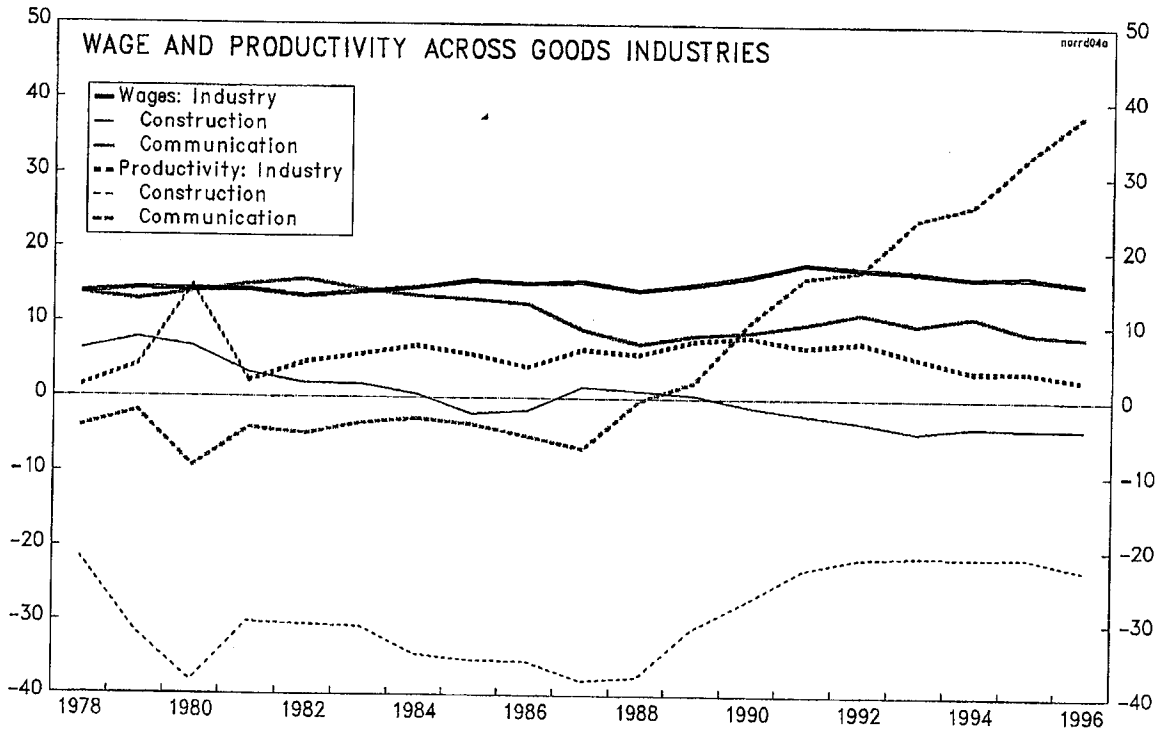
Sources: Statistics Norway; and staff calculations.

1/ Percentage change relative to the economy-wide average.

38.   To gain a more aggregative view of the contrasting real wage and productivity developments in the sectors that are most exposed to international competition (manufacturing and communication) versus the less exposed sectors (hotels and restaurants, banking, shipping, personal and business services), the panels in Figure 5 aggregate both categories using employment weights for the various sectors.[14] The results appear to confirm that real wages in the exposed and less exposed sectors have moved closely together even though the productivity profiles differ considerably. In particular, the real consumption/product wage in the service sector has followed productivity developments in this sector, while since 1988 the real consumption/product wage in manufacturing and communication has risen considerably slower than its corresponding productivity measure.

39.   Real wages in the service sector appear to mimic developments in the sectors that are more exposed to international competition. The exposed sectors have preserved competitiveness through wage restraint which has allowed wages to grow much more slowly than productivity. This has also helped to hold wage growth in the less exposed sectors in line with productivity developments in these sectors, thereby preventing services from being priced out of the market.

40.   Part of the explanation for the strong performance of productivity in the exposed sectors is the labor shedding that has taken place since the peak of the previous cycle in the mid-1980s. Between 1986 and 1993 employment in manufacturing and communication fell by 8½ percent whereas employment in the service sectors remained fairly flat (Figure 5, panel 3). Since 1993 employment has recovered in the exposed sectors but productivity has continued to rise, albeit at a slightly slower pace than over the 1988–1993 period.

D. Real Wage Developments Across Norwegian Sectors

41.   A number of authors have estimated wage relationships for the Norwegian manufacturing sector in recent years (see, in particular, Holden (1989), Johansen (1995), and Evjen and Nymoen (1997)). Two major findings are consistent among the various analyses: (1) payroll taxes have no long–run effect on the gross wage because the tax burden is shifted to the workers, and (2) labor market pressures influence wage outcomes. However, the papers differ in terms of their specification of labor market pressures. Holden argues that these pressures are best captured by the vacancy rate whereas Johansen argues that a non-linear representation of the unemployment rate is necessary to capture wage movements prior to the 1990s. In contrast, Evjen and Nymoen demonstrate that Johansen's non-linear specification fails to hold up during the 1990s because of parameter instability and prefer the log-linear specification.

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[14]The communication sector has only become competitive since the late 1980s and therefore referring to it as an exposed sector over the whole period is debatable. However, the lack of degrees of freedom preclude splitting the sample into two sub-periods.

FIGURE 5
NORWAY

RELATIVE WAGE AND PRODUCTIVITY DEVELOPMENTS

RELATIVE WAGES AND PRODUCTIVITY BETWEEN TRADABLES AND SERVICES
(In percent)

Relative wage

Relative productivity level

norrd05a

PRODUCTIVITY LEVELS RELATIVE TO WAGES IN TRADABLES AND SERVICES
(In percent)

Consumption wage: services

Product wage: services

Consumption wage: tradables

Product wage: tradables

norrd05b

TOTAL HOURS WORKED IN TRADABLES AND SERVICES
(Indices: 1990=100)

Tradables

Services

norrd05c
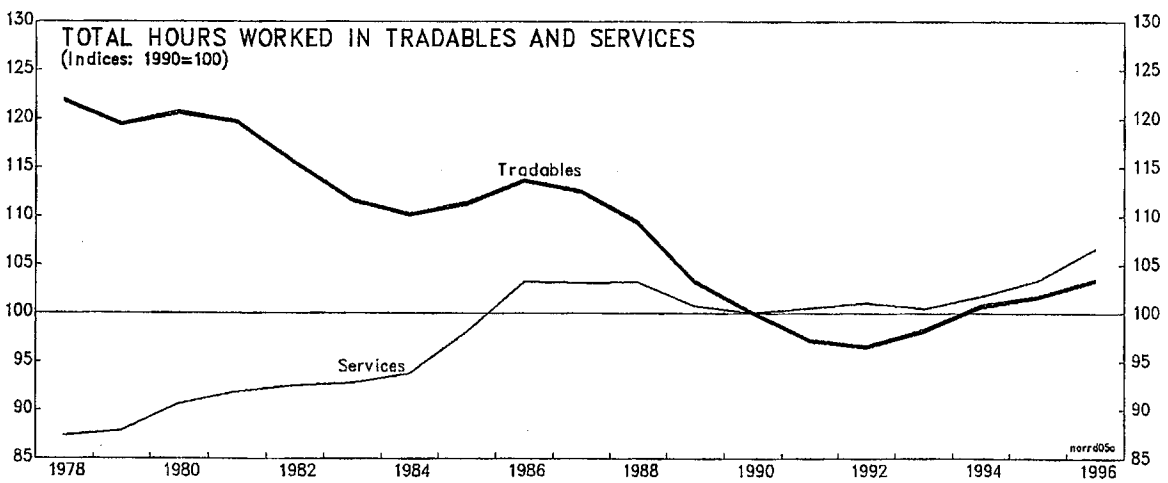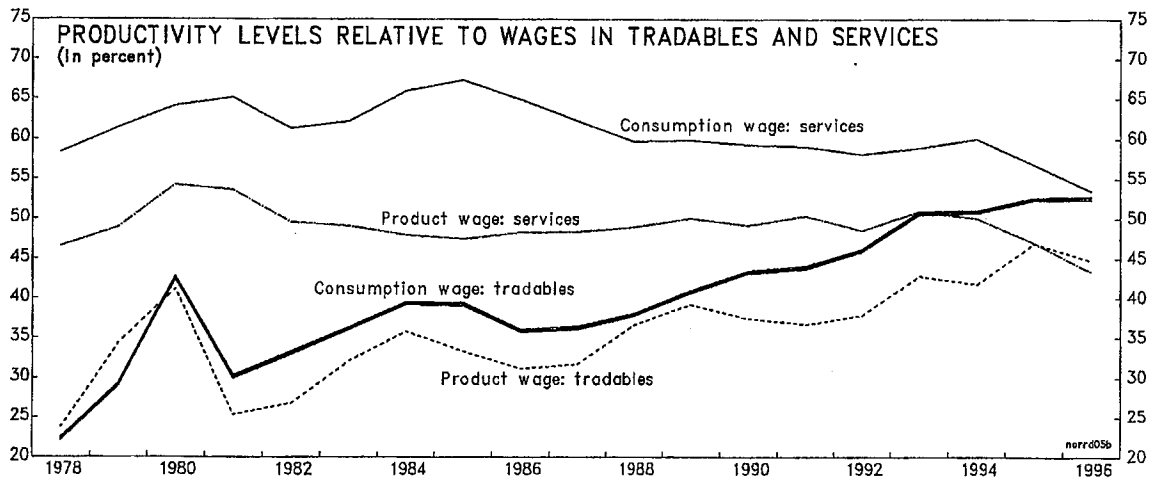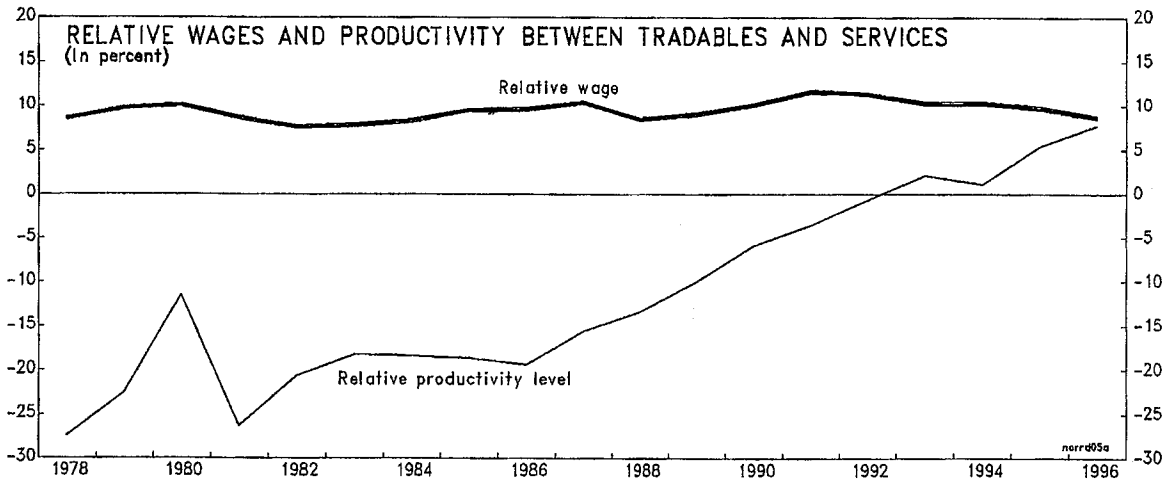
Sources: Statistics Norway; and staff calculations.

42.   One of the main purposes of this paper is to uncover further evidence on the
determinants of real wages in the exposed and sheltered sectors and test the hypothesis that real
wages in the sheltered sectors are more heavily dependent on developments in the exposed
sectors than in their own sector. Drawing on the empirical work summarized above, the wage-
setting schedule is defined as follows:

$$w_i = \eta(pty_i, u, \tau_i)$$

where w is the real gross wage, defined as total compensation divided by total hours worked
and deflated by the CPI index, pty is real GDP divided by total hours worked, u is the
unemployment rate, and τ is the payroll tax rate. The industry specific variables are indexed by
I. To take into account Evjen and Nymoen's concern about parameter instability arising from
complicated specifications we use log differences for all variables with the exception of the
payroll tax variable which is expressed as a rate. We also include a dummy variable which takes
on the value of unity for the post–1988 period, to assess whether the close relationship between
the labor organizations and the government has resulted in lower real wages over this period.

43.   Recent revisions to the national accounts in Norway limit the analysis to annual data
over the 1978–1996 period. In order to conserve degrees of freedom, estimates were obtained
by pooling the data across sectors, with a distinction made between exposed sectors and less
exposed sectors. Weighted Symmetric t test statistics indicate that the wage, productivity and
unemployment variables have trended upwards over time although in some cases the first
differences of the variables appear to be stationary (Table 5).[15] The relationships were analyzed
in first differences to maintain consistency with previous research in this area.

44.   Tests were also conducted to discover whether the real wages in the exposed sectors
were cointegrated with an employment-weighted estimate of productivity in manufacturing and
communication and with unemployment. Table 6 indicates that a cointegrating vector was
obtained between the real wage, the productivity estimate and the unemployment rate.
However, upon further inspection it was found that adding the unemployment rate did not
improve on the accuracy of the estimate (ie. the Chi-squared test statistic was insignificant). In
the less exposed sectors it was postulated that the real wage was related to the real wage in the
exposed sector and to productivity developments in the less exposed sectors. However, no
cointegrating relationship could be found between these variables.

45.   A dynamic error-correction equation was set up for real wage changes in the exposed
sectors with explanatory variables composed of lags in the dependent variable,
contemporaneous and lagged changes in the payroll tax rate, lagged changes in productivity and
in the unemployment rate and the error correction term. Two lags were chosen to conserve
degrees of freedom. Table 4 presents the estimates and indicates that the most significant

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[15]The inconclusive stationarity tests partly reflect the limited degrees of freedom.

explanatory variables are lagged changes in productivity. However, the coefficient estimates are considerably below unity suggesting that real wage changes in the exposed sectors have only partially compensated for productivity improvements. The other significant variables include the contemporaneous change in the payroll tax rate, lagged changes in the dependent variable and in the unemployment rate, and the post–1988 dummy. Simulating the effects of a permanent 1 percent increase in the payroll tax rate indicates that the real gross wage increases by 1 percent within two years and gradually stabilizes at an increase of 0.9 percent. Therefore, over time there is a only a slight reduction in the net wage so that most of the burden of the increase in the payroll taxes is borne by the employers.

46.   The discovery that the change in the unemployment rate is an important determinant of wage behavior coincides with the work of Johansen (1995). Moreover, he also finds that the unemployment rate plays a role in determining long–run real wage developments, whereas this analysis could not detect an independent role for the unemployment rate in the cointegrating equation. Differences in results could relate to the equation specification because Johansen explains movements in nominal wages while this paper focuses on real wage movements.

47.   Bowitz and Cappelen (1997) document that the wage freeze in the late 1980s had long-lasting effects on real wages. Moreover, while Evjen and Nymoen (1997) argue that there has not been any noticeable change in wage behavior since the implementation of the Solidarity Alternative in 1993, they concede that important changes may have taken place in the labor market since the imposition of the wage freeze in 1988. When a dummy variable for the post–1988 period is included in this analysis, it is found to be significant, indicating that real wages have been 1 percentage point lower in the post–1988 period, holding all other explanatory factors constant.

48.   Traditionally, Nordic unions have set wages in relation to wage developments among trading partner countries in order to remain competitive and maintain employment in the competitive sector.[16] To test this hypothesis for Norway, two lags of real exchange rate changes used to proxy for competitiveness were added to the original specification. The second column of Table 7 indicates that the variables were insignificant and had little effect on the other parameter estimates. It appears therefore that the real wage does not adjust to dampen the economy-wide effects of sudden changes in the real exchange rate. However, this does not necessarily imply that the Solidarity Alternative has been unsuccessful in its attempt to moderate real wage behavior, because the variability of the real exchange rate based on relative wages has been considerably more muted over the 1993–96 period than over the 1978–1993 period (see Figure 6, panel 1).

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[16]This was the so-called EFO model in Sweden in which wage increases in the sector open to foreign trade was determined by the sum of international price inflation and the rate of growth of productivity. A similar objective is embodied in the incomes policy of Norway's Solidarity Alternative.

FIGURE 6
NORWAY
COMPETITIVENESS MEASURES AND EXPORT PERFORMANCE

REAL EFFECTIVE EXCHANGE RATES
(Indices: 1980=100)

norrd06a

— Relative wages
— Relative normalized ULCs
-- Relative Consumer prices
■■ Relative GDP deflators

EXPORT PERFORMANCE OF MANUFACTURES
(Index: 1990=100)

norrd06b
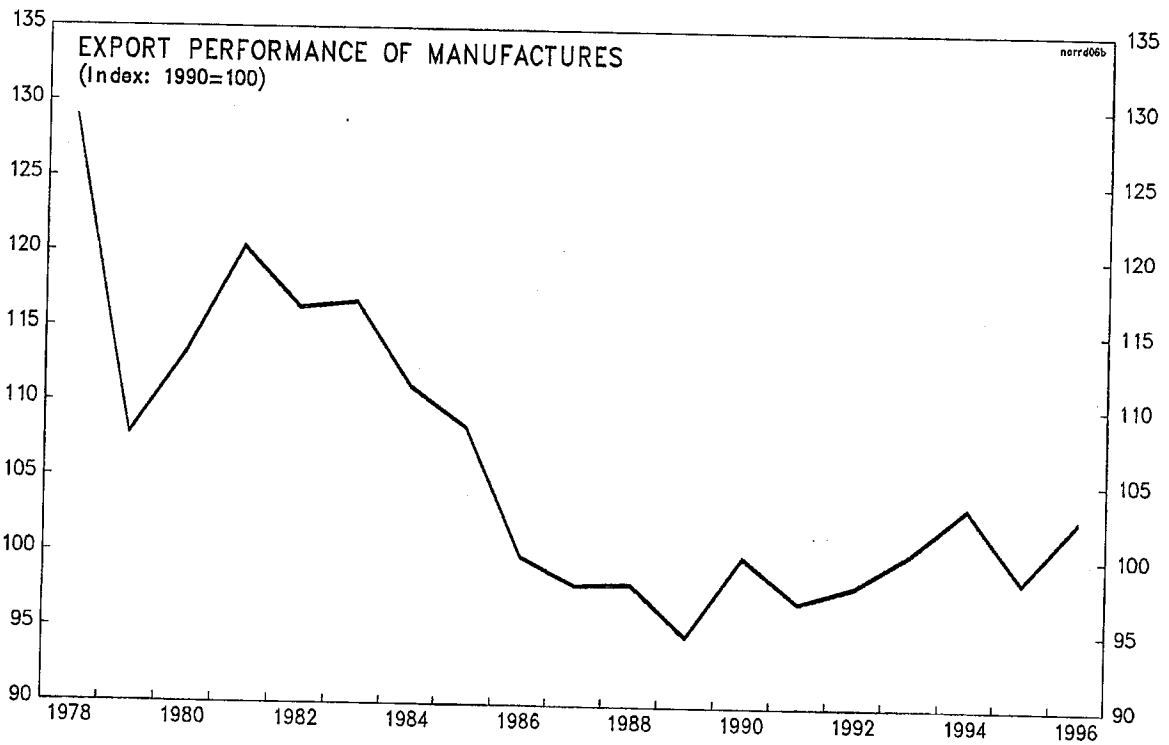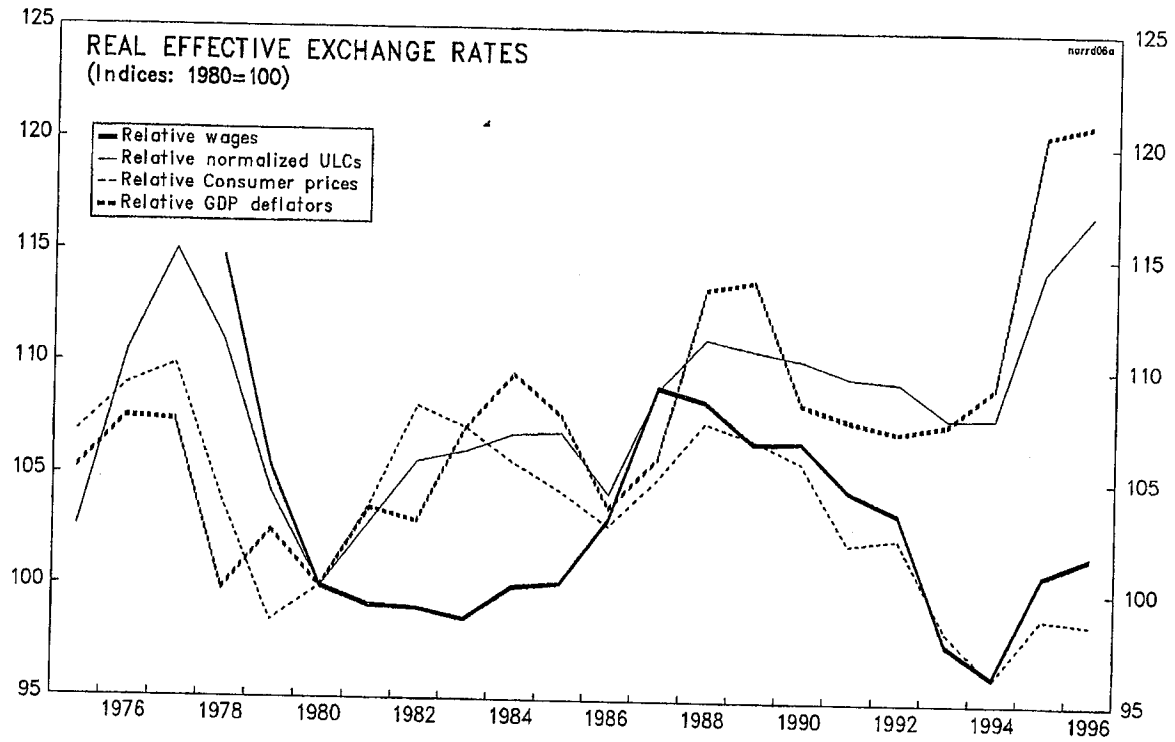
Sources: Statistics Norway; IMF, Financial Statistics; and World Economic Outlook.

49.   In the equation specifications with and without the real exchange rate, the error correction term is insignificant. It appears therefore that during this limited estimation period, real wages in Norway have not adjusted to any long-run disparity between the real wage and productivity, a development which has helped to maintain Norwegian competitiveness.[17]

50.   A comparable relationship to that proposed for the exposed sectors was estimated for the less exposed sectors, with the addition of the real wage in the exposed sectors as a further explanatory variable for wage changes in the less exposed sectors. In this case the productivity variables were negative and the real wage in the exposed sectors was highly significant. In fact, the hypothesis that the coefficient was unity could not be rejected suggesting that wages in the less exposed sectors move in tandem with those in the exposed sectors. Changes in payroll tax rates were also significant with a short- and long-term impact of a 1 percent increase in the payroll tax rate on the real wage of about 1 percent. The other significant variable was the second lag of the change in the unemployment rate but both coefficient estimates were considerably smaller than the corresponding estimates in the equation for wage changes in the exposed sectors. This conforms with the general observation that service industries are less sensitive than goods industries to cyclical conditions.

51.   The general findings documented above are consistent with the stylized facts of wage determination in the Scandinavian economies. Wages in the exposed sectors are dependent on economic conditions within those sectors, whereas wages in the less exposed sectors are determined by the wage increases granted in the exposed sectors and are largely unrelated to economic conditions within their own sectors. Normally, this situation would have adverse consequences for employment in the service sectors because the services would be uncompetitively priced. However, in Norway, real wage restraint in the exposed sectors has enabled the real wage in the less exposed sectors to grow at the rate of productivity, thereby sustaining the demand for domestically produced services caused by rising incomes.

E.   Real Wages and Competitiveness in an International Context.

52.   Recent wage developments have been relatively favorable for Norway. However, a more complete picture of Norway's current competitive position must also take into account price and wage developments among its trading partners. This issue is addressed by considering various measures of the real exchange rate and analyzing the extent to which these appear to explain changes in Norway's market share.

53.   A number of papers have discussed the theoretical validity of using various measures of the real exchange rate to determine the competitive positions of nations with no measure clearly superior to the others (see, for example, Artus and Knight (1984), McGuirk (1986), and Marsh and Tokarick (1994)). Consumer price measures have the advantages that they are calculated

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[17]It is possible that over a longer time horizon the importance of the cointegrating relationship would be more evident.

based on a basket of goods that is fairly comparable across countries and that they reflect factor costs. However, they may be a poor proxy for the price of traded goods because they include the prices of services, many of which are non-traded. Measures based on unit labor costs also reveal important information about underlying costs of production but do not reflect the effect on activity of changes in intermediate input prices. In addition, unit labor costs are highly sensitive to cyclical movements in labor productivity over the course of the business cycle.

54. Figure 6, panel 1 presents various measures of the real exchange rate and indicates that an assessment of Norway's competitive position is sensitive to the choice of measure. In particular, between 1988 and 1993 there was an improvement in Norwegian competitiveness measured by the real exchange rate based on relative unit labor costs but since 1993 this situation has changed owing to less rapid growth in unit labor costs in Norway's partner countries (which could be associated with the different cyclical positions of the various countries). As a result of these developments the real exchange rate in 1996 at its most appreciated level for the past 20 years. Measuring competitiveness using relative GDP deflators further accentuates the recent appreciation of the real exchange rate. In contrast, the real exchange rate measured in terms of consumer price indexes has depreciated by 9 percent since 1988, and, in recent years, measures using relative wages show similar results.

55. To assess the relevance of real exchange rate indicators, simple trade equations were used. These equations treated Norway's manufacturing exports as a function of relative prices and of a trade-weighted index of the level of activity in foreign markets, defined as:

$$XVMKT_t = \sum_{k=1}^{n} m_k MV_{kt}$$

where M_k is the historical average of the Norwegian share of country k's non-oil imports and MV_k is the volume of non-oil imports for country k in period t.

56. The performance of Norway's manufacturing exports relative to its export market shown in Figure 4, panel 2 indicates that Norway lost considerable market share during the late 1970s and early 1980s but has been able to maintain a fairly stable market share subsequently.[18]

57. A preliminary analysis of the determinants of traditional exports (Norway's export market and the real exchange rate) indicated that the export market variable entered into the analysis with a coefficient insignificantly different from unity in most specifications. Therefore, in order to conserve degrees of freedom this restriction was imposed. The estimates in Table 8 reveal that the real exchange rate based on relative wages provides the most explanatory power with the contemporaneous value significant at the 90 percent level of confidence (equation

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[18]The variable is defined as the ratio of the indexes of Norwegian manufactures exports and the export market.

(4)).[19] In the other equations, none of the parameter estimates of the real exchange rate variables were significant individually and an F test on the combination of lags also indicated insignificance.[20]

58.   One of the main objectives of economic policy in Norway is to preserve the competitiveness of the mainland economy in preparation for the post-oil era. Therefore, an understanding of the current competitive position is important in assessing the appropriateness of current fiscal and monetary policy in Norway. According to the analysis presented above, it appears that movements in the volume of traditional exports in Norway are best explained by movements in the real exchange rate based on relative wages. Since the late 1980s this exchange rate has depreciated by 5 percent and is now 1 percentage point below the average over the 1978–1996 period. Therefore, according to this benchmark, Norway's traditional exports are in a relatively favorable competitive position.

F. Conclusion

59.   This paper has demonstrated that Norway's centralized wage bargaining system has been successful in moderating wage pressures over the past ten years. This behavior has helped to stimulate employment in the manufacturing sector and to maintain employment in the service sector. Moreover, even though Norway is at a more challenging point in the cycle in terms of inflationary pressures from the labor market, its competitive position is strong. This is evident from the current level of the real effective exchange rate based on relative wages which is below its historical average over the past 20 years.

60.   There is considerable uncertainty about the future profile of the exchange rate in Norway which depends in part on the assessment of the sustainability of the non-oil current account position. According to the most recent estimate of the net present value of petroleum wealth, Norway should be able to finance the current non-oil current account deficit over the medium-term while maintaining the real value of its net foreign assets intact. However, the exchange rate could nonetheless come under pressure resulting from external shocks, macroeconomic policies in Norway, or short-term exchange market dynamics. These issues are discussed in a companion background paper.

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[19]The estimated equations differ depending on which real exchange rate is used.

[20]Tests were also conducted on the presence of cointegrating relationships and indicated that these relationships were present when the CPI and relative wage exchange rates were used. However, because of the limited degrees of freedom, neither estimate was significant when represented as an error correction term in each separate regression.

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Table 4. Norway: Employment Shares Across Industries

(In percent of total hours worked)

Industry	1994	1995	1996
Primary	9.5	9.4	9.1
Manufacturing	15.4	15.5	15.5
Construction	5.4	5.6	5.6
Trade	13.6	13.8	14.1
Hotels and Restaurants	2.5	2.5	2.5
Communication	6.9	6.7	6.7
Shipping	3.1	3.1	3.0
Banking	2.6	2.6	2.5
Business Services	5.8	5.9	6.1
Personal Services	8.1	8.1	8.1
Government	27.1	26.8	26.8

Table 5. Norway: Unit Root Tests 1/

Variable	Phillips-Perron Z (τ) Test	Weighted-Symetric τ Test
Tradeables wage	-5.8	-1.4
ΔTradeables wage	-10.2	-2.7
Services wage	-6.6	-0.9
Δ Services wage	-6.2	-1.9
Tradeables productivity	-12.7	-3.0 *
ΔTradeables productivity	-14.5	-1.7
Services productivity	-3.4	-2.0
ΔServices productivity	-10.7	-3.1 *
Tradeables payroll tax rate	-4.9	-1.3
ΔTradeables payroll tax rate	-22.0 *	-2.9*
Services payroll tax rate	-5.6	0.6
ΔServices payroll tax rate	-17.4	-3.3 *
Unemployment rate	-3.0	0.6
ΔUnemployment rate	-3.6	-2.2

1/An asterisk denotes a variable or test statistic that is significant at the 10 percent level

Table 6. Norway: Johansen Maximum Likelihood Tests of the System of Equations

(Cointegration likelihood ratio test based on trace of the stochastic matrix)

Null	Alternative	Test Statistic	95 Percent Critical Value
Wage Setting Equation for Tradeables			
$r=0$	$r \geq 1$	33.0	31.5
$r \leq 1$	$r \geq 2$	14.5	18.0
$r \leq 2$	$r \geq 3$	3.5	8.2
Wage Setting Equation for Services			
$r=0$	$r \geq 1$	24.3	31.5
$r \leq 1$	$r \geq 2$	11.9	18.0
$r \leq 2$	$r \geq 3$	3.7	8.2

Table 7. Norway: Estimated Equations for Real Wage Growth 1/

	Dependent Variable Trade goods wage growth			Services wage growth
Δptax	0.52 *	0.65*	0.47*	0.11 *
Δptax (-1)	0.29	0.10	0.29	0.17 *
Δptax(-2)	0.35	0.24	0.38	0.04
Δpty(-1)	0.26*	0.24*	0.28*	-0.02 *
Δpty (-2)	0.06	0.04	0.07*	-0.005 *
Δw (-1)	-0.46*	-0.44 *	-0.49*	0.16 *
Δw (-2)	-0.11	-0.06	-0.11	0.03
Δu(-1)	-0.03 *	-0.09	-0.03*	0.009
Δu(-2)	0.02	0.03 *	0.01*	-0.01 *
w-pty (-1)	-0.005	-0.009		
dummy	-0.01*	-0.02*	-0.01 *	
Δreer (-1)		0.10		
Δreer (-2)		-0.26		
Δw tg				0.93 *

1/ An asterisk denotes a variable or test statistic that is significant at the 10 percent level

Table 8. Norway: Estimated Equations for Traditional Export Growth

	(1)	(2)	(3)	(4)
CPI exchange rate	-0.36			
CPI exchange rate (-1)	0.17			
CPI exchange rate (-2)	-0.07			
ULC exchange rate		-0.003		
ULC exchange rate (-1)		-0.19		
ULC exchange rate (-2)		-0.34		
GDP deflator exchange rate			0.03	
GDP deflator exchange rate (-1)			0.02	
GDP deflator exchange rate (-2)			0.26	
Relative wage exchange rate				-0.70 *
Relative wage exchange rate (-1)				0.06
Relative wage exchange rate (-2)				-0.41
R^2	0.04	0.07	0.04	0.28
DW stat	2.43	2.43	2.93	2.65

1/ An asterisk denotes a variable or text statement that is significant at the 10 percent level.

III. DETERMINANTS OF THE REAL EXCHANGE RATE IN NORWAY: DOES POLICY MATTER?[21]

A. Introduction

61.   During most of its recent history, Norway has attempted to maintain a stable nominal exchange rate. This has in part reflected the desire for real stability: to moderate the response of the real exchange rate to developments in the oil sector in order to reduce "Dutch disease" effects. More recently an exchange rate targeting framework has been adopted within which monetary policy has been assigned the task of ensuring exchange rate stability. Exchange rate targeting, as a framework for monetary policy, is preferred by the authorities to monetary targeting, (which they consider to be infeasible because of the apparent lack of a stable demand for money function), and to inflation targeting (which is thought to run the risks of excessive fluctuations in the exchange rate and weakening the credibility of the incomes policy framework).[22]

62.   The appropriateness of the present monetary and exchange rate policy framework, and the validity of the arguments in favor of it, depend significantly on what determines the real exchange rate. It has, for example, been argued that if higher oil wealth and the accumulation of foreign assets put upward pressures on the real exchange rate, a policy that attempts to control the real rate by keeping the nominal rate stable will be ineffective in the long run because it causes higher inflation. A necessary condition for the framework to work, therefore, is that policy has a well-defined, significant, and dependable role in the determination of the real exchange rate. This is a more basic issue than assessing the system's other possible shortcomings—such as that, by tying monetary policy to that of European countries, it has a tendency to make policy procyclical, since stronger activity relative to Europe tends to appreciate the exchange rate and thus result in lower interest rates.

63.   This chapter focuses on the short- and long-term determinants of the real exchange rate and its principal components, the nominal rate and relative prices, with a view to assessing the relative importance of policy-related variables vis-à-vis cyclical factors and long–term wealth variables. Section B describes the theoretical framework. Section C discusses estimation issues and presents the results. Section D concludes.

B. The Framework

64.   The simple purchasing-power hypothesis suggests that the real exchange rate should be constant over time. Clearly, there is little support for this hypothesis in its simple form. Indeed, a

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[21] Prepared by Hossein Samiei.

[22] See the articles in *Choosing A Monetary Policy Target* (ed. Ann Berit Christiansen and Jan Fredrik Qvigstad), 1997, Scandinavian University Press, for a discussion of issues involved.

number of factors are likely to cause systematic fluctuations in the real exchange rate. We examine the role of policy variables, cyclical factors, and other factors such as oil wealth and accumulation of assets.

Determinants of the real exchange rate

Policy variables

65.   Interest rates could potentially influence the real exchange rate by affecting both components of the real exchange rate. The effect on the nominal exchange rate operates both directly and through expectations. Higher interest rates relative to trading partners attract capital flows that strengthen the value of the domestic currency. Such an interest rate differential also indicates an expectation of future weakening in the currency, through the interest rate parity condition. For given expectations of the future evolution of the nominal exchange rate, therefore, higher interest rates will mean a higher current exchange rate. There could also be reverse causation depending on how monetary policy is conducted: an actual or expected appreciation in the nominal exchange rate could cause a policy response in the form of lower interest rates. This suggests that the two variables are likely to have a two-way relationship. The effect of the interest rate on the relative price component of the real exchange rate is also likely to generate an inverse relationship between the two because higher interest rates would tend to lower price inflation through their effect on domestic demand. The predicted sign of the interest rate in the real exchange rate equation is, therefore, ambiguous.

66.   The relationship between fiscal policy and the exchange rate is not any less clear-cut. One possible relationship is through the interest rate: higher deficits by putting pressure on resources lead to higher interest rates and, therefore, a higher exchange rate. Higher expenditure could also, for a given stock of money, force the price of the currency up or lead to higher domestic prices, again leading to a higher real exchange rate. The effect, however, also depends on the composition of expenditure: higher expenditure out of imported goods or tradables could have the opposite effect on the exchange rate. In any event, data on the two types of fiscal expenditure are not readily available.

67.   Fiscal policy in Norway, as in other major oil-exporting countries, has also had a role to play in influencing the expenditure of oil revenues. Higher oil prices or discovery of new oil reserves could put pressure on resources in the nontradable sector and cause an appreciation of the real exchange rate, a phenomenon referred to as the "Dutch disease". It has been suggested that the domestic economy and the real exchange rate could be immune from these effects, if at any point in time only permanent revenue from oil was spent and the rest was invested abroad. Following this policy would prevent the real exchange from being significantly influenced by movements in oil wealth or the accumulation of foreign assets (discussed below).

Cyclical factors

68.   The real exchange rate is likely to respond to cyclical factors. The relative strength of the krone over the past year, like that of the U.S. dollar and pound sterling, could in part be explained by the stronger cyclical position of these countries relative to continental Europe. Higher activity puts pressure on domestic prices, or for a given stock of money, on the nominal exchange rate and the interest rate, pushing up the real exchange rate as a result. While stronger activity relative to partner countries might lead to a higher real exchange rate, an exchange rate appreciation could also lower activity through its effect on net external demand. Therefore, economic activity and the real exchange rate are likely to have a two-way relationship.

Other factors

69.   Over longer periods improvements in the foreign asset position could put upward pressure on the exchange rate: a permanently higher level of net foreign assets (and, therefore, higher flow of income from abroad) requires an appreciation in the real exchange rate (and a worsening trade balance) in the steady state in order to preserve external equilibrium. To the extent that the foreign exchange market is efficient and market participants are rational, it will be the unexpected component of movements in foreign assets that will influence the exchange rate. The net foreign asset position is in turn likely to be affected by the exchange rate, which appears in the definition of the net foreign asset position through the trade balance, causing simultaneity in the system.[23]

70.   In the case of Norway, oil discovery and oil price movements, or oil wealth, may also affect the real exchange rate and the non-oil economy through the "Dutch disease" effect. Higher oil wealth is likely to put upward pressure on the real exchange rate.

71.   Productivity is likely to be another important determinant of the real exchange. Higher productivity growth in the traded sector relative to that in the non-traded sector could, along the Balassa-Samuelson lines, lead to higher real exchange rate defined as the ratio of the price non-tradables to that of tradables. Higher economy–wide productivity growth relative to trading partners, however, could have the opposite effect if productivity growth is concentrated in the non-tradable sector.

72.   Finally, movements in the terms of trade could also affect the exchange rate by creating excess demand or supply in the non-traded sector. In the case of Norway, movements in the terms of trade largely reflect those in the relative price of oil and are, therefore, incorporated in

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[23] See, among others, H. Faruqee, "Long-Run Determinants of the Real Exchange Rate: A Stock-Flow Perspective," *IMF Staff Papers*, Vol 42 (March 1995); T. Feyzioglu, "Estimating The Equilibrium Exchange Rate: An Application to Finland,", IMF Working Paper, WP/97/109, for a discussion of the determinants of the real exchange rate.

the oil wealth variable discussed above. A separate terms of trade variable is not included in the following analysis.[24]

The model

73.   The real exchange, re_t, is defined as the product of the nominal exchange rate, e_t, and the Norwegian price level relative to that in its trading partners, p_t (The nominal exchange rate is the price of domestic currency so that a rise in the exchange rate means an appreciation). We estimate a model of the real exchange as a function of the interest rate differential with respect to trading partners, i_t, GDP relative to trading partners, y_t, net foreign asset position as ratio to GDP, f_t, government consumption as ratio to GDP, x_t, estimated oil wealth as ratio to GDP, w_t, and productivity relative to trading partners, pr_t:

$$re_t = f(i_t, y_t, f_t, x_t, w_t, pr_t),\qquad(1)$$

Since the components of the real exchange rate may respond differently, especially in the short run, to movements in the right–hand side variables, and we also estimate separately equations for the two components of the real exchange rate, i.e. the nominal exchange rate and relative prices, in order to obtain a better idea of the relationships involved.

Data definitions and sources

74.   To examine the determinants of the exchange rate in Norway, in particular the role that oil wealth may have played, it is important that the data cover a sufficiently long period that includes the early 1970s, when oil production began. Moreover, quarterly data, although less readily available than annual data, have the advantage of allowing a more thorough examination of the role of policy variables and cyclical factors. It was necessary, to rely on a number of different sources to obtain complete and consistent quarterly series for the variables for Norway and its trading partners for the period 1970–1995. These include the OECD Analytical Database, IMF International Financial Statistics, the World Economic Outlook Database, and data provided by the authorities. The trading partners selected for the exercise are the 14 countries with the share of trade larger than 1 percent of the total in the IMF World Economic Outlook Database.[25]

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[24]This procedure was also justified by the empirical results: the terms of trade, when included in the regressions, did not have a significant effect on the exchange rate.

[25]These are in order of importance: Germany (19.8 percent), Sweden (18.0 percent), United Kingdom (12.9 percent), United States (9.4 percent), Denmark (6.5 percent), France (6.3

75.   The nominal exchange rate used in the estimation is the effective rate and the real exchange rate is the CPI based real effective rate, both as measured in the IMF World Economic Outlook Database. Quarterly GDP levels in Norway and in its trading partners are obtained from the OECD, aggregated for the latter using the above weights (essentially the same weights as in calculating the effective exchange rate). The interest rate differential is calculated as short-term interest rate minus that in trading partners. The fiscal variable is government consumption in nominal terms relative to nominal GDP. The productivity variable is constructed as the ratio of the productivity index to that in trading partners. Annual series on oil wealth and net foreign asset position as ratios to GDP were obtained from the authorities. Quarterly numbers are obtained for the latter two series using cubic spline. This means that the estimated short-run coefficients associated with these two variables may not necessarily be meaningful. Estimates of oil wealth start in 1973, and the variable is set equal to zero in the period prior to that. Other variables are from the OECD Analytical Database. Some interest rate figures for the 1970–75 period are obtained from IMF International Financial Statistics.

C. Estimation Methodology and Results

76.   In the presence of series that are likely to contain unit roots it is customary to use the Johansen maximum-likelihood procedure to test for and estimate long-run relationships. We use a modified version of this procedure that allows for the presence of exogenous non-stationary variables.[26] At the same time, given the number of variables involved in the exercise, it is useful also to examine the relationship between the variables using other, more transparent methodologies in order to get a clearer idea of the nature of the interactions involved. Accordingly, before applying the maximum-likelihood method, we propose to use the autoregressive distributed lag (ADL) approach, which involves using the OLS to estimate cointegrating relationships.[27] Using two different procedures is also intended to enhance confidence in the empirical analysis. In each case we obtain both the long–run cointegrating

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[25](...continued)
percent), Japan (5.3 percent), Netherlands (5.0 percent), Italy (5.0), Finland (4.0 percent), Belgium (2.8 percent), Switzerland (1.9 percent), Spain (1.8 percent), and Austria (1.3 percent).

[26]See I. Harboe, S. Johansen, B. Nielsen, and A. Rahbek (1995), "Test for Cointegration Ranks in Partial Systems," Preprint No. 5, Institute of Mathematical Statistics, University of Copenhagen; and M. H. Pesaran, Y. Shin, and R. J. Smith, "Structural Analysis of Vector Error Correction Models with Exogenous I(1) Variables,", mimeo., University of Cambridge February 1997, for a description of how exogenous variables may be introduced in Johansen's procedure.

[27]See M. H. Pesaran and Y. Shin, "An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis," mimeo., University of Cambridge, January 1997, for a discussion of this approach.

relationship and the short–run error–correction specification. This distinction is important in the present context because it allows a distinction between short–run cyclical and long-run factors, such as oil wealth and the foreign asset position.

Testing for unit roots

77.   The Augmented Dicky-Fuller unit root tests are reported in Table 9. The order of the lag structure is determined using the Schwarz Bayesian Criterion. The variables used in the study all have unit roots in levels but are stationary in their first differences.[28] This warrants the examination of cointegration among the level variables.

Estimating cointegrating relationships using the ADL approach

78.   This methodology derives short- and long-run estimates of the coefficients based on estimating the traditional autoregressive distributed lag model, with the order of the dynamic structure chosen by maximizing the Schwarz Bayesian Criterion. Strictly speaking the ADL approach followed here assumes that only one cointegrating vector exists between the variables under consideration. Moreover, the approach does not distinguish between exogenous and endogenous variables, and therefore is not equivalent to the maximum-likelihood approach followed below. However, on the positive side, apart from simplicity, it has the advantage of not requiring that all variables in the cointegrating relationship to be of the same order of integration and the results can help in choosing the variables to use in the Johansen's procedure.

79.   The results of estimating this model for the real exchange rate are reported in Tables 10 and 11. These indicate that in the long run oil wealth positively affects the real exchange rate (at the 5 percent level) while the productivity differential has a negative effect (at the 10 percent level). Both variables are also significant (at the 5 percent level) in the short run, together with the net foreign asset position variable, which, however, appears with a negative sign. This could be because of how the quarterly foreign asset data was constructed (see Section B), or more likely it could indicate the reverse effect of the exchange rate on the valuation of net foreign asset position (see further discussion below). Other variables do not seem to influence the real exchange rate. In particular, we do not seem to find a significant link between the interest rate (monetary policy) or government consumption (fiscal policy) and the exchange rate.

80.   Although examining the determinants of the real exchange rate directly is useful, it could be argued that it would be more appropriate to decompose the exchange rate into its two principal components: the nominal exchange rate and relative prices. This is in particular useful given that the dynamic response of the nominal rate and relative prices to shocks may be quite different, with the former likely to respond much faster than the latter.

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[28]All estimations and testings were carried out using *Microfit 4.0 for Windows*.

81.   The results for the nominal exchange rate are reported in Tables 12 and 13. As in the case of the real exchange rate, oil wealth is a significant determinant of the nominal rate both in the short and in the long runs, but now the interest rate is also significant, appearing, however, with a negative coefficient in the long-run relationship. This could indicate the dominance of the reverse effect, namely rising (falling) interest rates resulting from an actual or expected weakening (strengthening) in the exchange rate.

82.   Relative prices seem to behave quite differently (Tables 14 and 15). Over the long run only productivity differential is significant (at the 10 percent level), while in the short run, apart from this variable, the differential in activity and fiscal expenditure also seem to affect relative prices. This suggests that cyclical factors and fiscal policy affect the relative price component of the real exchange rate, but only in the short run.

Cointegration with exogenous variables

83.   The standard Johansen procedure for estimating long-run relationships assumes that all the included variables are endogenous to the system. As a result it could give rise to a large number of statistically acceptable estimated cointegrating vectors, some of which would not make sense theoretically. In some applications, as in the present one, it would make sense to assume that some variables are exogenous. This reduces the number of possible estimated cointegrating vectors and, by giving a more theoretical structure to the system, mitigates the need to rely solely on the data, or other arbitrary post-estimation procedures, to choose among the estimated vectors.

84.   Among the right-hand side variables, as argued in Section B, the interest rate differential, i_t, GDP relative to trading partners, y_t, and the net foreign asset position, f_t, are likely to be influenced by the exchange rate, and are unlikely to be exogenous. Thus, in the following analysis we treat er_t, e_t, p_t, i_t, y_t, and f_t as endogenous I(1) variables and x_t, w_t, and pr_t as exogenous I(1) variables. [29]

85.   We use the ADL results to choose variables for the Johansen's procedure. Accordingly, each equation is estimated using all the variables that are significant in either the long-run or the short-run ADL relationships. The included variables are then separated into exogenous and endogenous using the above classification. This methodology requires that the first differences of the exogenous variables be included as I(0) variables in the cointegrating equation. The order of lags in the cointegrating VAR is set equal to 2, consistent with the lag structure optimally chosen in the ADL approach above.

86.   The results of the maximum-likelihood estimation of the cointegrating VAR for the real exchange rate are presented in Tables 16–18. Table 16 supports the hypothesis of one

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[29]In principle it is possible to test whether these restrictions are supported by the data. Given the relatively strong case for the restrictions, however, this is not attempted here.

cointegrating relationship between the variables included in the model, and Table 17, reporting χ^2 exclusion tests for all the variables, suggests that the cointegrating relationship is between the real exchange rate, oil wealth, and productivity differential; the net foreign asset position does not appear to belong to the long-run relationship. These results are similar to those obtained using the ADL approach. However, unlike the ADL model, the error–correction results (Table 18)—which are obtained as a byproduct of estimating the cointegrating VAR relationship—suggest that the real exchange rate in the short-run only responds to lagged net foreign assets (with a negative sign) and the error–correction term.

87.   The results for the nominal exchange rate, reported in Tables 19–21, suggest that the variables included are cointegrated when the maximal eigenvalue test is used; the trace test marginally rejects cointegration. The fact that the error-correction term is significant in the short-run equation (Table 21), however, provides further evidence in favor of cointegration. The estimation results are similar to those obtained before in that oil wealth and the interest rate differential appear to affect the nominal exchange rate with positive and negative coefficients, respectively. But they also indicate that the net foreign asset position negatively influences the nominal exchange rate in the long run, as well as in the short run.

88.   Finally, Tables 22–24 present the results for the relative price variable. Cointegration tests (Table 22) indicate the presence of two cointegrating relationships, which violates the assumption behind using the ADL approach. However, the signs of the coefficients are the same in both relationships (Table 23), implying that using either vector would yield the same conclusions as far as the direction of the effect of a variable is concerned. The long-run results suggest that, unlike in the ADL case, GDP relative to trading partners, the foreign asset position, and fiscal expenditure all positively influence relative prices in the long run, while the productivity differential, as before, enters with a negative sign. Foreign assets and fiscal expenditure appear to have an influence in the short run as well (Table 24).

D.   Conclusion

89.   The estimation results reported in this Chapter indicate a role for policy variables in the determination of the real exchange rate in Norway, but not one that is particularly dependable. The interest rate appears to have a negative relationship with the nominal exchange rate, suggesting a reverse causation: monetary policy appears to respond to actual or expected movements in the exchange rate rather than the other way around. Fiscal policy appears to have an independent effect on the relative price component of the real exchange rate, but the evidence is mixed as to whether this effect extends beyond the short term. Overall, the results do not suggest that the real exchange rate can successfully and directly be controlled by macroeconomic policy. The observed link between policy variables and the exchange rate, of course, may have been weakened by frequent changes in the exchange rate policy framework during the estimation period.

90.   The results, however, provide support for the hypothesis that oil wealth is an important determinant of movements in the nominal and real exchange rates. Higher estimated oil wealth,

other things being equal, leads to a higher real exchange rate by causing a nominal appreciation. The productivity differential relative to trading partners also influences the real exchange rate inversely through its relative price component. There is little support for the hypothesized positive effect of the net foreign asset position on the exchange rate, while there is some evidence that the cyclical position of the economy influences the real exchange rate through relative prices.

Table 9. Norway: Augmented Dicky-Fuller Unit Root Tests 1/

Variable	ADF	Critical Value
re_t	-2.29	-3.45
Δre_t	-8.72*	-3.45
e_t	-2.20	-3.45
Δe_t	-7.89*	-3.45
p_t	-2.12	-3.45
Δp_t	-4.38*	-3.45
i_t	-2.38	-3.45
Δi_t	-13.95*	-3.45
y_t	-1.94	-3.45
Δy_t	-4.66*	-3.45
f_t	-1.46	-3.45
Δf_t	-5.33*	-3.45
x_t	-2.64	-3.45
Δx_t	-5.04*	-3.45
w_t	-1.70	-3.45
Δw_t	-4.58*	-3.45
pr_t	-3.14	-3.45
Δpr_t	-13.13*	-3.45

1/ See text for data definitions and sources. An asterisk denotes rejection of a unit root at the 5 percent level. The order of lags is chosen such that the Schwarz Bayesian Criterion is maximized.

Table 10. Norway: Estimating the Cointegrating Relationship for the Real Exchange Rate using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	T-ratio
i_t	-0.13	-0.20
y_t	1.85	0.23
f_t	0.24	1.04
x_t	1.50	0.61
w_t	4.43*	2.52
pr_t	-1.88**	-1.78
t	0.16	0.85

1/ Dependent variable is the real exchange rate re_t; the lag structure is selected using Schwarz Bayesian Criterion; sample period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the 5 and 10 percent levels.

Table 11. Norway: Estimating the Error-Correction Relationship for the Real Exchange Rate using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	t-ratio
Δi_t	-0.02	-0.21
Δy_t	0.27	0.24
Δf_t	-0.30*	-2.57
Δx_t	0.22	0.64
Δw_t	0.64*	3.14
Δpr_t	-0.27*	-2.17
ecm_{t-1}	-0.14*	-2.99

$R^2 = 0.23$
$s.e. = 1.35$
$D.W. = 1.90$

1/ Dependent variable is change in the real exchange rate Δre_t; ecm_{t-1} is the error-correction term obtained from the long-run relationship in Table 2; sample period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the 5 and 10 percent levels.

Table 12. Norway: Estimating the Cointegrating Relationship for the Nominal Exchange Rate using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	T-ratio
i_t	-2.17*	-2.22
y_t	5.42	0.63
f_t	0.05	0.23
x_t	2.75	1.00
w_t	6.40*	3.31
pr_t	-1.32	-1.13
t	-0.14	-0.63

1/ Dependent variable is the nomial exchange rate e_t; the lag structure is selected using Schwarz Bayesian Criterion; sample period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the 5 and 10 percent levels.

Table 13. Norway: Estimating the Error-Correction Relationship for the Nominal Exchange Rate using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	t-ratio
Δi_t	-0.01	-0.13
Δy_t	0.73	0.62
Δf_t	-0.25*	-2.15
Δx_t	0.37	1.06
Δw_t	0.86*	3.64
Δpr_t	-0.18	-1.29
ecm_{t-1}	-0.13*	-3.11

R^2 = 0.29
$s.e.$ = 1.42
$D.W.$ = 1.67

1/ Dependent variable is change in the nominal exchange rate Δe_t; ecm_{t-1} is the error-correction term obtained from the long-run relationship in Table 4; sample period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the 5 and 10 percent levels.

Table 14. Norway: Estimating the Cointegrating Relationship for Relative Prices
using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	T-ratio
i_t	0.41	0.64
y_t	21.43	1.15
f_t	0.30	1.20
x_t	-1.10	-0.46
w_t	-1.19	-0.86
pr_t	-3.02**	-1.86
t	0.24	1.10

1/ Dependent variable is the Norewegian price level relative to its trading partners p_t; the lag structure is selected using Schwarz Bayesian Criterion; sample period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the 5 and 10 percent levels.

Table 15. Norway: Estimating the Error-Correction Relationship for Relative Prices
using the Autoregressive Distributed Lag Approach 1/

Regressor	Coefficient	t-ratio
Δi_t	0.02	0.57
Δy_t	1.21*	2.44
Δf_t	0.02	1.57
Δx_t	1.58*	4.10
Δw_t	-0.07	-0.77
Δpr_t	-0.17*	-3.15
ecm_{t-1}	-0.06**	-1.76

R^2 = 0.46
$s.e.$ = 0.55
$D.W.$ = 2.22

1/ Dependent variable is change in the Norwegina price level relative to its trading partners Δp_t;
ecm_{t-1} is the error-correction term obtained from the long-run relationship in Table 6; sample
period is 1970q3-1995q4; and single and double asterisks, respectively, denote significance at the
5 and 10 percent levels.

Table 16. Norway: Cointegration Likelihood Ratio Tests for the Real Exchange Rate
Equation 1/

Null	Alternative	Maximal Eigenvalue		Trace	
		Statistic	95% CV	Statistic	95% CV
$r = 0$	$r = 1$	27.80	24.88	35.62	35.37
$r \leq 1$	$r = 2$	7.82	18.08	7.82	18.08

1/ Based on a cointegrating VAR of order 2, with unrestricted intercepts and restricted trend, which includes re_t and f_t as endogenous I(1) variables, w_t and pr_t as exogenous I(1) variables, and first differences of the latter variables as I(0) exogenous variables. Sample period is 1970q3-1995q4.

Table 17. Norway: Estimated Coefficients in the Cointegrating VAR(2) for the Real Exchange Rate Using the Maximum-Likelihood Method and Likelihood Ratio Tests of Exclusions

Variable	Cointegrating Vector	$\chi^2(1)$ [Rejection Probability]
er_t	-1.00*	15.39 [0.00]
f_t	0.02	0.06 [0.80]
w_t	3.47*	19.06 [0.00]
pr_t	-1.54*	9.65 [0.00]
t	0.27*	10.56 [0.00]

1/ The sample period is 1970q3-1995q4. χ^2 statistic in each case tests the restriction that the coefficient is equal to zero in the cointegrating relationship; an asterisk denotes significance at the 5 percent level, and a double asterisk at the 10 percent level.

Table 18. Norway: Estimated Error-Correction Model for the Real Exchange Rate Based
on the Cointegrating VAR(2) in Table 17 1/

Regressor	Coefficient	t-ratio
Δre_{t-1}	0.15	1.48
Δf_{t-1}	-0.23*	-2.05
Δw_{t-1}	1.40	1.61
Δpr_{t-1}	-0.07	-0.36
Δw_t	-0.42	-0.51
Δpr_t	-22.32	-1.33
ecm_{t-1}	-0.12*	-2.92

R^2 = 0.16
$s.e.$ = 1.40
χ^2_{sc} (4) = 1.28 [0.86] Test for serial correlation
χ^2_{ff} (1) = 0.15 [0.70] Test for functional form
χ^2_n (2) = 8.36 [0.01] Test for normality
χ^2_{he} (1) = 0.002 [0.96] Test for heteroscedasticity

1/ Dependent variable is Δre_t; sample period is 1970q3-1995q4; and an asterisk denotes significance at the 5 percent level.

Table 19. Norway: Cointegration Likelihood Ratio Tests for the Nominal Exchange Rate Equation 1/

Null	Alternative	Maximal Eigenvalue		Trace	
		Statistic	95% CV	Statistic	95% CV
$r = 0$	$r = 1$	29.85	28.72	47.01	49.36
$r \leq 1$	$r = 2$	10.32	22.16	17.16	30.77
$r \leq 2$	$r = 3$	6.84	15.44	6.84	15.44

1/ Based on a cointegrating VAR of order 2, with unrestricted intercepts and restricted trend, which includes e_t, i_t, and f_t as endogenous I(1) variables, w_t as exogenous I(1) variables, and first difference of the latter variable as I(0) exogenous variable. Sample period is 1970q3-1995q4.

Table 20. Norway: Estimated Coefficients in the Cointegrating VAR(2) for the Nominal Exchange Rate Using the Maximum-Likelihood Method and Likelihood Ratio Tests of Exclusions

Variable	Cointegrating Vector	$\chi^2(1)$ [Rejection Probability]
e_t	-1.00*	11.59 [0.00]
i_t	-1.70*	11.82 [0.00]
f_t	-0.27*	3.87 [0.05]
w_t	5.40*	14.60 [0.00]
t	-0.05	1.30 [0.26]

1/ The sample period is 1970q3-1995q4. χ^2 statistic in each case tests the restriction that the coefficient is equal to zero in the cointegrating relationship; an asterisk denotes significance at the 5 percent level, and a double asterisk at the 10 percent level.

Table 21. Norway: Estimated Error-Correction Model for the Nominal Exchange Rate Based on the Cointegrating VAR(2) in Table 20 1/

Regressor	Coefficient	t-ratio
Δe_{t-1}	0.26*	2.78
Δi_{t-1}	-0.10	-0.90
Δf_{t-1}	-0.21*	-2.06
Δw_{t-1}	0.73	0.77
Δw_t	0.41	0.48
ecm_{t-1}	-0.10*	-3.17

R^2 = 0.26

$s.e.$ = 1.43

χ^2_{sc} (4) = 3.20 [0.52] Test for serial correlation

χ^2_{ff} (1) = 6.16 [0.01] Test for functional form

χ^2_{n} (2) = 5.63 [0.06] Test for normality

χ^2_{he} (1) = 0.03 [0.85] Test for heteroscedasticity

1/ Dependent variable is Δe_t; sample period is 1970q3-1995q4; and an asterisk denotes significance at the 5 percent level.

Table 22. Norway: Cointegration Likelihood Ratio Tests for the Relative Price Equation 1/

Null	Alternative	Maximal Eigenvalue		Trace	
		Statistic	95% CV	Statistic	95% CV
$r = 0$	$r = 1$	50.06	31.68	100.86	56.43
$r \leq 1$	$r = 2$	37.70	24.88	50.80	35.37
$r \leq 2$	$r = 3$	13.10	18.08	13.10	18.08

1/ Based on a cointegrating VAR of order 2, with unrestricted intercepts and restricted trend, which includes p_t, y_t, and f_t as endogenous I(1) variables, x_t and w_t as exogenous I(1) variables, and first differences of the latter variables as I(0) exogenous variables. Sample period is 1970q3-1995q4.

Table 23. Norway: Estimated Coefficients in the Cointegrating VAR(2) for the Relative Price using the Maximum-Likelihood Method and Likelihood Ratio Tests of Exclusions

Variable	Cointegrating Vector 1	Cointegrating Vector 2	$\chi^2(1)$	[Rejection Probability]
p_t	-1.00*	-1.00*	11.75	[0.00]
y_t	498.0*	9.60*	24.15	[0.00]
f_t	6.25*	0.39*	13.94	[0.00]
x_t	40.11**	3.17**	4.78	[0.09]
pr_t	-79.6*	-0.11*	21.59	[0.00]
t	1.20	-0.22	1.57	[0.46]

1/ The sample period is 1970q3-1995q4. χ^2 statistic in each case tests the restriction that the coefficient is equal to zero in both cointegrating relationships; an asterisk denotes significance at the 5 percent level, and a double asterisk at the 10 percent level.

Table 24. Norway: Estimated Error-Correction Model for the Relative Price Based
on the Cointegrating VAR(2) in Table 23 1/

Regressor	Coefficient	t-ratio
Δp_{t-1}	-0.07	-0.71
Δy_{t-1}	0.01	0.00
Δf_{t-1}	0.07*	2.06
Δx_{t-1}	-1.10	-1.31
Δpr_{t-1}	0.10	1.12
Δx_t	3.09*	3.76
Δpr_t	-8.66	-1.31
$ecm_{1,t-1}$	-0.003*	-5.55
$ecm_{1,t-1}$	-0.06*	-3.47

R^2 = 0.48
$s.e.$ = 0.54
χ^2_{sc} (4) = 3.49 [0.48] Test for serial correlation
χ^2_{ff} (1) = 0.02 [0.88] Test for functional form
χ^2_n (2) = 0.14 [0.93] Test for normality
χ^2_{he} (1) = 1.73 [0.19] Test for heteroscedasticity

1/ Dependent variable is Δp_t; sample period is 1970q3-1995q4; and an asterisk denotes significance at the 5 percent level.

IV. THE NORWEGIAN BANKING SYSTEM–FROM CRISIS TO HEALTHY COMPETITION[30]

A. Introduction and Summary

91.   Developments in world financial markets during 1997 focused renewed attention on the potential fragility of banking systems, related governance issues, and the adequacy of supervisory capacity. This paper provides a summary of the Norwegian authorities' response to the banking crisis which first struck the country a decade ago, describes the subsequent recovery of the banking system, and assesses possible areas for further modifications of government macroeconomic, regulatory and ownership policies to help promote a healthy banking sector. As the Norwegian banking crisis had many features in common with the problems that later emerged in Finland and Sweden, the discussion includes some references to the experience in these two countries; a more detailed examination of these country experiences is provided in recent staff papers by Drees and Pazarbasioglu (1995 and 1998).

92.   The Norwegian financial system has benefitted from timely action and effective coordination among the responsible public agencies during and after the banking crisis. Timely intervention, in ways that minimized moral hazard, helped to contain the costs to society as a whole and enabled the affected banks to resume playing an effective role in financial intermediation early in the subsequent economic recovery. Nevertheless, recent trends in banks' lending practices, profit margins and capitalization underscore the importance of effective surveillance by the supervisory authorities. In addition, it will be important as the recovery matures to ensure that mechanisms are in place to encourage further efficiency gains; elimination of the government's remaining ownership stake in Norway's largest commercial banks could contribute to this objective. Finally, macroeconomic policy has an essential role to play in protecting the stability of the banking system, by helping to avoid an unduly rapid expansion of credit.

B. Snapshot of the Norwegian Financial System at end–1996

93.   The Norwegian financial system is relatively small and highly concentrated. At end-1996 the Norwegian banking system comprised the Norges Bank (the central banks), 17 commercial banks (two foreign-owned), 133 savings banks, the postal savings bank, and 3 Norwegian branches of foreign banks; there were also 12 foreign branches of Norwegian banks. Other financial institutions included 38 finance companies, 8 mortgage companies, 10 loan intermediaries, and 9 Norwegian branches of foreign finance and mortgage companies.

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[30] Prepared by Scott B. Brown. This paper reflects information drawn from the sources cited in the bibliography and discussions with representatives of the Norges Bank; the Banking, Insurance, and Securities Commission (Kreditilsynet); the Ministry of Finance and Customs; the Bankers' Association; and the Savings Bank Association.

94.   The two largest commercial banks became almost entirely government-owned during the response to the banking crisis and the government's ownership stake remains over 50 percent. The third largest commercial bank is the publicly-owned Postal Savings Bank. Collectively these three institutions accounted for 73 percent of commercial bank assets, and 41 percent of the total assets of commercial and savings banks, finance, and mortgage companies, at end-1996.

95.   In recent years the Norwegian banking and insurance markets have become dominated by integrated financial groups and conglomerates, with about two-thirds of domestic financial services accounted for by the eight largest conglomerates at end-1996. Norway's Banking, Insurance, and Securities Commission (BISC), was established in 1986 through the merger of pre-existing institutions, as a comprehensive supervisory authority for all banks, insurance companies, securities firms, real estate agents, and accounting and auditing companies. In 1988 its jurisdiction was extended to cover other non-bank financial institutions and financial groups. The BISC cooperates closely with the Norges Bank (see below).

C. The Banking Crisis of 1988-1993

96.   The Norwegian banking crisis occurred in two waves, triggered initially by the fall in world oil prices in 1986 and subsequently by snowballing loan losses in the early 1990's. The effects of the oil price shock on business activity and asset prices led to a sharp increase in corporate bankruptcies and nonperforming loans. While most financial institutions incurred operating losses in 1987–88, initially it appeared that severe problems would be limited mainly to finance companies and a few savings banks. During 1991–93, however, loan losses also drove the country's largest commercial banks into insolvency.

97.   The banking system was particularly vulnerable to macroeconomic shocks in the late 1980's, as a result of the failure of management practices and the supervisory regime to take into account fully the risks associated with the ongoing process of financial liberalization. At the beginning of the decade, both interest rates and the quantity of bank credit were tightly controlled in Norway, as in other countries in the region. Lending rates were subject to ceilings, which were tied to the central bank base rate and changed infrequently. As interest payments were deductible from both individual and corporate income taxes, after-tax interest rates were negative in real terms even before the acceleration of inflation in the late 1970's. While there were no explicit restrictions on deposit rates, banks lacked incentives to compete actively for deposits due to the existence of controls on both the total amount and the allocation of credit. During 1981–87 Norwegian banks were frequently subject to individual credit limits, beyond which lending was subject to a steep supplementary reserve requirement. Corporate borrowers had only limited alternatives to bank financing since the equity market was underdeveloped, access to foreign financing was limited by capital controls, and placements on the domestic bond market were subject to a restrictive quota. As a result they were chronic and, often, highly-leveraged borrowers form the banking system. Liquidity ratios further channeled part of banks' assets to government and housing bonds.

98.   Under these circumstances there was substantial excess demand for credit, banks lent mainly to customers with whom they had long-standing relationships, and interest rate spreads were kept at levels that appeared to provide for an adequate level of profits. Consistent with the perception that conservative lending practices limited the risk exposure of the banking system, and also with the authorities' objective of facilitating lending, commercial banks were subject to a minimum capital/asset ratio of only 6.5 percent and savings banks did not have any statutory capital requirements.[31] Actual capital/asset ratios in 1981 to 1985 averaged 7.0 percent for both commercial and large for savings banks.

99.   These arrangements became increasingly untenable due to higher rates of inflation in the late 1970's and early 1980's. The resulting sharp increases in asset prices provided further impetus to credit demand, which was met to a considerable extent by non-bank financial institutions (such as finance and mortgage companies), funded in part by banks' off-balance-sheet operations. A growing share of financial intermediation thus fell outside the purview of existing monetary policy and supervisory arrangements.

100.   In response, the authorities began to liberalize interest rate, credit, and foreign exchange controls gradually in 1984. However, they did not take full advantage of the scope for active use of interest rate policy to moderate the lending boom: following an initial increase at the time of decontrol, lending rates were fairly stable despite continued strong credit demand, in large part due to a sharp increase in liquidity support from the Norges Bank and the availability of central bank swap lines to hedge lines of credit from foreign commercial banks.

101.   The rapid growth of bank credit and, in particular, the spread of asset-based lending in the banking sector posed considerable risks. Assessing loan quality for asset-based lending was a new challenge for managements accustomed to developing long-term business relationships with well-known borrowers. As in many other industrial countries undergoing financial liberalization, the safety net and supervisory regime provided incentives for increased risk-taking.[32] A 1976 official report had indicated that it would not be appropriate for banks' own capital to provide the main buffer against cyclical fluctuations in economic activity, or even disturbances in particular sectors or regions, and that action by the authorities would be warranted in such cases. In this context the authorities were seen as signaling that no bank would be allowed to fail, undermining a potential source of discipline through the behavior of

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[31]Commercial banks' minimum capital/asset ratio had been lowered in 1961 from 10 to 8 percent, and again in 1972 from 8 to 6.5 percent. In conjunction with the 1972 reduction, the asset base for the requirement was also narrowed.

[32]Prior to the crisis, the formal safety net for the banking system relied on three components: banks' own capital and two deposit guarantee funds financed by contributions from the banks, the Commercial Bank Guarantee Fund and the Savings Bank Guarantee Fund. In addition, as noted above the Norges Bank became an increasingly important source of liquidity for the system in the 1980's, facilitating the sharp increase in bank credit.

shareholders and creditors. As noted above, capital adequacy requirements were relatively low and, moreover, compliance was facilitated in the 1980's by an increase in the allowable portion of subordinated debt in banks' total capital, to 75 percent. Moreover, Norway's financial supervisory agency, the BISC, lacked the capacity to rely significantly on examinations on-site.

102.   Under these circumstances, the Norwegian financial system was highly vulnerable to the negative effects of the 1986 oil price shock on their borrowers. The downturn in economic activity and asset prices in 1986 and 1987 led to widespread nonperforming loans in the real estate, construction, and service sectors. Many finance and mortgage companies, with little capital and a large exposure in these sectors, experienced large operating losses and either went out of business or were restructured. Commercial banks also began to incur losses in 1987, reflecting both their own direct exposure in these sectors and their investments in finance companies, while the earnings of savings banks were greatly reduced (Table 25).

103.   One of the first official actions prompted by the spread of loan losses was the issuance in 1987 by the BISC of regulations seeking to promote more uniformity and transparency in the classification and writeoff of assets. Operational intervention began in 1988, with an officially-supported merger of two large savings banks. The 1988 merger was supported both by the Savings Bank Guarantee Fund (SBGF) and through subsidized loans from the Norges Bank (Table 26). The scale of intervention to recapitalize troubled institutions increased in 1989, with further support to the merged savings bank and five other savings institutions, plus drawings on the Commercial Bank Guarantee Fund (CBGF) by two small commercial banks. By late 1989 it appeared that the crisis might be coming to an end, as commercial banks were again becoming profitable. However, continued weakness in mainland economic activity led to a further increase in the scale of loan writeoffs in 1990–91, endangering the solvency of the country's largest commercial banks and posing requirements for official support far in excess of the remaining resources of the guarantee funds.[33]

104.   Thus, in 1991 the government found it necessary to supplement the guarantee funds with two new institutions, the Government Bank Insurance Fund (GBIF) and the Government Bank Investment Fund (GBINVF), both financed from budgetary resources. The GBIF was intended to make equity investments in banks in crisis under conditions that would give the government a controlling interest, while the GBINVF was intended to provide subordinated capital to institutions not yet in crisis on the basis of commercial criteria, in order to increase the confidence of private investors. Subsequently it was decided that the GBINVF would exercise responsibility for managing the assets acquired by the GBIF.

105.   During the banking crisis the GBIF provided financing, both directly and through transfers to the two guarantee funds, equivalent to 2.2 percent of GDP. Other sources of official

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[33]The situation was further complicated in late 1992 by sharp increases in Norwegian interest rates, in the attempt to defend Norway's fixed exchange rate during the period of turbulence in the European Monetary System.

financial support (the subsidy element of Norges Bank loans and deposits, direct budgetary transfers to the SBGF, and capital injections into commercial banks by the GBINVF) totaled a further 1.0 percent of GDP. In addition, the two bank-financed guarantee funds made disbursements from their own funds equivalent to 0.9 percent of GDP.[34] As a result of official interventions during the crisis, by end-1993 the government had become virtually sole owner of the country's second- and sixth-largest commercial banks (Christiania Bank & Kreditkassen, and Fokus Bank) and obtained an 87.5 percent stake in the largest commercial bank (Den Norske Bank). Most of the previous private shareholdings in these banks were written down to zero value.

D. Recovery from the Banking Crisis

106.   The primary objective of official support operations during the banking crisis was to raise banks' capital/asset ratios to at least 8 percent and restore them to profitability. Accordingly, in most cases official financing was provided in conjunction with restructuring plans, including loan writeoffs, measures to increase efficiency, and changes in ownership and management.

107.   Both commercial and savings banks have succeeded in restoring profitability roughly to pre-crisis levels, as indicated in Table 1. This has been reflected in a sharp drop in loan losses, following large writeoffs during the early 1990's, and lower operating costs. Underpinning the reduction in operating expenses has been a cut of about one-third in the both number of branches and total employment in the Norwegian banking sector since 1987. In addition, since 1995 commercial banks have benefitted from a reversal of some of the loan loss provisions taken in earlier years.

108.   Banks are also far better capitalized than in the early 1980's, as summarized in Table 27. In 1994–96 the capital/asset ratio averaged about 12 percent for commercial banks and about 14 percent for large savings banks. However, the capital/asset ratios for both sectors have been declining as the recovery matured. The BISC and the Norges Bank have expressed concern that the rapid growth of lending and increases in asset prices may be signaling an increase in the riskiness of banks' portfolios, which would warrant higher capital/asset ratios for some institutions.

109.   During 1995–96 the government re-privatized Fokus Bank and reduced its stake in the two largest commercial banks to just over 50 percent. While it has announced an intention to reduce this stake further to 33 percent in 1998, the government has instructed the Investment

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[34]Total official support thus totaled 3.2 percent of GDP, and total financial intervention including the use of the guarantee funds' own resources was 4.2 percent of GDP. For reference, direct official support during the banking crises of the early 1990's in Finland and Sweden was equivalent to 10 percent and 4 percent of GDP, respectively, with additional assistance through guarantees of 6 percent and 2 percent of GDP.

Fund to maintain a controlling interest indefinitely in order to secure a substantial element of national ownership of Norwegian commercial banks. This policy is intended primarily to ensure that the focus of these banks is on the financing of Norwegian industry.[35]

110.   In view of its rapid recovery from the banking crisis and a more adequate level of capitalization since 1993, the Norwegian banking sector is rated favorably by agencies such as Moody's and Standard & Poor. These agencies' recent reports highlight the gradually declining trend in operating incomes in recent years and the likelihood that competitive pressures will lead to further consolidation in the sector.

E.   Supervisory and Other Economic Policy Challenges

111.   In the wake of the banking crisis, staff and other resources of the BISC were increased significantly, *inter alia* to permit more frequent on-site examinations of banks and to strengthen its supervision of insurance companies and conglomerates (see below).[36] The BISC also tightened reporting and disclosure rules and developed a system of indicators for early warning of potential liquidity and solvency problems. A major focus of on-site examinations is the adequacy of banks' internal systems for risk assessment and management. In 1996 the BISC established new requirements under which the adequacy of banks' capital is assessed in relation to the risk of loss in their individual portfolios.

112.   Building on earlier practices, in 1993 additional guidelines were established for collaboration between the BISC and the Norges Bank in the exchange of information, contacts with financial institutions, development of regulations, economic and financial analysis, and statistical reporting (in cooperation with Statistics Norway). In 1994 the BISC and Norges Bank initiated a program of macroeconomic surveillance, intended to supplement supervision of individual institutions with an assessment of threats to the stability of the sector as a whole. Under this program, the BISC and Norges Bank each report twice a year (in alternating quarters) on economic and financial conditions in the sector, new developments and trends, and scenarios of the future financial strength of supervised institutions. Recent surveillance reports have explored the risks posed by increased reliance on brokered funds and overseas borrowing to supplement the deposit base, rising loan-to-value ratios for mortgage lending (which has since become a special focus of BISC supervision), loans secured by transferable securities, rapid credit expansion, and declining interest margins, which could undermine the ability of some institutions to maintain adequate capitalization.

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[35]The government is also owner of the Postal Savings Bank, the third-largest bank in Norway, and a number of small "traditional" state banks, including the Housing Bank and the Industrial and Regional Development Fund.

[36]On-site examinations are now held annually for large banks, and on a 5–6 year cycle for smaller banks. The BISC also uses indicators of potential problems, such as a high rate of growth of assets, to trigger more frequent examinations.

113. Since the end of the banking crisis, the contributory deposit guarantee funds have gradually rebuilt their balances. In contrast to the trend in some other industrial countries, proposals to combine the commercial and savings bank funds, so as to ensure uniformity of treatment and greater pooling of risk, have not been adopted in Norway. Under legislation that entered into force in January 1997, each guarantee fund insures deposits up to a maximum of NOK 2 million per depositor (just over US$260,000 at current exchange rates).

114. The authorities have also collaborated to improve the efficiency and security of the payments system. In 1989 the Norges Bank incurred losses in conjunction with its decision to settle the outstanding balances of a small Norwegian commercial bank, Norion Bank, that had been declared insolvent and placed under public administration. Subsequently the Bank clarified that it would carry out final settlements only at the end of the business day, and that it would not settle transactions for other banks under public administration. The banks, Norges Bank, and the BISC cooperated in the following years to establish a new joint clearing and information system and to develop a system for balance checks for transactions prior to settlement. During 1997 the separate payments system maintained by the Postal Savings Bank was integrated into the general interbank settlements system. To further reduce settlement risk, in November 1997 the Norges Bank began the phased introduction of a real-time gross settlements system for large-value transactions. The Norges Bank will facilitate banks' liquidity management by offering intraday loans against security, as well as extraordinary loans in excess of collateral as a safety net for priority settlement. The real-time gross settlements system is expected to be in full operation by July 1, 1998.

115. While the new settlements system will bring Norwegian procedures more closely in line with those to be used in the new EU TARGET system, there is not yet any arrangement for providing Norwegian institutions with access to TARGET. The lack of a low-cost settlements capability in Euros could leave Norwegian banks at a significant competitive disadvantage, exacerbating existing pressures on profit margins. It will thus be important for Norwegian banks to obtain the services of a participating foreign institution as an intermediary, in the event that a direct link to TARGET in unavailable.

116. Given the large and growing role of diversified conglomerates in the Norwegian financial system, the BISC has sought to base its supervision of the participating institutions increasingly on the comprehensive financial situation of their conglomerate. Smaller institutions (most of which are savings banks) have attempted to compete with the conglomerates by forming alliances that enable them to offer a fuller range of financial services. Institutions form neighboring countries, which typically have a larger scale of operations, also have a growing presence in the Norwegian market since the entry into effect of the EEA regime for financial services in January 1994.

117. As illustrated by recent developments, financial supervision has an essential role in helping to ensure the safety and stability of the Norwegian banking system, in the face of rapid loan expansion and pressures on profit margins. This can be fully effective only if it is supported

by other economic policies. Banks will be more likely to respond to incentives to reduce their costs further and increase efficiency if legal impediments to consolidation within the banking sector are relaxed.[37] A more rapid phasing out of the government's ownership stake in the country's two largest banks could contribute to this objective, and possibly also improve the likelihood that lending decisions will be based on commercial considerations. In a strong economic upturn it is important that changes in interest rates, in response to market conditions, are a major force equilibrating supply and demand for credit. Ultimately, the response to the risks posed by rapid rates of expansion in domestic credit must lie primarily in the use of macroeconomic policy to avoid overheating of the economy.

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[37] Such legal impediments include provisions that no investor may acquire more than a 10 percent ownership stake in a financial institution (waived temporarily for the government's takeover of major commercial banks during the banking crisis); and that a one-third vote of shareholders is sufficient to block a change in corporate statutes (e.g., merger, change in share capital, or relocation of the corporate headquarters).

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Table 25. Norway: Bank Profitability, 1980–1997 1/

(In percent of average total assets)

	Commercial Banks				Savings Banks 2/		
	Net interest income	Loan losses	After-tax profits		Net interest income	Loan losses	After-tax profits
1980	3.17	0.13	0.75		3.92	0.04	1.02
1981	3.06	0.07	0.87		4.52	0.06	1.54
1982	3.03	0.17	0.70		4.60	0.07	2.11
1983	3.39	0.20	1.03		4.64	0.13	1.19
1984	3.10	0.24	1.03		4.44	0.15	1.09
1985	2.77	0.35	0.79		3.87	0.18	0.79
1986	2.78	0.50	0.83		3.70	0.27	0.88
1987	2.76	0.99	-0.35		3.49	0.81	0.23
1988	2.78	1.45	-0.24		3.58	1.54	-0.44
1989	2.98	1.60	0.04		4.14	2.24	-0.30
1990	2.55	1.96	-1.17		3.85	2.05	-0.77
1991	2.45	4.28	-4.29		3.79	2.11	-1.21
1992	2.78	2.25	-1.25		4.34	1.83	0.04
1993	3.07	1.40	0.58		4.73	1.17	2.01
1994	2.85	0.14	1.19		4.10	0.36	1.31
1995	2.41	-0.32	1.36		3.64	0.14	1.31
1996	2.23	-0.17	1.21		3.24	0.07	1.04
1997 (9 mos)	1.93	-0.15	1.04		2.88	0.02	0.95

Source: Norges Bank.

1/ Due to changes in definitions, data for 1980–86 are not fully comparable with those for later years.

2/ Data for the 24 largest savings banks until 1992, and the 30 largest savings banks thereafter.

Table 26.   Norway: Financial Intervention in Connection with the Banking Crisis, 1988–1993

(In millions of Norwegian Kroner)

	1988	1989	1990	1991	1992	1993	Total
Official support:	200	574	0	11,107	8,232	3,387	23,500
Norges Bank 1/	200	574	0	0	1,157	1,525	3,456
GBIF 2/	0	0	0	8,385	5,979	1,808	16,177
Direct payments				5,615	5,750	1,808	13,173
Support to guarantee funds				2,770	229	0	3,004
CBGF 3/	0	0	0	2,450	0	0	2,450
SBGF 4/	0	0	0	320	229	0	554
Budgetary transfer to SBGF	0	0	0	1,000	0	0	1,000
GBINVF 5/	0	0	0	1,722	1,096	54	2,872
Payments by guarantee funds with own resources							
CBGF 3/	0	885	466	3,385	0	0	4,736
SBGF 4/ 6/	0	1,721	179	309	0	0	2,209
Total, official plus guarantee funds	200	3,180	645	14,801	8,232	3,387	30,445

Source: Norges Bank.

1/ Subsidy element of concessional loans and deposits by the Norges Bank. The estimate for 1992 covers the period December 1991–November 1992, and the estimate for 1993 covers the period December 1992–November 1993.
2/ Government Bank Insurance.
3/ Commercial Bank Guarantee Fund.
4/ Savings Bank Guarantee Fund.
5/ Government Bank Investment Fund.
6/ Excluding the NOK 1.0 billion transferred to the SBGF from the budget in 1991.

Table 27.   Norway: Bank Capitalization, 1981–1997

(In percent of applicable asset base)

| | Commercial Banks 1/ | | Savings Banks 2/ | |
	Pre-1991 standard	Post-1991 standard	Pre-1991 standard	Post-1991 standard
Average, 1981-85	7.0	. . .	7.0	. . .
Average, 1986-90	8.1	. . .	5.7	. . .
1991	10.8	7.1	7.0	8.1
1992	9.0	8.6	8.0	11.0
1993	12.0	12.0	10.8	14.4
1994	. . .	12.4	. . .	14.9
1995	. . .	11.9	. . .	14.2
1996	. . .	11.5	. . .	13.9
1997 (end Sept.)	. . .	10.1	. . .	13.1

Sources: Norges Bank and OECD.

1/ Commercial bank data are for parent banks. The figures for the consolidated balance sheet of diversified financial conglomerates headed by banks in 1995 and 1996 were 12.6 percent and 10.7 percent, respectively.

2/ Data for the 24 largest savings banks until 1992, and the 30 largest savings banks thereafter. In 1995 and 1996 the remaining savings banks had an average capital/asset ratio of 21.0 percent and 20.8 percent, respectively.

Table A1. Norway: Demand and Supply

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(Volume changes in percent)					
Private consumption	484.3	1.5	2.2	2.2	4.0	2.7	4.7
Public consumption	208.9	4.3	5.0	2.5	1.4	1.0	3.3
Gross fixed investment	208.4	-0.4	-3.1	4.3	4.5	3.7	4.8
Stock changes 1/	23.6	-0.6	-0.1	0.5	0.5	1.6	-0.5
Total domestic demand	925.1	1.0	1.5	3.2	4.0	4.3	3.7
Exports of goods and services	412.7	6.1	5.2	3.2	8.7	3.6	10.0
Oil and gas	156.7	17.2	11.3	5.9	11.9	8.1	15.5
Other	256.0	1.8	2.5	1.8	7.2	1.3	6.9
Imports of goods and services	320.0	0.2	0.7	4.4	4.9	5.5	6.5
Gross domestic product	1,017.8	3.1	3.2	2.8	5.5	3.6	5.3
Mainland GDP 2/	834.8	1.3	2.4	2.7	4.1	3.1	3.7

Source: Statistics Norway.

1/ Changes in percent of previous year's GDP.
2/ Excludes items related to petroleum exploitation and ocean shipping.

Table A2. Norway: Final Consumption Expenditure of Households

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
				(Volume changes in percent)			
Total consumption	460.2	1.3	2.2	2.3	4.0	3.1	4.9
Food, beverages and tobacco	96.7	1.9	0.5	2.0	3.0	3.8	1.7
Clothing and footwear	26.6	7.2	-0.7	1.6	1.7	-4.1	6.3
Housing, light and fuels	104.4	2.7	0.5	1.3	1.4	1.5	1.5
Furniture and household appliances	29.5	0.1	5.8	1.0	9.2	5.2	3.7
Health services	11.7	5.9	-1.9	-1.0	2.1	-0.3	3.1
Transportation and communication services	78.5	-5.4	4.2	2.6	8.7	3.6	14.0
Education	2.1	1.7	-4.8	-9.8	-3.0	-1.2	0.0
Leisure, entertainment, culture	42.9	4.7	6.1	1.8	6.7	4.1	6.0
Hotels and restaurants	25.7	-0.4	6.6	4.6	6.7	4.8	3.9
Other domestic goods and services	37.8	8.2	0.6	9.7	2.6	4.4	3.1
Expenditures by Norwegians abroad	19.7	-10.3	11.3	2.0	8.5	0.8	5.6
Expenditures by foreigners in Norway	-15.2	-6.5	-7.6	-6.7	-13.4	6.9	0.0
Household disposable income	512.1	3.6	3.9	3.3	2.8	2.7	2.3
				(In percent of disposable income)			
Household saving	27.9	4.1	5.8	6.8	6.0	5.6	5.4

Source: Statistics Norway.

Table A3. Norway: Household Income and Saving

	1993 In billions of Nkr	1993	1994	1995	1996
		(Volume changes in percent) 1/			
Gross income	711.9	0.3	1.4	1.8	4.5
Wages	393.6	-0.2	3.8	2.9	6.4
Profits	88.0	2.8	1.3	-0.3	1.2
Interest earnings	46.3	-6.7	-16.4	2.0	-7.6
Income transfers from government	139.5	2.1	0.5	0.6	4.1
Other income	44.4	1.9	0.6	0.1	4.6
Expenses	272.3	-4.4	-0.5	0.8	4.4
Employees social security contributions	34.1	1.8	3.7	2.3	6.3
Employers social security contributions	49.1	-11.6	3.7	1.7	5.7
Interest payments	60.8	-15.7	-21.8	-8.4	-3.3
Direct taxes	93.9	4.4	6.6	4.8	7.2
Other expenses	34.4	0.9	4.2	-0.7	3.0
Household disposable income	441.6	3.3	3.0	2.3	4.5
Of which:					
Correction for saving in pension fund	2.0	-19.3	109.3	-0.7	1.1
Private consumption	411.6	2.2	4.0	2.7	4.7
Gross saving	30.0	21.9	-9.7	-3.9	1.8
		(In percent of disposable income)			
Saving rate	...	6.8	6.0	5.6	5.4

Source: Statistics Norway; and Ministry of Finance.

1/ Deflated by the private consumption deflator.

Table A4. Norway: Gross Fixed Investment

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(Volume changes in percent)					
Total investment	208.4	-0.4	-3.1	4.3	4.5	3.7	4.8
Private investment	176.6	-2.7	-4.7	7.6	5.4	4.0	4.8
Housing	26.1	-21.7	211.0	-72.3	24.6	13.0	-6.0
Agriculture, forestry and fishing	6.4	-22.6	3.0	-1.3	12.2	3.3	2.4
Petroleum exploitation	40.7	13.7	12.6	10.8	-13.7	-9.9	-5.8
Manufacturing and mining	18.2	-9.0	-1.4	-22.7	12.8	42.0	8.4
Electricity generation	4.7	-4.8	-9.7	0.7	-11.6	1.9	-7.0
Construction	1.0	-43.8	48.2	-26.7	8.1	22.6	2.8
Trade and commerce	23.3	10.2	0.2	7.7	20.1	11.5	12.4
Transportation	36.3	86.8	846.2	34.0	20.5	-1.3	21.6
Financial services	4.9	-14.0	-20.7	-11.1	62.6	23.4	10.8
Other	15.0	3.7	-1.8	25.6	6.8	4.1	13.4
Public investment	31.8	11.3	4.4	-9.6	-0.1	1.7	4.8
Central government	14.1	13.0	7.4	-15.9	-4.6	-3.7	1.4
Local government	17.7	9.5	1.0	-2.3	4.4	6.7	7.7
Memorandum item: Mainland investment 1/	155.4	-3.3	-2.2	-3.1	13.5	12.9	6.6

Source: Statistics Norway.

1/ Excludes items related to petroleum exploitation and ocean shipping.

Table A5. Norway: Real GDP by Sector

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(Volume changes in percent)					
Total economy	1,017.8	3.1	3.2	2.8	5.5	3.6	5.3
Business sector	859.9	3.1	3.2	3.0	6.2	3.9	5.7
Agriculture, forestry and fishing	22.5	2.2	-6.4	15.1	0.6	9.6	0.7
Petroleum exploitation	150.3	14.2	11.0	3.8	14.3	7.4	14.2
Manufacturing and mining	119.5	-1.8	1.8	2.3	4.3	3.0	2.7
Electricity generation	21.7	-1.3	5.7	2.3	-4.7	8.7	-15.0
Construction	36.7	-4.5	0.3	-7.2	4.5	7.1	2.4
Trade and commerce	104.6	3.8	1.4	-1.3	10.5	1.2	6.1
Transportation	92.4	5.8	-36.6	70.5	7.1	4.9	9.1
Housing	64.1	4.3	1.1	1.1	-0.2	0.9	0.9
Financial services	35.6	-4.8	-2.1	-2.5	-6.2	-1.9	-0.8
Other	86.9	1.8	38.8	-23.8	3.0	2.2	4.8
Public sector	157.9	3.1	3.3	2.0	1.7	1.8	2.7
Central government	46.7	3.0	2.6	1.6	0.8	1.7	1.9
Local government	111.2	3.1	3.6	2.2	2.1	1.8	3.0
Memorandum item:							
Mainland economy 1/	834.8	1.3	2.4	2.7	4.1	3.1	3.7

Source: Statistics Norway.

1/ Excludes items related to petroleum exploitation and ocean shipping.

Table A6. Norway: Indicators of Petroleum Activities

	1990	1991	1992	1993	1994	1995	1996
	(In billions of kroner)						
Export value	88.5	96.7	97.2	104.1	106.4	113.2	156.7
Accrued taxes and royalties	28.1	28.6	27.8	26.4	28.4	29.3	42.4
Paid taxes and royalties	26.1	32.1	24.7	26.6	24.5	27.6	33.1
Net cash flow	34.2	39.5	28.6	2.8	25.6	38.5	69.9
	(In millions of ton oil equivalent)						
Production of crude oil and gas	109	122	136	143	155	163	222
Crude oil	82	94	107	114	126	133	185
Natural gas	28	27	29	29	29	30	37
	(In percent)						
Petroleum exports as a share of total exports	30.1	31.4	32.4	32.9	31.9	32.0	38.0
Petroleum exports as a share of total GDP	12.3	12.7	12.4	12.6	12.3	12.2	15.4
	(In kroner per barrel)						
Price of Norwegian crude oil	148	133	120	123	111	108	134
Memorandum item: Price of Norwegian crude oil (in US dollars per barrel)	23.6	20.5	19.3	17.4	15.7	17.0	20.8

Sources: Statistics Norway; and Ministry of Finance, *Nasjonalbudsjettet.*

Table A7. Norway: Indicators of International Competitiveness and Trade Performance

(Annual percentage change)

	1991	1992	1993	1994	1995	1996
Terms of trade						
All goods	-2.4	-6.5	-1.3	-5.0	2.4	7.0
Traditional goods	0.4	-4.5	-0.6	-0.4	6.5	-2.0
Nominal effective exchange rate	-1.6	1.1	-1.4	-1.3	2.5	-0.3
Relative unit labor costs	-0.7	-0.2	-1.5	0.0	6.1	2.2
Exports of traditional goods						
In real terms	-2.7	5.7	3.2	12.5	4.2	10.3
Export markets	0.9	3.7	0.8	9.9	8.5	6.2
Export market share	-3.4	1.9	2.5	3.1	-4.0	3.7
Imports of traditional goods						
In real terms	0.6	3.7	1.3	12.9	9.5	9.2

Sources: Statistics Norway; and IMF Research Department.

Table A8. Norway: Exports of Goods and Services

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(Volume changes in percent)					
Total exports	412.7	6.1	5.2	3.2	8.7	3.6	10.0
Goods	321.7	7.4	8.3	3.4	11.0	5.9	11.5
Crude oil and gas	156.7	17.2	11.3	5.9	11.9	8.1	15.5
Ships, new	4.3	59.2	31.8	-60.2	44.8	-14.2	-1.4
Ships, old	3.8	24.1	-3.9	7.1	-23.1	21.9	-39.9
Oil platforms, new	0.1	10.7	61.3	2,564.0	-98.9	553.3	-9.2
Oil platforms, old	0.9	-31.6	-85.9	2,085.1	-21.5	-41.1	91.8
Other oil related exports	0.1	57.8	59.2	-40.7	-14.9	59.6	27.5
Traditional exports Of which:	155.8	-2.7	5.7	3.2	12.5	4.2	10.3
Industrial products	145.5	-2.2	4.9	3.2	13.2	3.4	10.7
Services	91.0	2.7	-2.6	2.4	2.7	-2.8	5.3
Freight earnings	46.8	3.8	-5.6	-2.7	4.5	0.2	2.0
Oil drilling	0.7	-32.7	-24.4	75.0	-24.1	-4.3	10.5
Other oil related service exports	1.1	114.6	15.8	-8.5	1.4	-34.5	-9.0
Pipeline services	3.4	1.6	-2.7	-4.2	31.8	-3.3	47.4
Travel	15.2	6.5	7.6	6.7	13.4	-6.9	-0.0
Other services	23.7	-2.5	-1.5	9.4	-8.0	-3.6	13.0

Source: Statistics Norway.

Table A9. Norway: Imports of Goods and Services

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(Volume changes in percent)					
Total imports	320.0	0.2	0.7	4.4	4.9	5.5	6.5
Goods	238.3	-2.2	-1.2	4.9	7.9	9.3	8.9
Ships, new and old	6.3	-20.5	-41.0	34.9	-27.0	-13.4	-5.6
Oil platforms, new and old	0.3	-24.9	-84.5	315.8	-87.3	103.7	-21.4
Other oil related imports	7.7	-19.7	-17.6	64.2	-30.5	40.0	20.9
Traditional imports Of which:	224.1	0.6	3.7	1.3	12.9	9.5	9.2
Industrial products	208.3	0.5	4.0	1.5	12.4	9.7	8.5
Services	81.6	6.5	5.3	3.4	-1.7	-3.6	-0.1
Shipping	20.1	5.2	-1.4	-9.7	6.5	0.2	2.0
Oil drilling	1.2	76.5	10.1	18.7	-41.3	50.7	-11.2
Other oil related service imports	4.1	118.0	-10.2	23.6	28.7	-35.9	-5.5
Travel	29.1	-8.8	10.4	2.1	7.2	1.9	4.7
Other services	27.1	10.5	8.6	9.1	-15.2	-5.5	-5.1

Source: Statistics Norway.

Table A10. Norway: Current Account Balance

	1996 In billions of Nkr	1991	1992	1993	1994	1995	1996
		(In percent of GDP)					
Goods and services							
Exports	412.7	40.4	38.3	38.4	38.4	38.0	40.5
Goods	321.7	29.0	28.0	27.7	28.3	28.8	31.6
Services	91.0	11.3	10.2	10.6	10.1	9.3	8.9
Imports	320.0	32.4	31.3	31.8	32.2	32.0	31.4
Goods	238.3	22.8	21.5	21.8	22.8	23.3	23.4
Services	81.6	9.6	9.9	10.0	9.4	8.7	8.0
Trade balance	83.3	6.2	6.6	5.9	5.5	5.4	8.2
Services balance	9.4	1.7	0.4	0.7	0.7	0.6	0.9
Balance of goods and services	92.7	8.0	6.9	6.6	6.2	6.0	9.1
Factor payments							
From abroad	38.6	3.1	3.5	3.4	3.4	3.4	3.9
Interest	23.2	2.7	2.3	1.9	2.2	2.3	2.3
Dividends	2.1	0.4	0.3	0.3	0.2	0.3	0.2
Reinvested earnings	3.7	-0.3	-0.4	-0.2	-0.1	-0.2	0.4
Transfers	9.6	0.3	1.3	1.3	1.1	0.9	1.1
To abroad	56.4	7.5	6.7	6.9	7.0	6.3	5.9
Interest	23.0	4.1	3.2	3.0	2.9	2.6	2.3
Dividends	9.5	1.2	2.2	2.3	1.3	1.2	0.9
Reinvested earnings	4.7	0.5	-1.1	-0.9	0.5	0.2	0.5
Transfers	19.2	1.6	2.3	2.5	2.4	2.2	2.2
Balance of factor payments	-17.8	-4.5	-3.2	-3.6	-3.7	-2.9	-2.0
Current account balance	72.5	4.3	3.7	3.0	2.6	3.4	7.1
Non-oil current account balance	67.7	...	-7.1	-7.6	-7.2	-7.0	-6.6

Source: Statistics Norway.

Table A11. Norway: Net External Debt

(In billions of NKr, at end of period)

	1991	1992	1993	1994	1995	1996
Net external debt						
Private sector	116.6	80.9	118.1	92.5	59.8	58.3
Oil and shipping	28.4	15.5	16.6	5.4	--	--
Private financial institutions	43.7	-19.3	8.7	6.1	-11.8	-50.6
Other	44.5	84.7	92.8	81.0	71.6	108.9
Public sector	-43.2	-15.8	-65.3	-68.6	-61.7	-130.7
Central government	22.1	50.3	67.6	63.0	64.4	71.3
State banks and Norges Bank	-73.8	-74.1	-139.9	-136.8	-136.1	-223.2
Local governments	8.5	8.0	7.0	5.2	10.0	21.2
Total	73.4	65.1	52.8	23.9	-1.9	-72.4
Memorandum item:						
Net external debt						
(in percent of GDP)	9.6	8.3	6.4	2.8	-0.2	-7.1

Sources: Ministry of Finance, *NasjonalBudsjettet*; and Norges Bank, *Economic Bulletin*.

Table A12. Norway: Labor Market Indicators

	1991	1992	1993	1994	1995	1996
Survey data	(Period averages in thousands)					
Labor force	2,126	2,130	2,131	2,151	2,186	2,246
Employment	2,010	2,004	2,004	2,035	2,079	2,137
Unemployment	116	126	127	116	107	109
Data based on information from employment agencies						
Registered unemployment	101	114	118	110	102	91
Unfilled vacancies	7	6	7	8	9	10
Persons affected by labor market programs	57	63	72	73	63	57
	(In percent of labor force)					
Survey unemployment	5.5	5.9	6.0	5.4	4.9	4.9
Registered unemployment	4.7	5.4	5.5	5.1	4.7	4.0
Unfilled vacancies	0.3	0.3	0.3	0.4	0.4	0.4
Persons affected by labor market measures	2.7	2.9	3.4	3.4	2.9	2.5

Source: Statistics Norway, Monthly Bulletin of Statistics.

Table A13. Norway: Wages and Prices

(Annual percentage changes)

	1991	1992	1993	1994	1995	1996
Hourly wage costs						
Total economy	5.8	3.0	3.9	3.6	4.8	5.5
Mainland	5.9	3.0	3.6	3.6	5.0	5.4
Mainland GDP deflator	3.6	1.5	1.9	1.8	4.5	1.5
Manufacturing labor costs						
Hourly labor costs	6.4	2.1	1.5	2.9	4.8	4.7
Productivity	0.8	2.5	0.6	0.9	1.0	1.0
Unit labor costs	5.5	-0.4	0.9	1.9	3.8	3.6
Private Consumptions	3.9	2.7	2.1	1.2	2.7	1.0
Food, beverages and tobacco	3.3	3.7	0.1	1.9	2.2	1.9
Clothing and footwear	1.2	1.5	3.0	1.3	0.8	-3.3
Housing, light and fuels	4.7	3.2	2.5	0.9	2.2	2.4
Furniture and household appliances	2.3	0.9	2.0	0.8	0.7	1.2
Health services	6.9	5.8	4.1	2.3	6.3	3.8
Transportation and communication services	6.6	3.4	3.0	2.2	4.1	-0.1
Education and recreation	3.5	2.2	2.5	1.2	1.4	0.4
Hotels and restaurants	4.6	3.8	3.9	1.1	1.4	2.2
Other domestic goods and services	-0.3	-0.5	1.5	-2.6	7.6	-1.9

Source: Statistics Norway.

Table A14. Norway: General Government Revenue and Expenditures

(In billions of Norwegian Kroner)

	1993	1994	1995	1996	1997 (Prel.)
Total revenue	408,210	436,471	472,685	522,599	556,182
Interest and dividends	50,832	46,457	48,432	48,330	45,297
Taxes and ss. Cont.	189,913	203,545	219,711	237,304	259,807
Petroleum taxes	15,479	18,051	20,056	28,900	38,000
Other indirect taxes	130,332	141,366	150,349	162,225	162,812
Other taxes	2,890	3,032	3,107	3,260	1,230
Transfers from state enterprises	8,244	9,010	10,970	26,944	38,151
Transfers from Norges Bank	5,080	9,545	14,340	7,239	4,236
Other	5,440	5,465	5,720	8,397	6,649
Total expenditure	420,693	433,817	443,139	463,394	478,864
Interest	27,845	27,065	26,857	26,818	23,545
Transfers abroad	6,599	7,389	7,931	8,279	9,180
Production subsidies	36,322	36,771	34,181	34,833	32,345
Transfers to households	151,008	153,757	158,503	167,247	173,666
Transfers to state enterprises	1,878	3,917	1,941	396	1,771
Public consumption	179,965	186,586	195,830	208,833	219,045
Capital expenditure and other	17,076	18,332	17,896	16,988	19,312
Financial balance	-12,483	2,654	29,546	59,205	77,318

Source: Ministry of Finance.

Table A15. Norway: Interest Rates

(In percent)

	Discount rates 1/			3-month Interbank rates 2/			Government bond yields 2/			Stock market indices (1990=100)	
	Norway	Germany	Differential	Norway	Germany	Differential	Norway	Germany	Differential	Norway	Germany
1990	10.5	6.0	4.5	11.5	8.4	3.1	10.7	8.9	1.9	100.0	100.0
1991	10.0	8.0	2.0	10.6	9.2	1.4	10.1	8.5	1.5	93.1	91.5
1992	11.0	8.2	2.8	11.8	9.5	2.4	9.9	7.8	2.1	86.7	87.3
1993	7.0	5.8	1.2	7.3	7.2	0.0	6.9	6.5	0.5	111.4	93.6
1994	6.8	4.5	2.2	5.9	5.3	0.5	7.5	6.8	0.7	142.5	106.1
1995	6.8	3.0	3.8	5.5	4.5	1.0	7.4	6.8	0.6	151.8	103.3
1996	6.0	2.5	3.5	4.9	3.3	1.6	6.8	6.2	0.5	182.3	117.9
1995											
Jan.	6.8	4.5	2.2	5.8	5.1	0.6	8.2	7.6	0.6	145.0	99.8
Feb.	6.8	4.5	2.2	5.5	5.0	0.4	8.0	7.4	0.6	146.3	103.1
Mar.	6.8	4.0	2.8	5.4	5.0	0.4	8.0	7.3	0.7	137.2	95.2
Apr.	6.8	4.0	2.8	5.4	4.6	0.7	7.8	7.1	0.7	143.7	99.2
May	6.8	4.0	2.8	5.7	4.5	1.1	7.5	6.8	0.7	143.7	102.2
June	6.8	4.0	2.8	5.8	4.5	1.3	7.6	6.7	0.9	154.1	102.5
July	6.8	4.0	2.8	5.6	4.5	1.1	7.6	6.8	0.8	145.5	107.8
Aug.	6.8	3.5	3.2	5.3	4.4	0.9	7.4	6.7	0.7	161.8	108.0
Sep.	6.8	3.5	3.2	5.4	4.1	1.2	7.1	6.6	0.5	164.4	105.7
Oct.	6.8	3.5	3.2	5.3	4.0	1.3	7.0	6.5	0.5	161.8	103.6
Nov.	6.8	3.5	3.2	5.2	4.0	1.3	6.7	6.3	0.4	157.9	105.6
Dec.	6.8	3.0	3.8	5.4	3.9	1.5	6.5	6.1	0.4	160.5	106.9
1996											
Jan.	6.8	3.0	3.8	5.5	3.6	1.9	6.4	5.9	0.5	166.2	114.8
Feb.	6.8	3.0	3.8	5.3	3.3	2.0	6.8	6.2	0.6	166.9	114.2
Mar.	6.5	3.0	3.5	4.9	3.3	1.6	6.8	6.5	0.3	171.5	114.0
Apr.	6.5	2.5	4.0	4.7	3.3	1.4	6.7	6.4	0.3	180.1	113.9
May	6.5	2.5	4.0	4.8	3.3	1.5	6.9	6.5	0.4	183.7	115.3
June	6.5	2.5	4.0	4.9	3.3	1.6	7.0	6.6	0.4	187.2	117.8
July	6.5	2.5	4.0	5.0	3.3	1.6	7.0	6.5	0.5	181.6	113.6
Aug.	6.5	2.5	4.0	5.0	3.3	1.8	7.0	6.3	0.7	177.2	116.5
Sep.	6.5	2.5	4.0	5.1	3.1	2.0	7.0	6.2	0.8	181.0	120.4
Oct.	6.5	2.5	4.0	5.0	3.1	1.9	6.7	6.0	0.7	188.8	120.3
Nov.	6.0	2.5	3.5	4.4	3.2	1.2	6.5	5.9	0.6	197.0	126.2
Dec.	6.0	2.5	3.5	4.1	3.2	0.9	6.3	5.8	0.5	206.6	128.1
1997											
Jan.	5.2	2.5	2.8	3.5	3.1	0.4	6.0	5.8	0.2	227.5	134.9
Feb.	5.2	2.5	2.8	3.5	3.2	0.4	5.7	5.6	0.1	241.3	143.5
Mar.	5.2	2.5	2.8	3.5	3.2	0.3	5.9	5.8	0.1	238.4	150.6
Apr.	5.2	2.5	2.8	3.5	3.2	0.3	6.2	5.9	0.3	234.4	151.1
May	5.2	2.5	2.8	3.5	3.1	0.3	6.0	5.8	0.2	247.8	155.7
June	5.2	2.5	2.8	3.5	3.1	0.4	6.0	5.8	0.2	256.7	164.4
July	5.5	2.5	3.0	4.0	3.1	0.9	6.0	5.6	0.4	271.1	187.0
Aug.	5.5	2.5	3.0	4.0	3.2	0.8	6.1	5.7	0.4	276.7	167.9
Sep.	5.5	2.5	3.0	3.9	3.3	0.7	5.9	5.6	0.3	278.0	176.9
Oct.	5.5	2.5	3.0	3.9	3.5	0.3	5.8	5.6	0.2	287.9	160.8
Nov.	5.5	2.5	3.0	3.8	3.7	0.1	5.7	5.6	0.2	271.7	167.8
Dec.	...	...	...	3.8	3.7	0.1	5.5	5.3	0.2	...	...

Source: IMF, International Financial Statistics.

1/ End of period.
2/ Period averages.

Table A16. Norway: Exchange Rate Developments

	Krone/ SDR	Krone/ US$	Krone/ ECU	Effective exchange rates (1990=100) Nominal	Real 1/	SDR/ Krone	US$/ Krone	ECU/ Krone	Effective exchange rates (1990=100) Nominal	Real 1/
	(Period average)					(Percent change from previous period)				
1990	8.5	6.3	8.0	100.0	100.0	-4.0	-9.3	4.5	-0.7	-0.4
1991	8.9	6.5	8.0	98.4	99.3	4.4	3.6	0.8	-1.6	-0.7
1992	8.8	6.2	8.0	99.4	99.1	-1.3	-4.1	0.3	1.1	-0.2
1993	9.9	7.1	8.4	98.0	97.7	13.2	14.2	3.9	-1.4	-1.5
1994	10.1	7.1	8.4	96.7	97.7	2.0	-0.5	0.3	-1.3	0.0
1995	9.6	6.3	8.3	99.2	103.7	-4.9	-10.2	-1.1	2.5	6.1
1996	9.4	6.4	8.2	98.9	106.0	-2.6	1.8	-1.1	-0.3	2.2
1996										
Jan.	9.4	6.4	8.3	98.4	104.2	-0.2	1.0	0.0	0.2	0.9
Feb.	9.4	6.4	8.3	99.1	105.6	-0.3	-0.2	-0.4	0.8	1.3
Mar.	9.4	6.4	8.2	98.8	104.9	0.0	0.3	-0.2	-0.4	-0.6
Apr.	9.4	6.5	8.2	98.7	104.2	0.4	1.1	-0.3	-0.1	-0.7
May	9.5	6.6	8.2	98.5	103.7	0.7	1.2	-0.1	-0.2	-0.5
June	9.4	6.5	8.2	98.5	104.6	-0.8	-0.7	-0.2	-0.0	0.9
July	9.2	6.4	8.2	98.8	105.9	-1.9	-2.4	0.3	0.3	1.3
Aug.	9.3	6.4	8.2	98.6	106.5	1.1	0.5	0.2	-0.2	0.6
Sep.	9.3	6.5	8.2	98.7	107.0	0.0	0.7	-0.4	0.1	0.5
Oct.	9.3	6.5	8.2	98.7	107.6	-0.1	0.4	-0.4	-0.0	0.5
Nov.	9.2	6.4	8.1	99.7	109.2	-1.1	-2.0	-0.6	1.0	1.6
Dec.	9.3	6.5	8.1	99.8	108.9	0.8	1.8	-0.4	0.1	-0.3
1997										
Jan.	9.1	6.4	7.8	102.7	111.3	-1.9	-0.3	-3.0	2.9	2.2
Feb.	9.2	6.6	7.7	103.7	112.0	0.5	2.7	-1.5	1.0	0.6
Mar.	9.4	6.8	7.8	102.3	110.8	2.5	2.9	1.4	-1.4	-1.1
Apr.	9.6	7.0	8.0	100.5	109.2	1.7	2.2	1.9	-1.8	-1.4
May	9.8	7.1	8.1	98.6	107.4	2.4	1.4	1.7	-1.9	-1.7
June	10.0	7.2	8.2	97.2	106.0	2.4	2.0	0.9	-1.5	-1.3
July	10.2	7.4	8.2	96.0	104.9	2.2	3.2	0.3	-1.3	-1.1
Aug.	10.3	7.6	8.2	96.0	105.1	0.9	2.7	-0.5	0.0	0.2
Sep.	10.0	7.3	8.0	98.0	107.5	-3.6	-4.0	-1.5	2.1	2.3
Oct.	9.7	7.1	7.9	99.9	109.7	-2.6	-3.4	-1.6	1.9	2.1
Nov.	9.7	7.1	8.0	99.1	109.1	0.0	-0.3	1.5	-0.8	-0.6
Dec.	...	7.3	8.1	98.7	108.8	...	2.8	0.3	-0.4	-0.2

Source: IMF, International Financial Statistics.

1/ Normalized unit labor costs in manufacturing adjusted for exchange rate changes.

Table A17. Norway: International Reserves

(In billions of NKr, end of period)

	1990	1991	1992	1993	1994	1995	1996
Official reserves	90.9	79.4	83.1	147.9	129.1	142.7	171.2
Gold 1/	0.3	0.3	0.3	0.3	0.3	0.3	0.3
SDRs	2.7	2.7	1.3	3.0	2.6	2.9	2.3
Reserve position in the Fund	3.4	3.4	4.5	4.4	4.4	6.0	6.0
Foreign exchange	84.5	72.9	76.9	140.1	121.7	133.4	162.6
Memorandum item:							
Gross official reserve (IFS)							
(in millions SDRs)	10,819	9,292	8,725	14,327	13,074	15,190	18,482
(in weeks of merchandise							
imports)	26	24	26	43	34	34	37

Source: IMF, International Financial Statistics.

1/ Gold valued at SDR 35 per fine ounce.