February 2001
IMF Country Report No. 01/34

Norway: Selected Issues

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Price: $15.00 a copy

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

NORWAY

Selected Issues

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Approved by European I Department

January 12, 2001

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Norway: Basic Data

Social and Demographic Indicators	
Area	323,878 square kilometers
Population (1999)	4.48m millions
Population growth (1998-99)	0.7 percent
GDP per capita (1998)	US$ 29,737
Population Characteristics and Health	
(most recent estimates as of December 1989)	
Life expectancy at birth: Overall	78
Female	81
Infant mortality (aged under 1, in percent)	0.5
Population per physician	451
Population per hospital bed	67

	1996	1997	1998	1999	2000 1/	2001 1/
	(Volume changes in percent)					
Private consumption	5.3	3.6	3.3	2.4	3.0	2.4
Public consumption	2.8	1.9	3.8	2.7	2.0	2.0
Gross fixed investment	9.9	13.9	5.8	-5.6	-4.9	-2.8
Export of goods and services	9.3	6.1	0.3	1.7	6.6	5.8
Of which: Oil and gas	-13.7	2.9	-3.6	-0.1	9.5	7.0
Import of goods and services	8.0	11.3	9.3	-3.1	1.2	3.2
GDP	4.9	4.7	2.0	0.9	3.0	2.4
Mainland GDP 2/	3.8	4.2	3.3	0.8	1.9	1.9
	(In percent of labor force)					
Unemployment 3/	4.1	3.3	2.4	3.2	3.3	3.3
	(Percentage changes)					
Consumer prices	1.3	2.6	2.3	2.3	3.0	3.0
Hourly labor cost in manufacturing	4.1	4.8	5.9	5.0	3.8	3.5
Effective exchange rate						
Nominal	0.3	0.5	-3.7	-1.6	...	...
	(Twelve-month percent change, end of period)					
Domestic credit	6.2	10.2	8.3	8.4	...	...
Broad money	6.0	4.9	5.0	10.4	...	...
	(In percent)					
Three-month Interbank rate	4.9	3.7	5.8	6.5	6.6	6.8
Ten-year government bond yield	6.8	5.9	5.4	5.5	6.4	6.4
	(In percent of GDP)					
State budget, including social security						
Revenues	42.6	43.6	42.5	41.9	45.6	48.2
Expenditures	37.9	37.5	40.0	39.2	35.3	35.7
Overall balance	4.6	6.1	2.5	2.7	10.3	12.5
General government financial balance	6.6	7.9	3.6	4.8	14.3	12.5
Current account balance	6.5	5.6	-1.3	3.9	14.3	13.3
International reserves (in months of imports of goods and services)	6.3	5.4	4.1	4.8	5.2 4/	...

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

1/ Staff estimates and projections as of October 2000.

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.

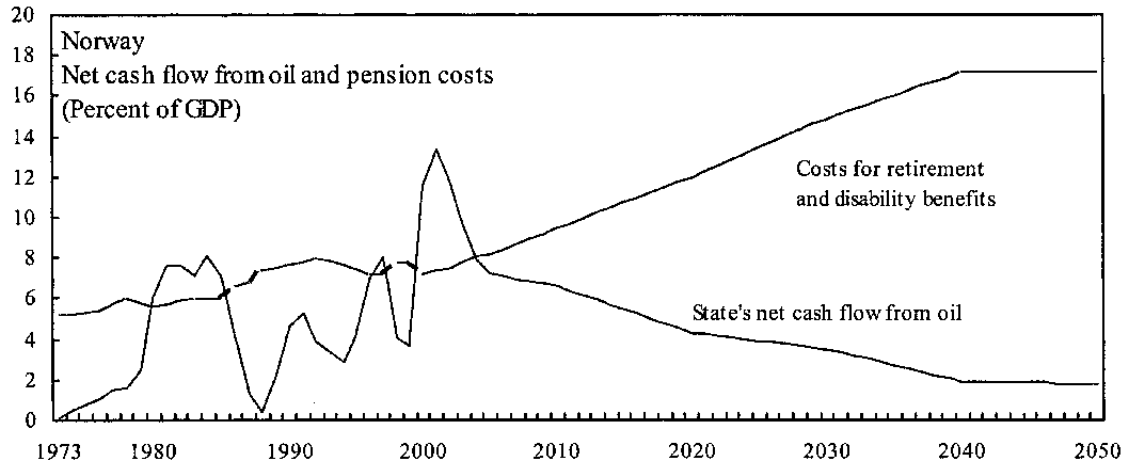
4/ December 2000.

I. Long-Term Fiscal and External Issues[1]

1. **Norway's long-run economic prospects depend in large measure on its strategy regarding the use of its substantial oil wealth.** Although the flows of income from the oil wealth are likely to generate sizeable fiscal and current account surpluses in the next few years, Norway will face major challenges in the long run, due to the gradual decline of oil exports and revenue, and the growth in pension and health care costs for an aging population. This chapter discusses long-run prospects and policy options and presents projections of the fiscal and external profiles.

Introduction and Summary

2. **Fiscal policy faces challenges over the long term from expected pressures on the public pension system and the eventual running down of petroleum reserves.** The graph below from Norway's 2001 national budget illustrates the two key revenue and spending trends facing fiscal policy in the coming decades.[2] The current boom in oil revenues that are flowing to the government as a consequence of peak production levels, high oil prices, and a strong dollar has pushed these revenues to about 14 percent of GDP. Over the coming decades, however, oil revenues are projected to decline sharply and dwindle to below 2 percent after 2040. Old-age pension and disability expenses are projected to show a continued upward trend as a percent of GDP, rising from the current 7 percent of GDP to around 18 percent of GDP.



[1] Prepared by Valerie Cerra and Elie Canetti.

[2] Unless otherwise noted, the sources for the figures are the Ministry of Finance, the Ministry of Oil and Energy, Statistics Norway, and staff estimates.

3. **These trends also have implications for the external sector.** The rise in government spending is likely to lead to pressure for the real exchange rate to appreciate on balance over the projection period. At the same time, as oil exports dry up and the government's financial wealth (held in the form of foreign securities) is used to meet growing demands for public services, the external balance could move from a position of exceptional net foreign wealth to a weak or unsustainable position. Therefore, a real depreciation may well be required for the long run in order to encourage the growth of other export industries that are needed to replace the fading oil industry.

4. **Unless the pension system is reformed, the goal of ensuring intergenerational equity may not be met.** The exploitation of an exhaustible resource such as oil represents a depletion of national wealth. To avoid excessive consumption of income from this source at the expense of future generations, it may be appropriate to limit current consumption to levels that could be sustained indefinitely on the basis of a reasonable rate of return on the investment of the corresponding assets. Nonetheless, the fiscal projections presented below indicate that government wealth, which accrues largely from oil wealth, is expected to be consumed in its entirety by the middle of the century due to the rising costs of pensions and other age-related expenditure. This implies that more than the permanent income on the oil wealth would be consumed by current generations. Indeed, there may be no oil wealth remaining for future generations to consume beyond the first half of this century.

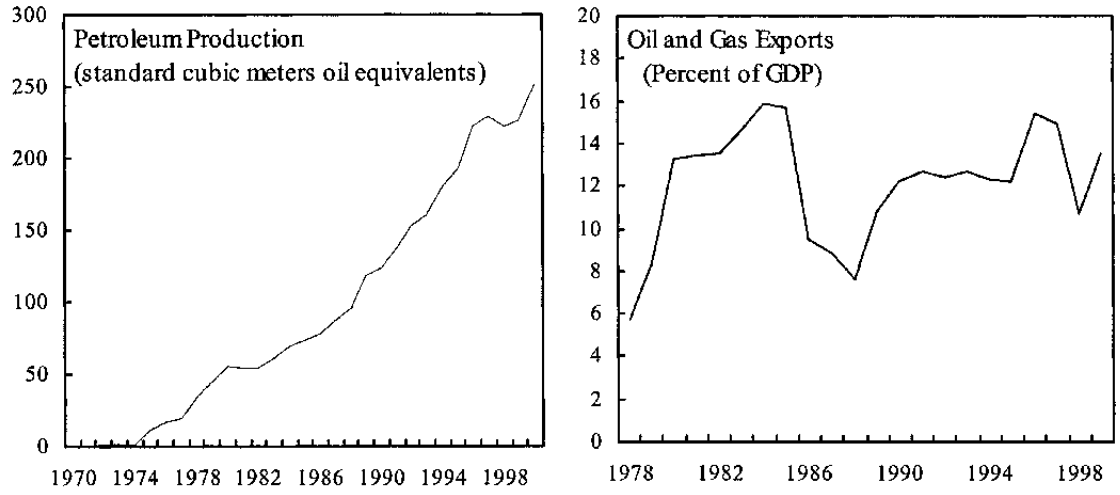
5. **The remainder of the chapter is organized as follows.** Section A describes the historical background and policy objectives of the Norwegian authorities including the benefits and challenges stemming from the substantial oil wealth, the role of the State Petroleum Fund, the Norwegian concern for equity, and the escalation of pension liabilities from the demographic shock. Section B presents more details about the Norwegian pension system and the policies that underlie the projections of the future liabilities. These two sections set the factual and policy context underlying future developments and policy tradeoffs. Section C presents long-run fiscal projections that illustrate the net effects of the decline in oil revenue and rise in pension costs. Beside the fiscal impact, the decline in oil income has a separate implication for the external sector, which Section D explores. The potential behavior of the non-oil current account—which is tied in part to both government expenditure policies and the economic restructuring required as the oil runs out—is then discussed in Section E and projections for the overall external balance are presented in Section F. Finally, conclusions are offered in Section G.

A. Background

6. **This section gives a brief introduction to Norway's long-run situation**, describing key characteristics that will impact the projections, such as Norway's substantial oil reserves, aging population, and the goal to ensure intergenerational equity and growth of mainland potential output.

Oil Wealth: Benefits and Challenges

7. **Oil production and exports have risen rapidly.** Since the discovery of oil on the Norwegian continental shelf in 1967 and Norway's emergence as a net exporter of oil and gas in 1975, the production of oil has increased gradually to a level of about 3 million barrels per day in 2000. Oil exports have contributed significantly to economic activity. Exports of oil and gas have averaged over 12 percent of GDP since 1978.



8. **Norway's petroleum resources are significant.** The annual output in 1999, as a percent of GDP, was higher than other major producers such as Canada, Mexico, and Nigeria, and on a par with Russia. In terms of future oil production, proven reserves are among the highest in the world on a per capita basis, although Norway is in the middle of the range with respect to proven reserves in relation to GDP.

Petroleum Resources - Selected Countries

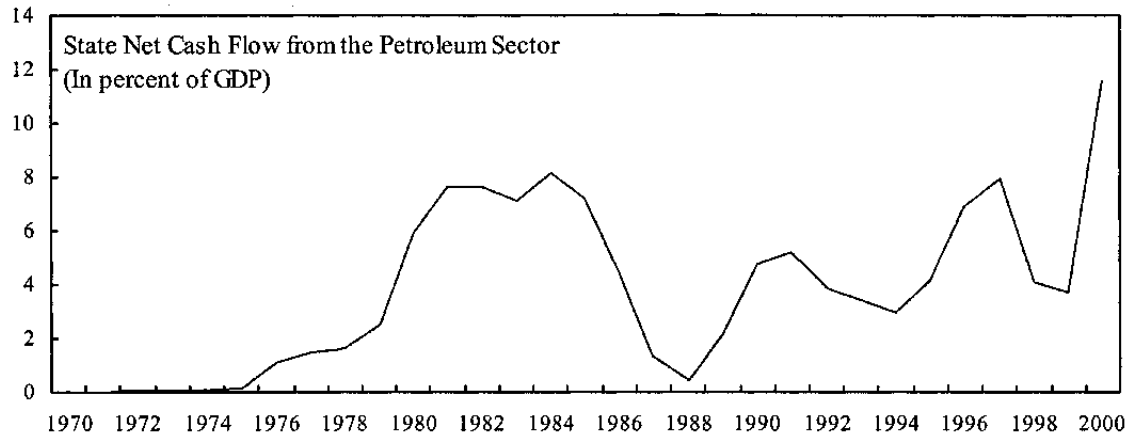
	Annual Production 1/ Percent of GDP	Petroleum Export Dependence 2/	Proven Reserves 3/	
			barrels per capita	value as percent of GDP
Canada	4.3	3.5	153	21.8
Ecuador	19.8	27.5	167	302.4
Indonesia	13.9	3.9	23	149.1
Mexico	8.3	14.0	286	192.0
Nigeria	15.5	92.0	202	489.5
Norway	14.2	24.3	2085	182.6
Russia	22.8	21.1	329	493.0
Saudi Arabia	60.3	82.7	13208	5693.7
Venezuela	30.1	70.0	3205	2270.8

1/ Value of annual petroleum production in 1999. The figure for Norway is from the authorities. Figures for the other countries are calculated on the assumption of an average petroleum price of $28.20 per barrel.
2/ Net petroleum exports as a percent of total exports of goods and services (average of 1995-97).
3/ Estimated as of January 1, 2001.

Sources: International Energy Agency, Oil & Gas Journal, staff estimates

9. **An important public policy objective has been to capture a large share of the rents from petroleum resources in the form of government revenues.** The most important instruments for generating such revenues, both immediately and in the long-run, are the tax and royalty system and the state's direct financial interest (SDFI) in the petroleum sector, as well as dividends from, and the rise in the asset value of, the state's holdings in Statoil and Norsk Hydro. SDFI was established in 1985 by dividing Statoil's holding in most Norwegian offshore licenses into an equity share for the company and a direct interest for the state. Most licenses awarded after 1985 have incorporated an SDFI interest, giving the state a direct interest in most offshore petroleum fields and transport systems. Under the SDFI arrangement, the state pays a proportional share of all investment and operating costs in a project and receives the corresponding proportion of production and other revenues. Statoil is responsible for the operation and financial management of SDFI.

10. **The government's net income from the petroleum sector has been substantial.** Since 1971, the state has received ongoing revenue from oil enterprises through taxes, fees and income from Statoil and SDFI. Although the state has incurred expenses for investment and operating costs, the net cash flow has been significant since the mid-1970s. Considerable net income is also expected over the next several years due to high oil prices, peak production levels, and reduced investment costs.



11. **Large revenues from petroleum activities are generating sizeable surpluses to both the government budget and the balance of payments.** In addition to the impressive fiscal consolidation achieved in the mid-1990s, oil revenue is responsible for a further substantial contribution to the fiscal balance. Net petroleum exports have also more than offset the non-oil current account deficits.

Contribution of Petroleum to Fiscal and External Balances

	1996	1997	1998	1999	Projections 2000	2001
	(In percent of GDP)					
General government fiscal balance	6.6	7.9	3.6	4.8	14.3	12.5
Net revenue from petroleum	6.8	7.9	4.0	3.7	11.6	13.4
Current account balance	6.5	5.6	-1.3	3.9	14.3	13.3
Net petroleum exports	15.3	14.8	10.5	13.4	20.9	19.3

Together with direct contributions to other Norwegian industries from the activities on the continental shelf, revenues from oil and gas sales have made it possible for Norway to maintain economic and employment growth and expand public services to a higher degree than otherwise would have been possible.

12. **The discovery of the substantial reserves of oil and natural gas has also confronted the authorities with many policy challenges:**

- The wealth from oil and natural gas needs to be consumed over time in a manner consistent with the principle of intergenerational equity. This involves trading off the competing uses of the wealth between satisfying current needs, financing the demographic bulge in pension and healthcare costs that would also favor current generations, and spreading much of the wealth to future generations.

- Norway needs to avoid the negative effects to the non-oil tradeables sector—referred to as the "Dutch disease"—that have frequently accompanied the production and export of natural resources in many countries. Policies need to encourage the long-run growth of the non-oil export sector and reduce restructuring costs to the mainland economy as oil reserves are exhausted over the next several decades.

- The mainland economy also needs to be protected against the negative impacts of sharp fluctuations in oil revenue stemming from either production changes or oil prices.

The State Petroleum Fund

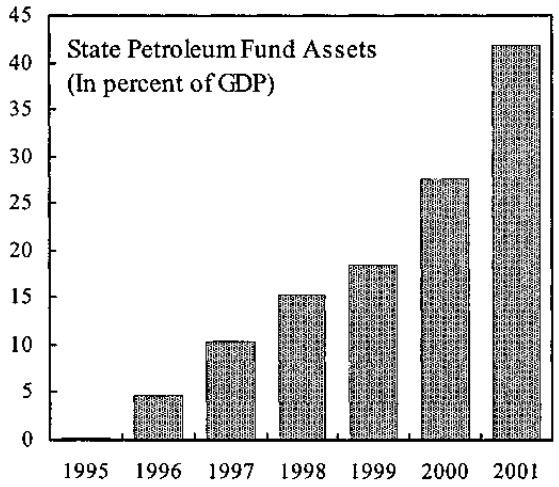
13. **Norway's strategy for managing oil wealth is centered on the SPF.** The government established the SPF in 1990 to avoid excessive spending of petroleum revenues and promote a gradual transformation of oil wealth into foreign financial assets. The first allocation was made to the fund in 1995, which was the first year the government ran a budget surplus since the fund's establishment. The SPF is a krone account of the Ministry of Finance in Norges Bank. Its revenues consist of central government net cash flow from petroleum activities and net investment returns. Its expenditure consists of an annual transfer to the Treasury to cover the non-oil deficit. According to the rules of the SPF, the fund cannot be increased without a central government budget surplus and is reduced with budget deficits. This prevents the creation of an artificial fund financed by public borrowing. Norges Bank is the operational manager of the fund and invests it entirely abroad in bonds and equity to prudently maximize long-term returns while maintaining liquidity.

14. **The SPF is an important macroeconomic tool.** As underscored by the language of the government's Long-Term Program, the authorities view the accumulation of SPF assets as a conversion of national wealth in the form of oil into financial assets.

> *"... the extraction of petroleum in the North Sea must be matched by the creation of other wealth with a similar return. The extraction of petroleum will increase during the programme period, before declining gradually during the next century. To avoid abrupt and important changes in industrial structures and to ensure that future generations will benefit from these resources, it is essential to separate the use of petroleum revenues from the formation of these revenues. The State petroleum fund is an important instrument designed to redeploy petroleum wealth."*

This conversion seeks to facilitate a prudent intertemporal transfer of resources, with the accumulated savings helping to cover the large expected increase in pension and health care costs related to the looming demographic shock, coming at the time when oil revenues are expected to taper off. An equally important role of the SPF is to insulate the domestic economy from oil-related external shocks by investing its assets outside Norway. This helps avoid a domestic demand surge and minimize the crowding out of the non-oil tradeables sector and the associated real appreciation of the krone during the peak years of oil production. Steering clear of domestic investments increases transparency since it precludes the SPF from becoming a second government budget through extensive domestic investment operations. It also minimizes domestic repercussions, should the government want to draw on SPF funds to finance an overall deficit (which is allowed under SPF rules, but has not occurred so far).

15. **The SPF has accumulated substantial assets.** Prior to 1995, the SPF received no transfers because of both weak budgetary outcomes and low net oil income in the first half of the 1990s due to expenditure for large infrastructure investments including pipeline construction and the building of offshore rigs. Subsequently, peak oil output volume, sharply declining investment costs, and more recently, high oil prices have contributed to increased transfers to the SPF. Investing abroad in a diversified manner has reduced risk by spreading exposure, and has probably raised returns owing to the increased availability of profitable investment opportunities. Indeed, the net cumulative real return measured in terms of the currency basket of the SPF over the three years through end-1999 has been a remarkable 28.6 percent. With sustained fiscal prudence and judicious investment decisions, SPF assets are expected to reach 28 percent of GDP at the end of 2000 and 42 percent of GDP at the end of 2001. The Fund has grown to an internationally significant size, reaching two-thirds of the Kuwait Reserve Fund for Future Generations, and about a tenth of the largest US pension fund at end-1999.

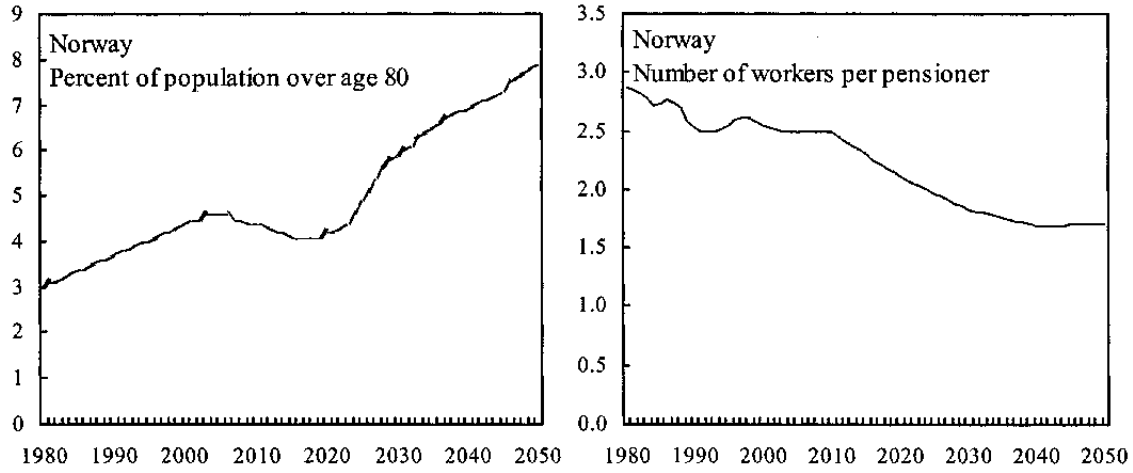


16. **Norway's management of its oil wealth compares well with many other countries.** The policy of saving most of the high oil revenue in the SPF protects Norway's mainland economy from fluctuations in demand and price pressures that would occur if the highly volatile revenue were used to alternately relax and constrain public expenditure in a similarly volatile fashion. Investing the SPF in foreign assets offsets current account receipts by capital outflows and thereby helps contain exchange rate volatility. The operational design of the SPF, under which the fund's assets represent net government savings, fosters transparency and addresses fungibility issues through its integration with the budget process. Transfers to and from the fund need parliamentary approval and the fund's operations are incorporated into the fiscal accounts. In addition, comprehensive accounts and data on the

SPF's operations are available in budget documents as well as quarterly and annual reports, and are regularly audited. By comparison, the design of natural resource funds in many other countries could be improved to reduce the negative impact of volatile revenue and increase transparency.[3]

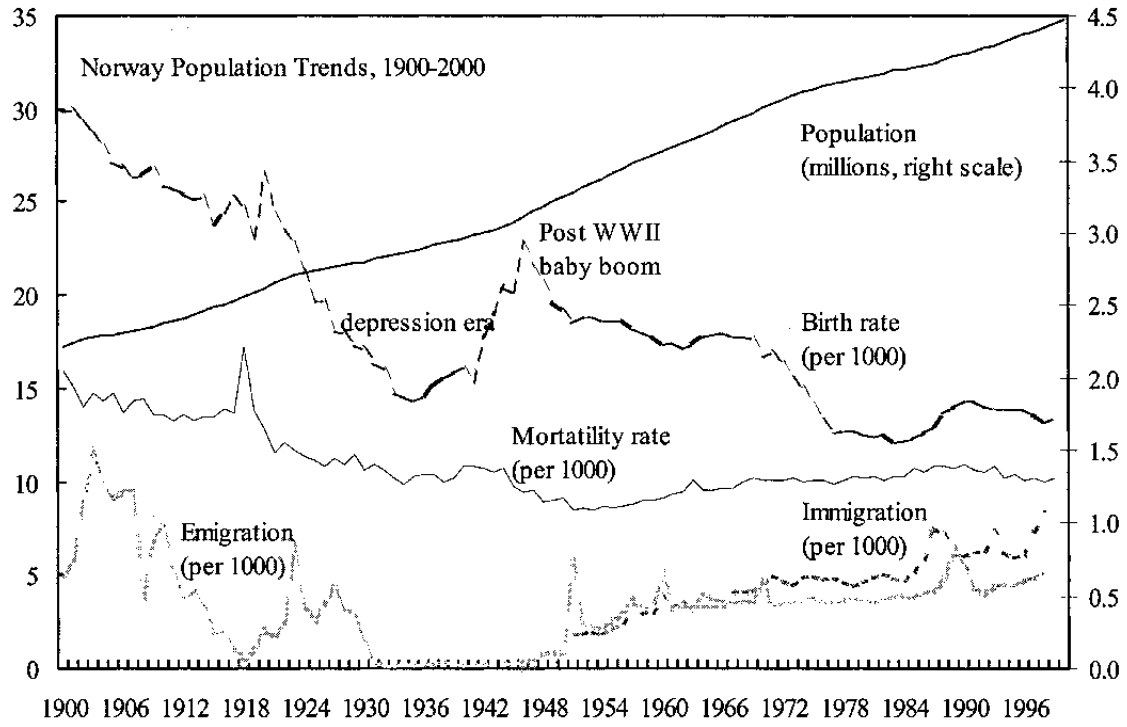
The Demographic Shock

17. **Norway's population is expected to age steadily over the next 50 years.** The proportion of the population over the age of 80 will likely double by 2050. At the same time, the number of workers supporting each pensioner will decline gradually from a current ratio of about 2.5 to a ratio of about 1.7 workers per pensioner.



18. **There are several demographic factors responsible for this trend.** As can be seen in the historical data, the mortality rate has fallen, implying a longer average lifespan. Birth rates have also declined, leading to fewer young workers expected to replace those retiring. Beside the general downward trend over the century, there was a temporary decline in birth rates in the depression era, followed by a temporary boom following World War II. Immigration has increased in recent times, but has been mostly offset by emigration.

[3] For a review of the experience and policy implications for resource stabilization and savings funds, see Fasano (2000) and IMF (2000).



19. **The long-term demographic challenge is broadly similar in scope to that faced by many other industrial countries.** The ratio of elderly Norwegian citizens to persons in the labor force will increase from 24 percent in 2000 to 39 percent in 2030 (Table 1). This near doubling of the elderly dependency ratio is similar to the change in population structure that most other OECD countries will experience over the same period.

The Welfare State

20. **The policy framework is characterized, like the other Nordic countries, by a strong concern for equity and social protection.** Along with managing its oil wealth prudently, the Norwegian concern for equity stands out as an important policy objective. The government spends roughly 30 percent of GDP on social programs including various forms of transfers to households, health care, and labor market programs. The public sector provides most of the education and healthcare services, with consumers financing very little. The principle of universalism has been a key characteristic, although there has been a trend toward more targeting in some areas. Most transfers and welfare benefits are financed on a pay-as-you-go basis.

21. **Norway's welfare state has grown rapidly over the last three decades.** In 1960, total government spending was lower in proportion to GDP than in the United States. A universal and partly earnings-related social security pension scheme was introduced in 1967 and is still maturing. Social programs expanded rapidly in the 1970s and 1980s. In 1978, Norway established one of the most generous sickness benefit schemes in the world. In the

Table 1. Elderly Dependency Ratio, OECD, 1960-2030

Country	1960	1990	2000	2010	2020	2030
Australia	13.9	16.0	16.7	18.6	25.1	33.0
Austria	18.6	22.4	23.3	27.7	32.6	44.0
Belgium	18.5	22.4	25.1	25.6	31.9	41.1
Canada	13.0	16.7	18.2	20.4	28.4	39.1
Denmark	16.5	22.7	21.6	24.9	31.7	37.7
Finland	11.7	19.7	21.5	24.3	34.7	41.1
France	18.8	20.8	23.6	24.6	32.3	39.1
Germany	16.0	21.7	23.8	30.3	35.4	49.2
Greece	12.3	21.2	25.5	28.8	33.3	40.9
Iceland	14.1	16.6	17.3	18.1	24.1	32.1
Ireland	18.6	18.4	16.7	18.0	21.7	25.3
Italy	13.3	21.6	26.5	31.2	37.5	48.3
Japan	9.5	17.1	24.3	33.0	43.0	44.5
Luxembourg	15.9	19.9	21.9	25.9	33.2	44.2
Mexico	..	6.4	7.0	8.0	10.4	14.8
Netherlands	14.7	19.1	20.8	24.2	33.9	45.1
New Zealand	..	16.7	17.1	18.9	24.6	30.5
Norway	17.3	25.2	23.9	24.0	31.2	38.7
Portugal	12.7	19.5	20.9	22.0	25.3	33.5
Spain	12.7	19.8	23.5	25.9	30.7	41.0
Sweden	17.8	27.6	26.9	29.1	35.6	39.4
Switzerland	15.5	22.0	23.6	29.4	37.8	48.6
Turkey	6.7	7.1	8.9	9.4	11.7	16.2
United Kingdom	17.9	24.0	24.4	25.8	31.2	38.7
United States	15.4	19.1	19.0	20.4	27.6	36.8
Total OECD	14.9	19.3	20.9	23.5	29.8	37.7
OECD Europe	15.3	20.6	22.1	24.7	30.8	39.2
Selected OECD 1/	15.5	20.6	21.8	24.7	31.7	39.4
Selected Europe 2/	16.5	22.1	23.0	25.8	32.5	40.6
Nordic ex-Iceland	15.8	23.8	23.5	25.6	33.3	39.2

Source: OECD

1/ Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, U.K., U.S.
2/ Austria, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Sweden, U.K.

1980s, government spending on several public assistance programs swelled, including spending on disability pensions, sickness benefits, unemployment benefits, single parents' allowances, and means-tested municipal economic assistance.

22. **The Norwegian desire for equity extends to generations not yet born.** Therefore, the authorities have declared that the oil wealth must be distributed in a manner consistent with intergenerational equity. This policy concern is clearly expressed in the Norwegian Long-Term Program:

> *"It is a requirement that future generations should inherit a national wealth per inhabitant at least as large as the one inherited by the present generation."*

23. **Current generations have already consumed a significant amount of oil income.** Much of the oil revenue generated over the past 30 years has been absorbed by the Norwegian economy through the non-oil public budget deficits. The government estimates that roughly three-quarters of the state's net cash flow from oil has been used to cover the non-oil fiscal deficit in the period 1971-2000, excluding investment for oil infrastructure and education and training for the oil industry.

24. **The welfare systems that are currently established imply a considerable growth in public outlays and resource demands over the medium and long term.** As discussed in more detail in the next section, demographic changes will have a key role in this growth. Norway's significant oil revenue will enable it to cope with these demographic challenges better than many other countries. Nonetheless, the policy objective of achieving intergenerational equity requires that a large part of the oil wealth be saved beyond the next several decades.

B. The Norwegian Social Insurance System

25. **This section discusses the details and implications of Norway's system of social insurance schemes.**

26. **All persons residing in or working in Norway are insured compulsorily under a pay-as-you-go National Insurance Scheme (NIS).**[4] The NIS is financed by contributions from employers, employees and general tax revenues, and confers a wide range of benefits on its participants. The scheme is integrated into the government budget rather than as a separate account with contribution rates tied to outlays as in other OECD countries. Many NIS benefits are linked to a basic amount (currently NOK 49,090 or around $5,500), which is adjusted on a discretionary basis, generally annually, by Parliament. These adjustments

[4] The other two elements of Norway's Social Insurance Scheme are the Family Allowance Scheme and a recently introduced scheme paying cash benefits for families with small children.

provide the main element of indexation of benefits. In the past ten years, the basic amount has been increasing at a rate of about ½ percentage point below wage increases, but well above CPI inflation. At the same time, the minimum pension has been growing at a faster rate than wages.

27. **The principal NIS benefits are old-age and disability pensions.**[5]

- *Old-age pensions* commence at the official retirement age of 67 (though they may be partially deferred until age 70). They consist of (i) a basic pension which is calculated as a ratio to the basic amount (a full basic pension is equal to the basic amount), and which is independent of previous income and contributions paid, and (ii) a supplementary pension, introduced in 1967, the amount of which depends on the number of pension earning years and income as measured by "pension points".[6] A full pension requires an insurance period of 40 years. Since supplementary pensions were introduced only in 1967, a transitional period during which average benefits are increasing will continue through 2007, although some special transitional provisions were introduced to partially compensate pensioners who would not have the opportunity to complete 40 years service under the system. The supplementary pension is capped at a maximum of about 3½ times the basic amount. In addition, for pensioners who receive no or only small supplementary pensions, special supplements are provided which have the effect of increasing the minimum pension (basic benefit plus special supplement) to nearly double the basic amount.[7] As a result, **the distribution of old-age pension benefits is relatively flat, effectively entailing a transfer of wealth from high income earners to low income earners.** The ratio of the maximum old-age pension to the minimum pension is on the order of 2½ times and will eventually fall to 2.2. At high incomes (exceeding 12 times the basic amount), there is no marginal increase in old-age pension benefits.

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[5] Other benefits include survivors benefits, additional (more narrowly targeted) disability benefits, rehabilitation benefits, occupational injury benefits, benefits to single parents, medical benefits in case of sickness and maternity, funeral grants, and cash benefits for sickness, maternity, adoption, and unemployment. See Thomas (1998) for more details on some of these benefits, as well as on the family allowances and child cash benefits.

[6] Pension points are earned annually as an increasing function of an individual's income level, but are capped at 7 points per year as income reaches 12 times the basic amount. See Thomas (1998) and Ministry of Health and Social Affairs (2000) for details.

[7] About one-third of old-age pensioners receive the minimum pension. This ratio is expected to decline over time, in particular due to the increase in work-force participation rates among women.

- *Disability pensions* are available to those aged 18 to 67 whose working capacities are permanently reduced by at least 50 percent due to illness, injury or defect. **Both the level of benefits and eligibility requirements are relatively liberal.** Benefits consist of basic pensions, supplementary pensions and special supplements, calculated on the same basis as for old-age pensions. In fact, for those who go on disability, pension points continue to accumulate up to retirement age so that the only difference between the benefits accruing under the disability pension and the old-age pension are that the former are based on the income level before the disability occurred. Eligibility criteria for disability benefits have become liberalized over time, in part because of administrative and judicial decisions. Eligibility is determined by the National Insurance Office and can be approved on the recommendation (and even against the recommendation) of a single doctor. Moreover, there is no requirement for continued monitoring of those on disability, and some 90 percent of those who take up disability pensions never return to work.

- **Other social benefits are relatively generous.** In particular, cash sickness benefits, equal to 100 percent of pensionable income (although income higher than six times the basic amount is not taken into account), are available for a full year.[8] In September 2000, a commission set up to examine the increase in uptake of disability and sickness benefits (the Sandman Commission) recommended a modest shift of financing towards employers combined with a 20 percent reduction in sickness benefits (offset by a general reduction in social insurance contributions) in order to reduce the incentives to take sick leave.

28. **In addition to the NIS benefits outlined above, the state has a role in financing other pension benefits:**

- Central government workers and teachers are covered by a pay-as-you-go (PAYG) *government occupational pension*, which has the effect of guaranteeing a total income replacement rate of 66 percent.[9] In other words, if NIS pensions do not achieve a 66 percent replacement rate, the occupational pension will make up the difference, even if shortfalls from NIS benefits are due to changes in NIS rules. As a result, public workers are insulated from any changes in such rules.

- A contractual *early retirement scheme* (the avtalefestet pensjon - AFP) was introduced in 1989 allowing employees to retire at age 64 with benefits comparable to

[8] The first 16 days of sickness benefits are paid by the employer, and thereafter are covered by the state.

[9] There are also funded occupational pension schemes for local government workers (other than teachers) and the private sector. The schemes for local government workers also guarantee a 66 percent replacement rate.

disability benefits. The AFP was originally granted primarily to workers in the manufacturing sector. However, it has since become much more widely available, now covering 40 percent of the private labor force and 100 percent of the public sector (60 percent of the total labor force), and the eligibility age has been reduced (albeit with some limitations) to 62 years of age. The state finances the AFP scheme for public sector workers and provides a subsidy equal to 40 percent of the scheme's expenses for private sector workers age 64 or older.

29. **Costs of these social insurance programs are expected to rise rapidly.** The authorities estimate that the fiscal cost of the old-age pension and disability schemes under current policies will grow from about 7 percent of GDP now to 15 percent in 2030 and 17 percent in 2050. The growth in the ratio of public pension expenditure to GDP is expected to outstrip that of many other advanced countries (Table 2) despite similar population trends. Including the costs of the government occupational pension and AFP schemes, staff estimates that over the same period, public expenditure on these benefits will rise from some 8 percent of GDP now to 19 percent of GDP in 2050. The following table shows the costs and numbers of people in each of the main schemes in 1999.

Social Insurance Benefits

	Number Receiving Benefit	Public Expenditure on Benefit (percent of GDP)
	end-1999	1999
National Insurance Scheme		
Old-age Pensions	631,220	5.2
Disability	269,840	2.4
Survivors' pensions	41,811	0.2
Norwegian Government Occupational Pension		
Old-age Pensions	88,516	0.4
Disability	34,843	0.1
Survivors' pensions	44,595	0.1
Early Retirement (AFP)	25,628	0.1

30. **The change in the demographic composition of the population accounts for roughly half of the growth in the projected fiscal cost of these social insurance programs over the next 50 years according to staff estimates.** That is, holding the demographic structure of the year 2000 constant and allowing for the same total projected population growth shows a reduction in the cost of such programs of around 5 percent of GDP in 2050 compared to the baseline. Most of the rest of the increase in expenditure is due to the full phasing in of benefits and increases in female participation rates in the labor force, which will imply higher average benefits for women. Only a relatively small part of the increase in expenditure over the period (equivalent to about ½ percent of GDP) is due to an

Table 2. Public Pension Expenditure, Selected OECD Countries, 1960-2050

	Actual 1/		Projected 1/		
Country	Δ1960-80	Δ1980-93	Δ1995-2010	Δ2010-30	Δ2030-50
Australia	1.6	-0.1	-0.3	1.5	0.7
Austria	3.9	1.4	1.4	4.2	0.5
Canada	1.6	1.6	0.1	3.7	-0.3
Denmark	4.5	0.8	0.8	3.3	0.6
Finland	2.7	4.0	0.6	7.1	-0.1
France	5.5	2.0	-0.9	3.8	0.9
Germany	2.4	-0.3	0.7	4.7	1.0
Ireland	2.0	-0.3	-1.0	0.2	0.2
Italy	6.5	3.6	1.4	0.8	-1.6
Japan	3.1	1.4	3.0	3.8	3.1
Netherlands	7.0	0.7	0.1	5.1	0.2
New Zealand	3.3	0.2	-0.7	3.1	1.5
Norway	4.8	1.5	0.8	4.9	0.6
Sweden	6.5	2.1	0.6	2.6	-0.5
United Kingdom	2.3	0.8	0.7	0.3	-1.4
United States	2.8	0.4	0.4	2.1	0.4
Average (all)	3.8	1.2	0.5	3.2	0.4
Average (Europe)	4.4	1.5	0.5	3.4	0.0
Average (Nordic)	4.6	2.1	0.7	4.5	0.2

Source: OECD

1/ Change in ratio of expenditure to GDP.

assumed increase in the proportion of workers taking advantage of disability benefits. The projections assume no increase in the proportion of workers taking advantage of early retirement, an assumption which is belied by recent trends in this area.

31. **The generosity of social insurance benefits may be having an impact on the labor supply.** Labor supply is, of course, a key determinant of potential growth and—by affecting the number of contributors to social insurance—also influences the fiscal position. While the aforementioned demographic factors will clearly be crucial in determining future labor supply, evidence is building that the generosity of social insurance schemes may be further contributing to a decline in the labor force:

- The number of disability pensioners has risen from some 120,000 in 1969 to 270,000 in 1999, a time period over which Norway's population increased by only about 15 percent. As a proportion of the labor force, the figure is projected to rise from some 11.5 percent at end-1999 to 13.3 percent by 2005.

- The number of workers on early retirement has grown from under 0.2 percent of the labor force in 1993 to 1.3 percent of the labor force in 2000, in part because of the liberalization of qualification rules. In the last two years, entry into the scheme has been increasing at a rate of roughly 20 percent per annum. As a result, the anticipated future retirement age of 18-year olds has fallen from 61 to 59 years of age over the period 1995 to 1999.

- Sickness absences have been growing rapidly, from an estimated average of less than 10 days per employee in 1996 to an estimated 13½ days in 2000, with further increases projected.

In addition, more labor resources will be drawn into services demanded by an aging population. According to government estimates, already enacted social insurance reforms imply that more than 60 percent of new entrants to the workforce in the next 10 years will work in welfare-related systems, especially in health and social services.

32. **Many countries have begun to reform their social insurance systems to account for the impending demographic shock.** In the 1990s, most OECD countries have undertaken reform measures such as increasing the pensionable age, promoting longer employment, increasing the contribution rate or required contribution period, or reducing the benefit rate (Kalisch and Aman, 1998). In addition, a number of countries have increased reliance on funded schemes, as well as promoting privatized pension schemes. Norway, by contrast, has done very little to reform its pension system during the 1990s. Two reforms implemented in 1992 have had relatively limited effects.

33. **A recent report prepared for the Nordic Council of Ministers** (Herbertsson, Orszag and Orszag, 2000) recommended measures to encourage work force participation of older workers through, inter alia, indexing the age at which workers become eligible for early retirement benefits to economic and demographic conditions and designing tax measures to

discourage early retirement. They also recommended that Nordic countries should increase the degree of prefunding of their pensions.

34. **The European Union's Economic Policy Committee has recently issued a report (EU, 2000) in which they reaffirmed earlier recommendations for EU countries to address the pressures of aging populations on public pension expenditures:**

- Containment of benefits should represent the main instrument for guaranteeing the solvency of PAYG pension systems. Reforms should especially aim at delaying retirement;

- The "breathing space" in pension expenditures in the next few years before baby boomers retire should be used to put pension systems on sounder fiscal footings, in part through public debt decumulation;

- The link between individual contributions and benefits should be strengthened in order to improve labor market incentives; and

- The role of funded schemes should gradually be increased.

35. **In 1998, the Moland Committee considered alternatives methods of financing social insurance schemes in Norway, including both publicly and privately funded schemes.**[10] While they were not asked to make recommendations, they noted certain possible advantages of funding and privatization of supplementary pensions (they considered that basic benefits should continue to be financed from the state budget):[11]

- In a publicly financed funded scheme, the existence of an explicit earmarked fund for future pension benefits would draw attention to the need for actuarially sound pension finances, and therefore could increase support for greater public saving. In this connection, the Moland Committee noted that to the extent that pensions were to be prefunded, it would probably be necessary to transfer some funds from the NPF to provide initial funding for current generations which would otherwise have to pay both for the current old generations under the unfunded schemes as well as funding their own future pensions.In addition, future generations may be less likely to tinker with benefits if they are funded, though this shifts the risks of any possible need to curtail benefits to future generations;

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[10] Their terms of reference enjoined them from considering broad changes in benefits.

[11] For a somewhat skeptical view of the benefits of funded pension schemes, see Barr (2000). The Moland Committee itself was well aware that all possible financing models, including funded schemes, contain both benefits and drawbacks.

- Partial privatization of supplementary pensions could lead to more efficient investment strategies as private sector funds compete for business;

- Schemes which are funded and with defined-contributions individually linked to benefits may help stimulate labor supply by increasing the marginal future benefits from larger contributions. Against this is some increased return risk to individuals.

C. Long-Term Fiscal Projections

36. **In the long run, public finances face challenges posed by the escalating pension liabilities.** Norway's resolve in recent years to transfer budget surpluses into the State Petroleum Fund has been based in part on the need to pay for rapidly rising social security expenditures, in particular pensions, in future years as a result of demographic changes. Pension expenditures (including government occupational pensions and early retirement schemes) are expected to rise from 8 percent of GDP in 2000 to a peak of 19 percent of GDP around 2050.

37. **Oil revenues accruing to the budget are expected to decline over the course of the next fifty years.** Using WEO assumptions, oil revenues are expected to rise from the 1999 low of 4 percent of GDP to around 19 percent of GDP in 2001, but then gradually decline to under 2 percent of GDP by 2050, as currently projected reserves are depleted.

38. **Oil revenue projections are based on oil production forecasts that try to estimate the total available reserves.** The forecasts, which are provided by the Ministry of Oil and Energy, contain several components, including a normal rate of discovery of new reserves. The Ministry of Petroleum and Energy estimates that petroleum resources on the Norwegian continental shelf total some 13.2 billion standard cubic meters. Of this, some 21 percent has already been produced and 22 percent remains in fields which have already been developed. Another 30 percent are less certain resources in already developed fields, discoveries under evaluation, or resources expected to be recovered through improvements in recovery technique. Finally, some 27 percent of the estimated total remains to be discovered. The total amount of resources is reestimated every year, but, reflecting the maturity of the fields, the estimates have remained fairly stable over time.

39. **Using plausible assumptions and the authorities' current expenditure policies, a baseline scenario is constructed for net financial assets held by the public sector.** The main assumptions underlying the projections consist of the following.

- The scenario is based on the budget for 2001 and constant non-oil revenue and expenditure (excluding pensions) levels in relation to GDP subsequently.

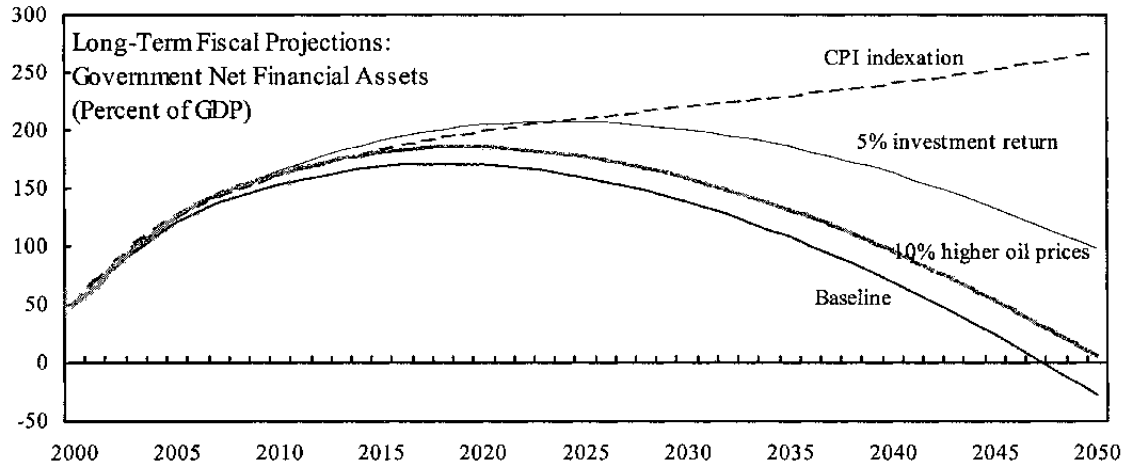
- Pension expenditure includes old-age and disability pensions and also early retirement pensions and the public occupational pension. Future pensions are assumed to be indexed to wage inflation, broadly in accordance with recent practice.

- Oil prices are assumed to follow WEO assumptions (that are based on data from the futures market) from 2000-2005, and then trend down to Norway's 2001 Budget assumption of Nkr125 kroner per barrel in 2001 prices by 2010 (and through the remainder of the projection period) in response to a projected decline in oil demand associated with the implementation of the international Kyoto agreement on CO2 emissions.

- Net financial assets held by the public sector include net assets from a defunct government pension fund and assets held in the state banks, as well as assets held in the SPF.

- The real rate of return on SPF assets is assumed to be 4 percent.

40. **The baseline long-term fiscal profile is worrisome.** The chart below shows that net financial assets would be exhausted before 2050, without additional measures.



41. **Favorable exogenous factors such as high oil prices or investment returns would improve the fiscal profile, but would probably only delay the depletion of public wealth.** Higher oil prices relative to the baseline by 10 percent would extend the government's positive financial position for a few years beyond the baseline scenario. An increase in the average annual real investment return on financial assets from 4 percent to 5 percent would extend the positive fiscal position for as much as two decades. However, both scenarios would still likely result in the exhaustion of public wealth by some time in the mid-21st century.

42. **Policy changes aimed at making the pension system financially more sound would enhance the long-run fiscal position.** Indexing future pensions to the CPI instead of wages would clearly generate a sustainable net asset position, but the feasibility of such a step may be open to debate. Alternative ways of addressing the problem would be to raise the

average retirement age or foster an increase in the participation rate. The authorities have calculated that increasing the average retirement age by 1 year would have the same effect on national wealth as raising the oil price by Nkr 13 per barrel (about US$2). A permanent increase of 9 percent in average working hours would raise national wealth by an amount equivalent to the total oil wealth. These estimates underscore the importance of ensuring a high level of labor supply.

D. Long-Term Profile of Oil-Related Exports and Income

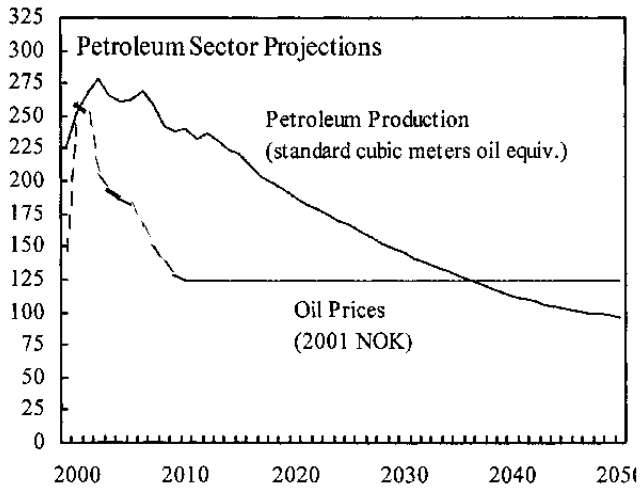
43. **One way to view external sustainability is to estimate the level of the non-oil current account deficit that could be financed in perpetuity by oil wealth.** Assuming a present value of oil wealth accruing to the government at 177 percent of GDP, a real rate of return of 4 percent on SPF assets, and potential mainland GDP growth of 2¼ percent, the wealth could be consumed in perpetuity at about 3 percent of GDP each year.[12] However, there are some complications that affect the accuracy of this simple calculation. The government does not completely extract all of the rent from the petroleum sector. Also, due to complex tax rules, the profile of oil revenue to the government is not fully equivalent to the profile of oil exports. Indeed, the overall value of oil exports is projected to be greater than that of fiscal oil revenue over the next fifty years, especially in the near-term as firms are expected to benefit from depreciation allowances from prior investment. Some of the oil rents from production on the Norwegian shelf accrue to foreign firms and are repatriated as dividends or interest. These factors must be taken into account to obtain a long-run profile for the total oil component of the current account.

44. **The oil current account is defined as the sum of oil and gas exports, the income on government net financial assets, and oil-related private net investment income.** This definition of the oil current account excludes some other trade activities related to the petroleum sector. For example, investment in the petroleum sector relies on a combination of domestic and foreign inputs. The imported inputs used for the petroleum industry cannot be easily disaggregated from imported inputs used for other industries, and therefore comprise a component of the non-oil current account. Likewise, some exported goods and services that are connected to activity in the petroleum sector are not included in the oil current account.

45. **The assumptions used to project the oil current account in the long run consist of the following:**

[12] Appendix I discusses this calculation.

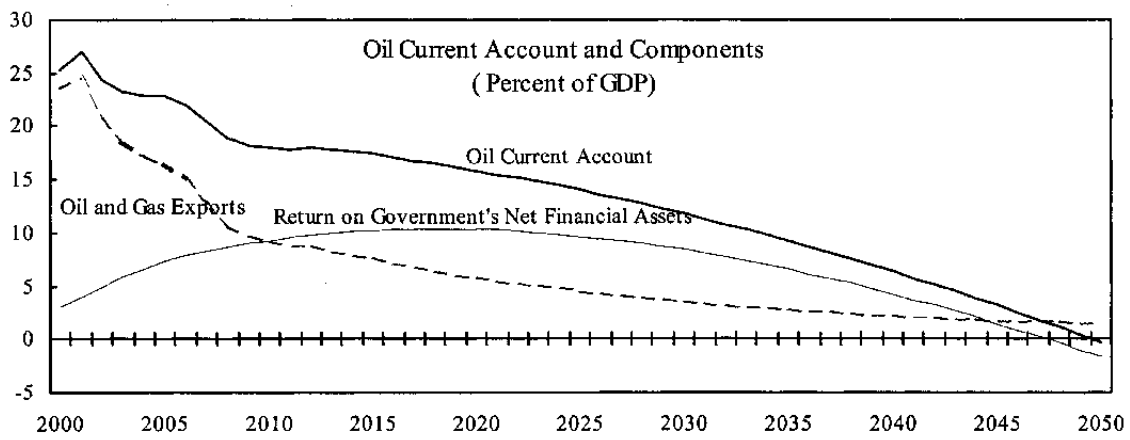
- Oil and gas exports take as given the historical data from Statistics Norway. The projections use the production profile for exports from the 2001 National Budget; oil prices are based on WEO assumptions through 2005, trend down to the authorities' assumption of 125 kroner per barrel by 2010, and remain fixed at 125 kroner per barrel for the remainder of the forecast horizon.



- The return on the government's net financial assets depends on the size of those assets, which in turn depends on the level of the non-oil fiscal balance. Thus, the projection of the oil current account is linked to the fiscal projections and uses a baseline assumption of 4 percent for the real rate of return on the net financial assets.

- There is also a component of the oil current account which reflects the oil related net investment income. This component is calculated as a fraction of the oil and gas exports, reflecting the transfer to abroad of oil export earnings of foreign oil companies that have a stake on the Norwegian Continental Shelf.

46. **On the basis of these assumptions, the main components of the oil current account are shown in the graph below.** Oil and gas exports are projected to decline from nearly 25 percent of GDP to around 10 percent of GDP within the decade. This will be partially offset by an increase in earnings from the build-up of the State Petroleum Fund. However, before the middle of the century, current account receipts from the oil sector are projected to be negligible.



E. Long-Term Behavior of the Non-Oil Current Account

47. **This section discusses the economics behind long-run projections for the non-oil current account.** It is unlikely that the non-oil current account balance will be a constant fraction of GDP over the projection period. Rather, it will depend on both private and public sector behavior.

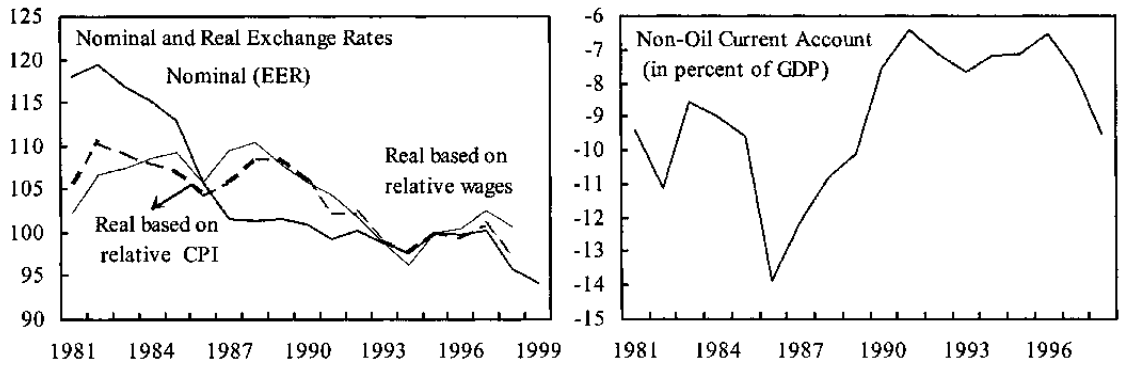
48. **Oil wealth and fiscal policy are the two most significant factors that will likely impact the behavior of the long-run non-oil current account balance.** The direct impact of oil wealth on the current account was illustrated above, but oil wealth also impinges indirectly on the mainland exposed sector through "Dutch disease" effects. In addition, public expenditure may be a determinant of the structure of the exposed sector through its impact on the real exchange rate. Theory and historical analysis can be useful guides in assessing the impact of these factors and any other determinants of the normative non-oil saving-investment balance.

Dutch Disease and the External Sector

49. **Dutch disease refers to a crowding out of the non-resource tradeables sector as a result of increases in income and wealth associated with the export of oil or other resources.** This crowding out is accompanied by an appreciation of the real exchange rate (Corden, 1984). Corden and Neary (1982) present a core theoretical model of Dutch disease economics with three sector specifications, including the booming, lagging, and non-tradeable sectors. They analyze the effects on resource allocation, factor income, and the real exchange rate of a boom in only one part of a small open economy's traded goods sector. The booming sector could be energy, natural resources, or any other sector, which either generates cost savings by technology progress or results in export expansion when world prices increase. Dutch disease is a consequence of this economic expansion that results in imbalanced growth. The result could be a combination of deindustrialization, real exchange rate appreciation, inflation, unemployment, and deterioration of the income distribution,

depending on the policy response and economic structure. In Norway's case, the likely changes in economic structure and policy developments would suggest potential future deterioration of the current account (Box 1).

50. **The historical evidence of Dutch disease in Norway is mixed.** The early period of oil development has been accompanied by real appreciation. Indeed, there have been periods of sizeable real appreciation in the mid-1970s and early 1980s which would be expected to have had a contractionary effects on the non-oil tradeables sector. Such effects would have been unlikely to fully reverse themselves with the subsequent real depreciation. Moreover, despite the existence of the SPF, the nominal exchange rate has to some extent mirrored short-term oil price movements, particularly in the 1990s. This may reflect the fact that some mainland industries provide goods and services to the oil sector and are therefore partly dependent on oil-related developments. Nonetheless, over the longer run, the consensus-based regime has helped to mitigate the spillover effects from oil on the mainland economy. In particular, average wage growth in Norway since the early 1970s has been comparable to that of trading partner countries. The modest growth in wages has been reflected in the relative consumer price index which has remained flat on average over the 1970-98 period. Most notably, the real exchange rate has not changed significantly over the last decade.



51. **Over the past 10 years, the non-oil current account deficit has averaged over 7 percent of GDP.** However, the recent deterioration in the non-oil current account associated with the peak of the 1990s boom is expected to be reversed in coming years as real fixed investment declines to more normal levels.

52. **Exploitation of oil wealth has facilitated an expansion in the size of the public sector.** Since the early 1970s, the public sector's share of mainland GDP has almost doubled to 19 percent. The upward trend in the size of the public sector in Norway has been more pronounced than in Denmark and Sweden (two countries with similar economic structures, but without significant oil resources) and the Netherlands. However, if fiscal transfers were included, the trends in Norway and the Netherlands were similar in the 1970s. The sharp increase in the value added captured by the public sector parallels the relative decline in the share of the manufacturing sector, partly reflecting diverging price trends between the sheltered and exposed sectors. Indeed, as expected, compared with the other countries, the

Box 1. The Literature on Dutch Disease: History and Theory

The literature has explored a number of historical instances of Dutch disease. These include the consequences of the inflow of treasure from the Americas on Spanish industry in the sixteenth century (Forsyth and Nicholas, 1983), effects of the gold discoveries in Australia on some industries (Maddock and McLean, 1984), consequences for structural change and relative wages in the Canadian economy over the period 1962-83 (Ansari, 1989), the impact of an oil boom in Cameroon on the agricultural and manufacturing sectors (Benjamin et al., 1989), and the celebrated case of the U.K. In the first example, the Spanish colonization of the New World gave Spain access to gold and other natural resources, which it chose to spend in large measure on war and luxury. When the flow of gold dried up, Spain was heavily laden with debt and experienced a long period of decline.1/ The discovery of gold in Australia in the 1850s led to an inflow of labor into gold mining (mainly from immigration) and a sharp increase in real wages. The rise in wages contributed to a contraction of the other main export industry (wool) as did the transfer of inputs to non-traded good uses (the sheep were used for meat production). The term "Dutch disease" itself applies to the case of the Netherlands following its extensive use of income from gas resources in the 1970s. The substantial revenue from gas financed a sharp increase in government expenditure. However, there was a corresponding decline in competitiveness and a loss of jobs in the non-gas export industries and import-competing industries that led to large current account deficits and deteriorating government finances.

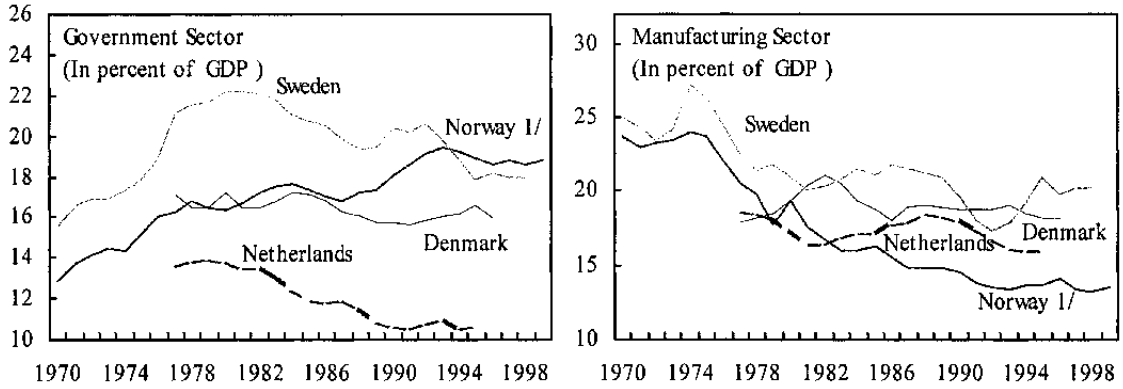
The discovery of a natural resource has generally been modeled as a permanent increase in transfer income to an economy facing fixed terms of trade. Such papers include Corden and Neary (1982), Neary and Purvis (1982), Bruno and Sachs (1982), Bevan, Collier, and Gunning (1990), and Van Wincoop (1992). Although the resource discovery models frequently employ an intertemporal framework for determining the role of the relative price of non tradeables in the adjustment process, they either assume a closed capital account such as the first two papers cited above or fail to characterize the behavior of the current account when the capital account is assumed to be open, such as the latter three papers.

In theory, the impact of resource wealth on the current account depends on economic structure. Brock (1996) considers the role of the relative price of non traded goods and the current account in the adjustment of a small open economy to the receipt of an international transfer (equivalent to the return on resource wealth). The economy's macroeconomic adjustment to the transfer depends upon the relative capital intensities of the traded and nontraded sectors of the economy as well as on the duration of the transfer. If non tradeables are relatively capital-intensive, the steady state capital stock will increase, and the current account will deteriorate. On the other hand, if the tradeable sector is relatively capital-intensive, the steady state capital stock will decline and the current account will improve. This analysis assumes that investment uses nontraded resources. If investment expenditure uses traded capital or traded capital subject to installation costs, there is no direct tradeoff between investment and consumption and no consequent change in the current account.

Norway's economic structure may undergo sharp changes. A large amount of investment in Norway was directed to the oil industry over the past three decades, using a combination of imported inputs and domestic resources. With a capital-intensive tradeables sector, the current account may have strengthened over the period in which oil income has been "transferred" to Norway. However, investment in the oil sector is expected to dwindle with production nearing its peak. In a theoretical application to Norway, Mork (2000) finds that a new discovery or realization of resource wealth raises the steady state values of investment and the capital stock. He assumes that new capital will be needed only in the nontraded sector in order to build up education and healthcare infrastructure. This switch to a capital-intensive nontradeables sector implies a deterioration of the current account according to Brock's analysis.

1/ Norges Bank Governor Gjedrem addressed this point in a speech to the Polytechnical Society on November 28, 2000 (http://www.norges-bank.no/english/).

emergence of oil has led to a greater relative contraction of Norway's manufacturing sector. The expansion in the public sector permitted by the oil income accruing to the government may not have been entirely adverse since it provided some welfare-enhancing economic services and may have generated additional employment opportunities.



Government Spending and the External Sector

53. **Dutch disease may be linked, in part, to the path of government spending.** Representative agent models of resource wealth may not distinguish between the government and private sector. In a frictionless perfect-foresight economy, only the initial discovery of resource wealth is important for economic behavior; the timing of the realization of that wealth through export earnings is irrelevant. Even if the wealth accrues only to the government, public saving of the wealth may be offset by private sector dissaving. Therefore, the timing of oil export earnings should not affect the non-oil current account, although it would clearly affect the overall current account. This type of model contains strong assumptions. First, there may be a high degree of uncertainty associated with the value of the oil wealth due to technological improvements that may affect extraction rates and the world price of oil at the time of sale. Second, the Ricardian behavior of the private sector to offset public saving assumes that there are no binding liquidity constraints. In Norway, the government has stated its plans to save much of the oil wealth in the near-term, and use some of it later to finance the public pension system. While this policy could have some Ricardian effects through the reduced growth of private pensions, it would be difficult for the private sector to offset the large buildup in SPF assets in the near-term by borrowing against their future pensions. Indeed, the stable private savings rate in Norway over the last decade could be viewed as partial evidence against Ricardian effects. Moreover, as the population ages, the equilibrium savings rate may fall and spending habits may change. This could impact the economy regardless of whether the government (the principal pension provider in Norway) or private sector provides the pensions. In sum, the path of government spending could affect consumption, and through distortionary taxation, the steady state capital stock as well.

54. **Public expenditure can crowd out export and import-competing sectors.** Montiel (1997) presents a theoretical model using intertemporal optimization that shows how the

long-run equilibrium real effective exchange rate (REER) can be affected by real variables. His analysis shows how changes in the composition of government spending impact the equilibrium REER in different ways, depending on whether the spending is directed toward traded or non-traded goods. In particular, government spending directed mainly toward non-traded goods and services generates excess demand in the non-traded sector. The price of non-tradeables relative to tradeables must rise to draw resources into the nontradeables sector. Appendix II shows how the real exchange rate is related to the relative price of nontraded goods. Holding foreign prices constant, a rise in the relative price of nontraded goods corresponds to a rise in the real exchange rate. Thus, if the government spends more on nontraded goods, sectoral balance is restored through an appreciation of the REER.

55. **The real exchange rate also depends on foreign government spending patterns.** If the governments of all countries symmetrically increase spending on their own respective nontraded goods, the relative prices of domestic nontraded goods, p_N, and foreign nontraded goods, p_{N^*}, would both rise. As a result of these symmetric price increases, the decomposition in Appendix II demonstrates that the real exchange rate would remain unchanged. On the other hand, output of domestic and foreign nontraded goods would increase and the volume of total trade would shrink.

56. **A variety of factors may reduce the tendency of Norway's real exchange rate to appreciate significantly over the long run.** The expected aging of Norway's population and the rise in the old age dependency ratio over the next several decades might require a shift of consumption to more nontraded goods and services such as hospital and elderly care. However, the implication of the above analysis is that Norway's long-run real exchange rate would only need to appreciate by the extent to which the shift in Norway's consumption of nontraded goods and services outpaces the shift in its trading partners. Similar demographic trends in Europe as well as other countries could therefore diminish the importance of aging as a factor requiring real appreciation in Norway, provided that there were similar shifts in consumption patterns overseas. Tables 1 and 2 illustrate the parallel developments in the population age structures and projected pension cost to GDP ratios in Norway and other OECD countries. Although Norway's expenditure ratio is projected to be somewhat higher than in many of the OECD countries, the extent of the difference may not be significant enough to require a major exchange rate adjustment relative to its current main trading partners. On the other hand, non-OECD countries may grow into a greater share of Norway's trade over time, particularly if the competitiveness of OECD countries as a group declines—with the expansion of their nontraded sectors—relative to other countries. Such a trend would likely imply a real effective appreciation of the krone based on future trade weights. However, other determinants of the equilibrium REER—such as the potential productivity catch-up of Norway's developing country trading partners—may offset this factor. These long-run factors are speculative at best.

F. Long-term External Sector Projections

57. **External sector sustainability depends on the path of both the oil and non-oil current account balances over the long-run.** As described above, the oil current account is

expected to register substantial surpluses in the near-term, which will more than offset the persistent non-oil current account deficits. The government plans to convert much of the oil revenue into foreign financial assets in the State Petroleum Fund over the next several years. In the absence of the rising pension costs or other reasons for an up trend in the non-oil government deficit, income from the financial wealth could be used to offset the decline in oil export earnings. However, if the non-oil deficit averages about 6¼ percent of GDP in the medium-term, as projected by staff, the Norwegians would be consuming more than the permanent return on oil wealth. Also, given the need to finance escalating pension and disability payments, the SPF will be drawn down over time, and will not be able to contribute to a permanent foreign income stream. This section presents projections of the overall external balance taking into account the baseline projection of government fiscal behavior through 2050.

58. **The current account consists of the oil current account and the non-oil current account components.** The change in net foreign assets is equal to their sum. The oil current account is based on the projections discussed in Section D above. Through 2005, the projections for the non-oil current account are based on the staff's trade model, which includes lagged responses of imports and exports to exchange rate movements, and domestic and partner country GDP. Beyond 2005, the non-oil current account projections are based on two alternative scenarios.

59. **One scenario maintains the non oil current account balance at a constant 6¼ percent of GDP for the entire projection horizon after 2005.** Based on this assumption, net foreign assets in Norway would increase to nearly 190 percent of GDP by the year 2025, but would then begin declining as oil and gas exports dwindled and as the investment earnings on the SPF fell. In this scenario, net foreign assets of Norway would still be positive at the end of the projection horizon, but would be on a path toward elimination within a few decades, assuming similar government policies beyond 2050.

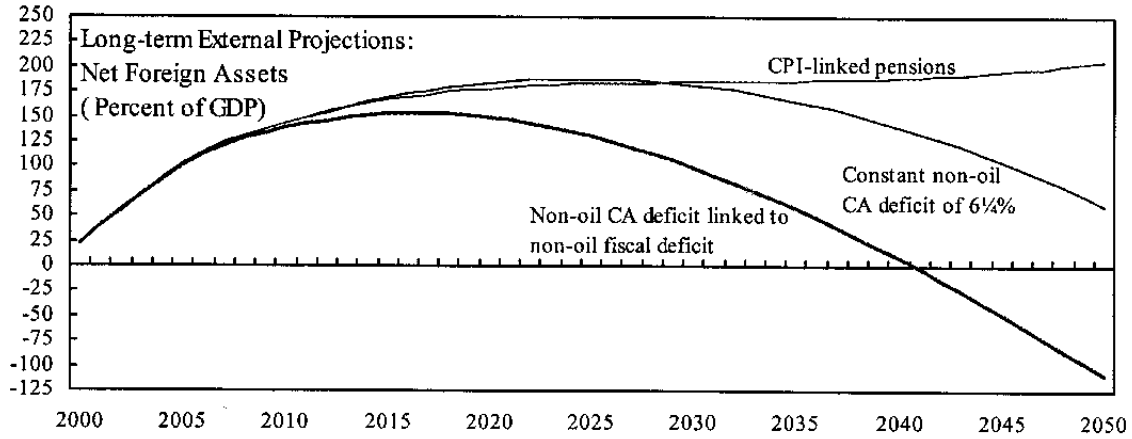
60. **The constant current account assumption needs to be modified to take into account the projected public sector behavior.** The fiscal projections indicate that the government will need to draw down its net foreign wealth (SPF assets) to fund future fiscal deficits due to high pension payments and other domestic obligations. Since the reduction of the SPF assets is a capital account transaction, it is not a component of the oil current account.[13] The counterpart to this transaction should be implicit in the non-oil current account. The sale of the government's financial assets would be used in part to finance higher imports. The remainder would be converted to domestic currency, placing upward pressure on the exchange rate and inducing a greater level of private-sector net imports. The result would be a tendency of the non-oil current account balance to worsen in line with public-sector behavior. The constant non-oil current account assumption would imply, without a good reason, that the private sector accumulates substantial net foreign assets to offset the

[13] The oil current account only includes investment earnings on the SPF.

government reduction of its net foreign wealth. In addition to the greater overall level of public spending that would spill over into higher net imports, the switch in the composition of spending toward non-traded goods and services would lead to an appreciation of the real exchange rate. This appreciation would, in turn, further shrink the exposed sector.

61. **The alternative scenario links the non-oil current account to the non-oil budget balance.** This scenario assumes that net foreign assets are drawn down in line with the reduction of the SPF, implying that the non-oil current account balance as a percent of GDP would be endogenous. It holds constant the private sector's non-oil current account. Based on this assumption, Norway's net foreign assets would be exhausted much before 2050.

62. **The projections indicate that a significant improvement in the performance of the non-oil exposed sector will be required based on current policies.** Changes in public expenditure policy aimed at saving some of the wealth for future generations could improve the external position, as would policies that strengthened the competitiveness of the non-oil export sector. Taking one of the alternate fiscal scenarios from Section C as an example, linking pension benefits to CPI growth rather than wage growth would lead to a substantial net foreign asset position at the end of the projection horizon. More generally, changes in the public pension system that reduce the generosity of pension benefits, increase contribution rates, or reduce the effective dependency ratio (through measures aimed at increasing the labor participation rate or retirement age) would indirectly contribute to a sustainable external position as well as a sustainable fiscal position in the long-run.



G. Conclusions

63. **Reforms to social insurance schemes are likely to be needed to shore up long-term public finances.** Norway's oil wealth can help to cushion the fiscal impact of generous social insurance systems and to finance the costs of the demographic transition. With the fiscal impact exacerbated by benefits which tend to provide disincentives to labor force

participation, reforms to public pension and disability programs along the lines already suggested for Nordic and EU countries[14] could help alleviate the terms of the tradeoff by:

- containing benefits for the pay-as-you-go public pension and other social insurance schemes;
- strengthening the link between retirement benefits and number of years in the work force, possibly through the tax system, to provide increased incentives for labor force participation;
- increasing the role of funded pension schemes, whether public or private;
- tightening eligibility rules for disability and early retirement schemes.

64. **It remains an open question as to whether future generations will benefit from the oil wealth.** According to the projections, the net effect of the rise in pension expenditure and the decline in oil revenue in the coming decades is the likely exhaustion of public wealth by the middle of the century. This implies that future generations may not be able to consume their part of the permanent income from oil wealth, except to the extent that the oil wealth mitigates the debt burden that future generations might otherwise have to bear. Moreover, there may not be sufficient incentives for reforming the public pension system due to the strong near-term public finances. This may force the burden of adjusting pension system parameters onto future generations.

65. **The external sector will likely need to be strengthened in the long run.** The projections show that, although Norway's net foreign assets could grow to over 150 percent of GDP within two decades, NFA is expected to decline sharply thereafter as petroleum exports diminish and as the government sells off its foreign assets to cover rising fiscal deficits. By 2050, Norway could become a net debtor to the rest of the world. Therefore, the non-oil tradeable sector needs to be significantly strengthened to help offset this later decline in the external balance and to ensure a sustainable external balance beyond 2050. At the same time, the combination of "Dutch disease" effects and public sector expenditure pressures could lead to an appreciation of the real exchange rate. Reforming the public pension system and containing the government's use of domestic resources would help avoid real appreciation and its associated damage to the competitive position of the mainland exposed sector.

[14] See Herbertsson, Orszag and Orszag (2000) and EU Economic Policy Committee (2000).

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A Note on the Sustainable Constant Non-oil Current Account Balance

Let F_0 denote a country's total net resource wealth, which reflects the net present value of all future export receipts of the country's ownership of a natural resource such as oil. For simplicity, assume that all of the extracted natural resource is exported and prices are constant.

$$(1) \qquad F_0 = \int_0^{\infty} e^{-rt} y_{oil}\, dt$$

where y_{oil} is the value of oil exports and r is the interest rate.
Assuming that there are no initial net financial assets aside from those reflecting the conversion of resource wealth into financial wealth, the country's instantaneous budget constraint can be written as follows.

$$(2) \qquad \dot{F} = rF + Y_{(mainland)} - C - I$$

where C and I are consumption and investment, respectively. The last three terms represent the non-oil current account.

What level of the non-oil current account deficit, expressed as a constant fraction of output, can be sustained in perpetuity by drawing on the country's oil wealth?

If consumption and investment grow at the same rate as output, they will remain a constant share of output. Let the non-oil current account deficit be given as a constant fraction of output, $-\phi Y$. In order for Y to grow at a constant rate given the budget constraint, the ratio of F/Y must be constant. Then, using $\frac{\dot{Y}}{Y} = \frac{F}{F} = \gamma$, we can rewrite (2) as:

$$(3) \qquad \gamma F = rF - \phi Y_m$$

Rearranging, $\phi = (r - \gamma)\frac{F}{Y_m}$

The level of the non-oil current account deficit as a percent of GDP that can be financed indefinitely is a function of the interest rate, the trend growth rate, and the initial ratio of wealth to GDP.

$$(4) \qquad \phi = (r - \gamma)\frac{F_0}{Y_{m,0}}$$

APPENDIX II

Decomposition of the Real Exchange Rate

Suppose residents of each country consume a non-traded good and a traded good. With Cobb-Douglas preferences, the aggregate price index of the home country could be expressed:

$P = P_N^a P_T^{1-a}$ where N denotes the non-traded good and T denotes the traded good.

The aggregate price index in a representative foreign country would be:

$P^* = P_{N^*}^a P_{T^*}^{1-a}$

In logs (denoted by small letters), the real exchange rate can be defined as the nominal exchange rate adjusted by the relative price levels.

$r = s + p - p^*$

where the spot exchange rate, s, is in units of foreign to domestic currency, so that an increase in s or r corresponds to an appreciation.

Substituting for the domestic and foreign price indices,

$r = s + a\, p_N + (1-a)\, p_T - a\, p_{N^*} - (1-a)\, p_{T^*}$

If the law of one price holds for traded goods, the price of the traded good in the home country would equal the price of the traded good (assumed to be the same good) in the foreign country, after converting with the nominal exchange rate:

$p_T + s = p_{T^*}$

Substituting,

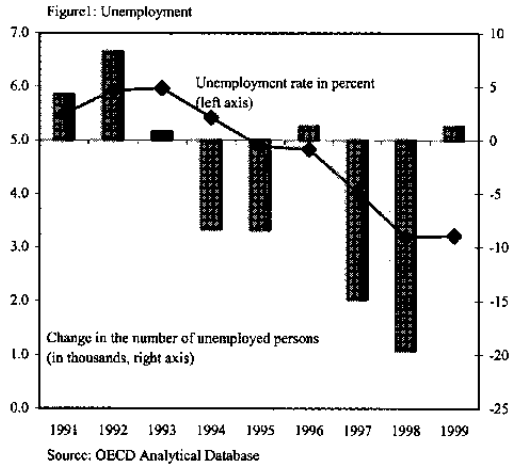
$r = a\,(p_N - p_T) - a\,(p_{N^*} - p_{T^*})$

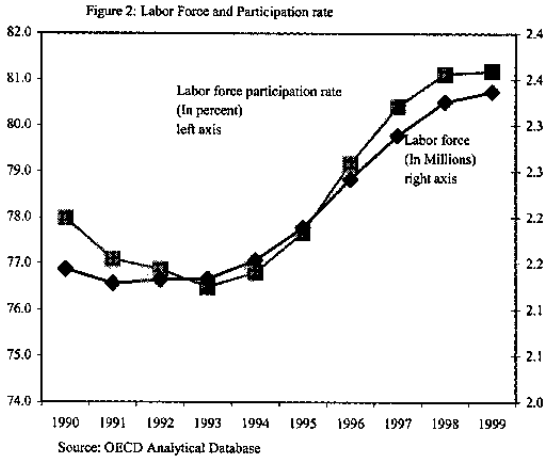
The real exchange rate is therefore a function of the relative price of nontraded goods to traded goods in the home country and also the relative price of nontraded goods to traded goods in the rest of the world.

II. Emerging Challenges to the Norwegian Labor Market Framework [15]

A. Introduction

66. **The Norwegian labor market has performed well in the past decade.** The country has experienced solid employment growth, with net job creation strongly positive since 1994. The rate of unemployment fell to 3.2 percent at end-November 2000, among the lowest in the OECD, despite a 10 percent increase in the labor force from 1993. Five consecutive years of substantial declines in the number of people in employable age outside the labor force boosted the participation rate to above 81 percent in 1999. While the prolonged cyclical upswing and the oil windfall have played a role, this favorable outcome in the labor market underscores that gains from centralized structure and government intervention can outweigh the costs (Figures 1 and 2).[16]





67. **Institutional factors have contributed to this performance.** With high union density and a strong social partnership that values consensus and equal income distribution, centralized bargaining plays a pivotal role in the determination of wages and working conditions. The system aims to limit agreed wage increases to be compatible with continued profitability in the exposed sector, and determines (subject to a wage drift arising at lower

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[15] Prepared by Balázs Horváth.

[16] See Dølvik and Steen (1997), especially the chapters by Freeman, Rødseth, and Bosch, and Kahn (1998) for a detailed description of the Norwegian labor market and its key aspects; and Flanagan (1999), Blanchard and Wolfers (1999), and Freeman (2000) for a general overview of relevant labor market-related issues.

bargaining levels) the average actual outcome. It is buttressed by compulsory government arbitration in case of unresolved disagreements in vital areas, a comprehensive social safety net including generous unemployment, sickness and retirement benefits, as well as active labor market policies and continuing on-the-job education.

68. **The system of centralized bargaining is a key characteristic of the Norwegian labor market.** This system reflects the social consensus about the importance of income equality, and—together with transfers and progressive taxation—results in a remarkably even distribution of household incomes. Continued reliance on centralized bargaining may also reflect the existence of substantial oil-related rents for social partners to allocate, and the belief that a partial move toward decentralization would not be productive.[17] The model of cooperation between government, labor, and employers has been in place for several decades. It was strengthened by the 1992 Solidarity Alternative, a policy agreement that sought to contain inflation pressures and safeguard competitiveness through coordinated wage formation aimed at keeping wage increases under those in trading partners. It assigned responsibility for stabilizing economic activity to fiscal policy, for keeping the exchange rate stable vis-á-vis European currencies to monetary policy, and envisaged targeted training and improved matching of job seekers with vacancies to enhance labor market flexibility.

69. **Some labor market developments raise concerns.** First, the wage scale is extremely compressed by international standards, with Statistics Norway data showing a differential between the top and bottom wage deciles of only 260 percent in 1998. This differential is well below the average of European OECD countries.[18] Second, wages have grown rapidly, with real business sector compensation increasing by 11 percent between 1992 and 1999, exceeding productivity growth by some 7 percentage points (however, it could be argued that given the cyclical upswing and substantial oil price shocks, alternative wage setting mechanisms may not have performed much better). Third, the public sector played a substantial role in the overall growth of employment, with the number of persons employed in the public sector having grown by almost 30 percent in the 1980s, and a further fifth in the 1990s. The public sector has provided over half the increase in employment in the 1990s, and the bulk of it in 1999 (Figure 3), resulting in a very large share of government in total employment compared to other countries (Figure 4). Fourth, effective labor supply is severely eroded by sharp increases in early and disability retirement, and in the number of sick days. These aspects give rise to rigidities and risks to the sustainability of the present labor market setting.

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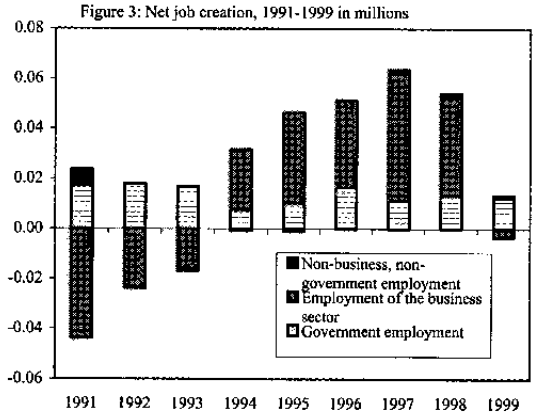
[17] See Katz (1993), Stokke (2000), and Freeman (2000) for discussions of the role of rents in sustaining centralized bargaining; and Blanchard and Landier (2000) for a discussion of the latter issue using a French example.

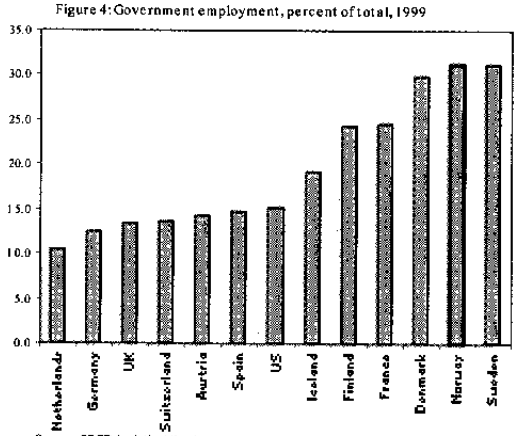
[18] In the absence of recent comparable wage distribution data, Norway's ratio of top and bottom income deciles of 5.3 was compared to 8.9, the unweighted average of this ratio for European OECD countries. Income deciles are from the ILO World Labor Report (2000).

Figure 3: Net job creation, 1991-1999 in millions



Source: OECD Analytical Database

Figure 4: Government employment, percent of total, 1999



Source: OECD Analytical Database

70. **The challenge is to contain these risks while safeguarding the attained level of employment and real wages.** While the recent labor market outcome appears to be significantly better than would be implied by these elements of rigidity and the implied disincentive effects, it remains to be seen how resilient this performance is. Norway is not immune to influences that had undermined centralized wage setting in other countries, including the globalization of trade and capital flows, an increasingly competitive business environment, and the growing importance in employment of multinational enterprises. Expected demographic changes and a deteriorating competitiveness of non-oil tradables associated with the booming oil sector could add to the pressures. With the economy operating at virtually full employment and most indicators pointing to a maturing cycle, the labor market is likely to emerge as a bottleneck. On the other hand, labor market rigidities could hinder adjustment, should a downturn occur. Consistently high wage settlements in recent years imply an insufficient internalization of the macroeconomic effect of wage settlements, reflecting the ongoing shift from manufacturing to the less-unionized service sector, the declining share of the exposed sector, and the fragmentation of trade union federations. Wage scale compression weakens work incentives, and could lower the return to education or lead to crowding out young and low-skilled workers from employment. Strict work schedule restrictions, a declining number of hours worked, and generous replacement ratios provided by welfare programs reduce the flexibility of the labor market and strain labor supply. Therefore, policies to contain aggregate wage growth, boost effective labor supply and enhance labor market flexibility are essential to ensure continued good performance.

71. **This chapter focuses on the implications of centralized bargaining for the labor market and explores its continued viability.** Box 1 reviews key lessons from the literature, setting the stage for an overview of the wage bargaining system. This is followed by a review of developments since 1992 in wages and quantities, and the interaction of labor supply with welfare programs. A section on challenges and possible policy responses concludes.

Box 1. Collective Bargaining: Key Lessons from the Literature

Strikingly different collective bargaining systems exist in different OECD countries, and they change over time, with decentralization the key trend in the past decade. Most analysts treat the degree of centralization of wage setting as a key aspect, finding that centralized wage bargaining and free, market-based wage setting both outperform industry-level decentralized bargaining (OECD, 1997).

Thus, either extreme in the wage bargaining framework is better than the middle ground. Advantages of centralized bargaining include the internalization of macroeconomic effects of the agreement reached, resulting in moderate and less volatile pay settlements, stable industrial relations, and low strike frequency. It also avoids the staggering of wage agreements, which can lead to sticky nominal wages. By anchoring employers' expectations to low wage growth, it can facilitate employment growth. However, centralized bargaining defines a rigid, uniform path for nominal wages and other determinants of labor costs for a period of time. Increasing competitive pressures and uncertainty about future shocks call for flexible, workplace-specific, and perhaps contingent agreements. Lower-level negotiations are better suited for this, but centralized bargaining may still have a coordinating role to play (Katz, 1993; Flanagan, 1999).

However, the institutional setting cannot be reduced to a single dimension, with policies, regulations, and actual practices all critically affecting the outcome. It is thus unsurprising that empirical cross-country studies fail to find a stable correlation between the centralization of collective bargaining and macroeconomic outcomes, with one notable exception: centralized collective bargaining strongly correlates with lower wage dispersion across the skill/education spectrum (Freeman, 2000).

As for the divergent patterns of unemployment in the United States and Europe over the past decades, the most convincing explanation is the interaction of adverse economic shocks and labor market institutions, including centralized bargaining. Adverse shocks can account for an upward shift in the natural rate of unemployment, but not the wide observed cross-country variation, which is left to be explained by differences in labor market institutions that amplify or soften the effect of shocks. Panel regressions covering shocks, labor market institutions and the interaction of the two can account for both the rise and the heterogeneity in the evolution of unemployment in Europe (Blanchard and Wolfers, 1999).

Increased competition and liberalized trade and factor flows reduce industry-wide rent to be parceled out by social partners, undermining an important rationale for centralized bargaining (Katz, 1993).

A recent empirical study of wage flexibility classified Norwegian nominal wages as rigid, but found that real wage adjustments to shocks were statistically significant, consistent with the internalization of the macroeconomic impact of centralized bargaining agreements (Kandil, 2000).

The feasibility of centrally coordinated wage setting increases with a non-accommodating central bank, which will allow the negative externalities of deviating from low wage agreements filter through to all economic agents, making deviations from the agreement costly (Holden, 2000).

B. Norway's System of Collective Bargaining

72. **Norway maintains a centralized system of wage determination.** The social partners involved are employers, employees and the government. The former two are represented in bargaining rounds by various organizations negotiating on their behalf (Box 2). The government plays a pivotal role. It orients fiscal policy to conform with the Solidarity Alternative and provides a mandate to the central bank consistent with it. As the employer, it directly participates in the bargaining rounds for the public sector, and seeks to ensure that wage increases remain consistent with the logic of the Solidarity Alternative, providing a strong demonstration effect for lower-level negotiations. Finally, it effectively constrains free-riding by firms with monopolistic power or by militant trade unions through compulsory arbitration, contributing to the stability of the centralized bargaining system.

73. **Trade unions play a substantial role in centralized bargaining.** The unionization rate, at 55 percent (Stokke, 2000)—reaching 43 percent in the private sector and over 80 percent in the public sector—is high in Norway compared to other OECD countries (Figure 5). However, mechanisms for extending the effect of centralized wage setting are weaker in Norway than in some other OECD countries. There is no government-mandated extension of wage agreements to unorganized workers outside the public sector. Extension mechanisms (e.g. the clause in trade union level agreements precluding strikes related to local wage bargaining disagreements) mainly aim at ensuring that central agreements are honored at the individual union and enterprises levels. Extension mechanisms on the employer side—including the requirement for employers in NHO (the largest organization representing non-government employers) to apply the centrally agreed wage increases and working conditions to their non-unionized employees as well—also lack full coverage. On balance, the effective coverage of centralized bargaining is estimated at around 55 percent of wage earners in the private sector and 100 percent in the public sector in mid-2000, implying an overall coverage of 71 percent, well below the top end of the range in the OECD.[19]

C. Implications of Collective Bargaining and Recent Developments

Wage Compression and Wage Increases

74. **The wage scale is seriously compressed in comparison with other OECD countries.**[20] The specific form of central wage agreements (a fixed krone wage increase) implies a strong built-in bias toward compressing the wage scale since the percentage

[19] Stokke (2000) finds that Norway exceeds only Switzerland, UK and the US in the coverage of centralized bargaining among OECD countries with reliable data. Kahn (2000) places Norway behind Austria, Germany, Sweden, Italy and Australia in this regard.

[20] For a recent careful overview of this issue, see Barth (2000).

increase is the smallest for the high end of the wage distribution. The cumulative effect of repeated wage settlements in this form is substantial. In addition, the 2000 agreement also

Box 2. Norway: Wage Bargaining Mechanics

The employer side of wage negotiations consists of employer associations for the nongovernment and government sectors. The largest nongovernment employer association is NHO, whose member enterprises employ 450,000 employees, followed in size by HSH-APO (200,000 employees), NAVO (for state-owned enterprises, 38,000 employees), and FA (finance sector, 35,000 employees). The Ministry of Labor and Government Administration negotiates as the employer of 250,000 central budgetary employees, and KS on behalf of municipalities (400,000 employees). The general tendency over the past two years on the employer side has been for smaller associations to merge into larger ones.

The employee side of wage negotiations consists of trade unions and their federations, dominated by the Norwegian Federation of Trade Unions (LO), with combined membership of 828,000 mainly in industry and the public sector. Others are: YS (243,000 members), AF (116,500) and federations or trade unions that had splintered from AF: Akademikerne (115,000), and NITO (44,500). Independent federations or trade unions have an additional 180,000 members. The recent tendency characterizing the employee side of wage negotiations has been dispersion, especially for more educated employees.

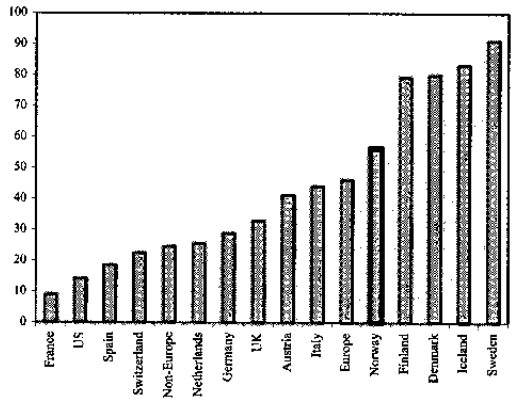
The bargaining process begins with basic agreements among the social partners, which complement legislation and cover procedures, work organization, and social policy aspects, including sickness and retirement arrangements and the number of holidays. Basic agreements are typically put up for a referendum of affected trade union members, but they also cover non-unionized employees. On this basis, employer organizations biannually negotiate with federations or unions a collective bargaining agreement (CBA) on working conditions and the agreed increase in wages for the coming year (those for intervening years are dealt with in interim negotiations, or can be settled in the biannual deal, as in 2000). CBAs are legally binding for the signing parties with private employers bound to implement its conditions for all their employees, but are renegotiated every two years. They can be nationwide or cover just a single company; and a company may be bound by several CBAs. Branch and firm level bargaining—determining the excess of actual over the centrally agreed wage increase (wage drift) and local working conditions—follows the central negotiations. In the public sector separate negotiations are carried out for central government, municipalities and Oslo municipality with trade union federations and independent unions, but the wage increases are subject to a common wage scale.

Coordination and extension mechanisms supplement central wage bargaining. The key method of coordination is a settlement with front occupations in sectors exposed to competition in the LO-NHO field. This settlement establishes a template for pay raises and changes in work conditions, including for the public sector, and binding guidelines for federations and national associations, including the policy on strikes. In the absence of a statutory minimum wage, they also establish the binding wage floors at the branch level. Provisions of the Labor Law and voluntary agreements by other wage bargaining partners to accept the outcome of the LO-NHO agreement extend the coverage of centralized wage determination to about ¾ of employees according to survey data.

Compulsory arbitration is a key restraining element. Wage demands in excess of that granted to front occupations were often sought in the past, but the resulting disputes were typically referred to compulsory arbitration. This was critical in limiting strike activity in both the private and public sector, and helped avoid the appropriation of oil rent by oil workers by largely eliminating the scope for effective minority strikes that could undermine the centrally negotiated wage increases.

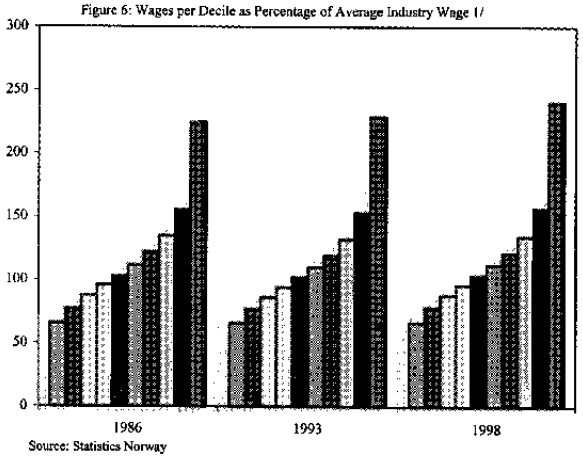
mandated an additional boost to wages below the mean, further compressing the wage scale (Box 3). The wage distribution has remained remarkably stable for over a decade (Figure 6), with no detectable change in the first nine deciles and a small gain for the top decile, which earned 3.4 times as much as the bottom decile in 1986, and 3.6 times as much in 1998, the latest available year. Statistics Norway's 2000 Income Distribution Survey showed similar outcomes for household incomes. It reported a statistically significant increase in the *Gini coefficient* by a sixth to 0.261, attributing the increase to surging property income in the top income decile. Nevertheless, Norway's Gini coefficient remains the lowest in the OECD after Japan according to the World Bank's World Development Indicators database.

Figure 5: Union Density Figures in the OECD, Percent of Wage Earners in 1995



Source: : ILO World Labor Report 1997-98, and Holden Committee Reprot

Figure 6: Wages per Decile as Percentage of Average Industry Wage 1/



Source: Statistics Norway

1/ For example, the top decile earned 241 percent of the average industry wage in 1998.

75. **While certain aspects of the bargaining mechanism alleviate wage compression, they cannot prevent the accumulation of tension.** In the private sector, wages not covered by centralized bargaining could in principle reflect demand conditions, although in practice wage bargaining has a strong demonstration effect on them. In addition, wage compression is eased in trade-union level and local negotiations, giving rise to wage drift, which however, has been limited to under 1 percentage point since 1996. Local negotiations also involve non-wage aspects of work, including working time and the number of leave days, allowing some trade-off between wages at the higher end of the wage scale and concessions in various aspects of working conditions. While such trade-offs may have helped maintain the centralized bargaining system by injecting flexibility, they have contributed to the substantial decline in actual hours worked in Norway during the past decade, widening further the gap with other OECD countries (Figure 7). Wage scale compression also poses problems for the public sector, where wage increases are linked to the exposed sector, a limited (and shrinking) part of the economy. Tensions building up in the public sector remain to be addressed through ad-hoc adjustments (e.g., the special wage increase for teachers in 2000).

Box 3: The Central Collective Bargaining Agreements in 2000

Following six days of strike action sparked by a grass-roots revolt against a first agreement, the LO and NHO agreed on a revised two-year collective bargaining agreement for the private sector in early May 2000. The revolt was fueled by news of large compensation packages awarded to retiring managers of nationally known enterprises, and an interest rate hike by Norges Bank prior to the vote of trade union members was also reported to be a factor. Four-fifths of LO's members voted to approve the revised agreement, which doubled the originally agreed wage increase. It contained the following key elements:

- a general wage increase of NOK 1.50 per hour for all employees, plus supplementary hourly increases of NOK 1.50 – 2.00 for low-wage workers;
- the staged introduction of an extra week of annual leave with two additional leave days in 2001 and again in 2002;
- No central wage negotiations in 2001, with the general wage increase of NOK 1.00 already settled for next year, together with the same low-wage increases as in 2000;
- a binding commitment to reform continuing education, extending it to the public sector.

Manufacturing wage growth in 2000 is expected at 4.5–5 percent, a percentage point above the pre-strike proposal and—as in recent years—higher than wage growth in Norway's trading partners.

The collective bargaining agreement for the public sector was concluded a few weeks later in May, and reflected dissatisfaction with relative wages, as well as the private sector outcome. It is expected to result in a 4.8 percent wage growth in 2000 for the state and municipal sectors, and includes:

- a general annual pay increase of NOK 5,000 effective from May 1, 2000;
- two days' additional annual leave in 2001 and again in 2002;
- a general annual pay increase of NOK 2,200 effective from May 1, 2001 without central negotiations in 2001, but setting aside funds for local and sector-level negotiations;
- reform of continuing education as in the private sector;
- improvements in the pension scheme for highly paid employees.

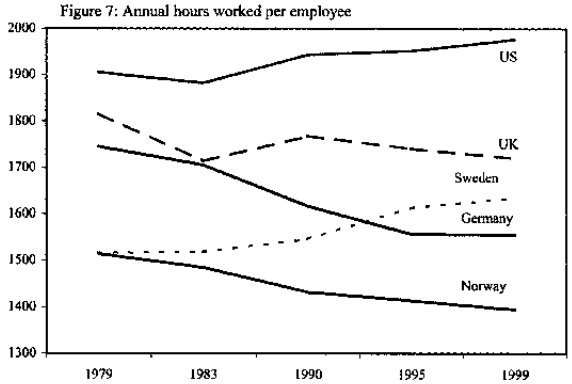
In the state sector, one percent of the wage bill was set aside for central pay adjustments effective from mid-July, primarily aimed at education and areas with recruitment difficulties, raising their wages by a further 2.2 percent on average. Another quarter of a percent of the wage bill was set aside for local negotiations, raising wages from September 1, 2000. Similar measures favoring workers with higher education applied in the municipal sector. In addition, teachers who received no additional leave, received a NOK 5,000 increase in their annual salaries.

Agreement was not reached without some strike activity in Oslo municipality, raising important issues. Two strikes—initiated by unions breaking away from their confederations, and involving hospital engineers and nurses—were stopped by compulsory arbitration. This has marked the first time that a member union of LO has rejected LO's recommendations in the municipal sector. Thus, cracks appeared in the bargaining framework, which will need to be dealt with before the next main settlement in 2002. Recognizing this, the government has appointed a public committee to review the legal framework for negotiations and strikes, including the municipal bargaining structure.

76. **The overall annual increase in labor costs comprises several components.** Annual average wage increases consist of the centrally agreed wage increase; wage drift arising from the additional wage increases agreed at the trade union and enterprise level of bargaining; and a carry-over effect resulting from the fact that the effective date of the wage settlement is around the middle of the year, with possible additional sectoral wage adjustments kicking in during the second half of the year, as agreed in lower-level negotiations. The increase in total labor compensation consists of the actual wage increase, plus the effect of non-wage components of the bargaining agreement (e.g., the two extra holidays in 2001 will raise hourly labor costs by an additional ¾ percentage points).

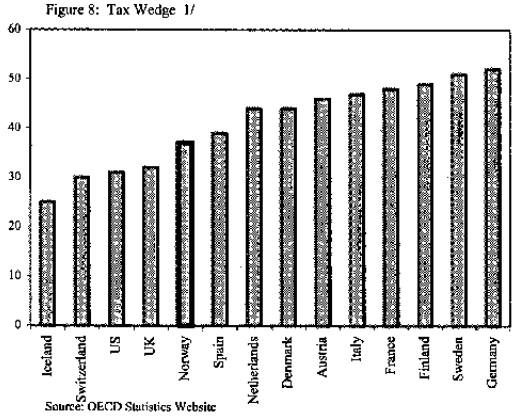
77. **Norwegian nominal wage growth has exceeded that in key trading partners since 1992.** Norway's nominal wage increase of 31.6 percent in the business sector since 1992 has outpaced that in Germany (24.5 percent), the EU (27.4 percent) and the United States (21.4 percent),[21] although it increased by less than in Sweden (34.6 percent) and the United Kingdom (36.1 percent). High wage growth implies that a key benefit of centralized bargaining under the Solidarity Alternative appears to have been less than fully captured. However, considering Norway's relatively advanced stage in the business cycle, centralized wage setting may have delivered some wage restraint. Estimating wage equations, Thomas (2000) finds that the sensitivity of Norwegian nominal wages to changes in unemployment was limited and lower than in other OECD countries, but has increased since 1992. He finds a higher responsiveness of wages to labor market conditions even at the early stages of the current cycle. Although the tax wedge affects international comparisons, given Norway's position at around the middle of the range in the OECD (Figure 8), this aspect is not likely to materially alter the conclusion.

Figure 7: Annual hours worked per employee



Source: OECD Employment Outlook 2000

Figure 8: Tax Wedge 1/



Source: OECD Statistics Website

1/ Income tax plus employee and employer social security contributions in 1998. Single individual at income level of average production worker.

[21] Comparisons are based on OECD Analytical Database data, involve manufacturing wages for comparator countries, and contain no cyclical, tax, or exchange rate adjustment.

Job Creation and Employment

78. **Strong employment growth, aided by an expanding public sector, led to low unemployment.** Employment growth has been substantial despite very high and rising participation rates, with the business sector contributing much of the net increase in jobs during 1993-98. However, the relentless rise in public sector employment throughout the past decade has also played a significant role. As a result, the share of Norway's public sector in employment has reached 30 percent by 1999, and exceeds that in any other OECD country except Sweden. Unemployment is very low compared to other OECD countries (Figure 9), and Norway's share of long-term unemployment is a small fraction of the OECD Europe average, among the lowest in the OECD (Figure 10). Over 84 percent of the unemployed have been out of a job for less than half a year in 1999, compared to an OECD average of 37 percent, indicating considerable flexibility. Moreover, youth unemployment is low, aided by higher school attendance than in other OECD countries,[22] and labor conflicts have remained subdued compared with other OECD countries. Recent measures hold the promise of further improving the functioning of the labor market. They include the elimination of the public monopoly on work referral and of limits to using contract and temporary labor, and the expansion of active labor market programs in 2000 due to downturns in mainland oil-related industries emphasizing short-term, career-oriented training courses.

79. **Despite open migration channels through the Nordic Common Labor Market, migration flows have remained low.**[23] Denmark, Finland, Norway and Sweden have implemented a common labor market since the 1950s, preceding the liberalization of trade in the framework of EFTA more than a decade later, and of capital markets in the 1980s. Iceland joined in 1982. Migration within the Nordic common labor market is unrestricted: all citizens (not only workers) have complete freedom of movement and employment in Nordic countries, covering both the private, and (with the exception of a few national security-related jobs) the public sector. Since 1989, social security benefits are portable within the Nordic Community: movement from one Nordic country to another implies no loss of benefits. Member countries have also pledged to mutually accept qualifications obtained in other member countries. Despite the lack of legal and for the most part, language, barriers, net migration has remained very low, with gross flows also limited, leaving the Nordic common labor market segmented on a national basis. Nevertheless, it was credited to have alleviated sectoral and regional shortages of labor at various points in time, for instance through inflows to Norway's health sector in the past few years. Simultaneous membership in two common labor markets for European Union members (Denmark, Finland and Sweden)

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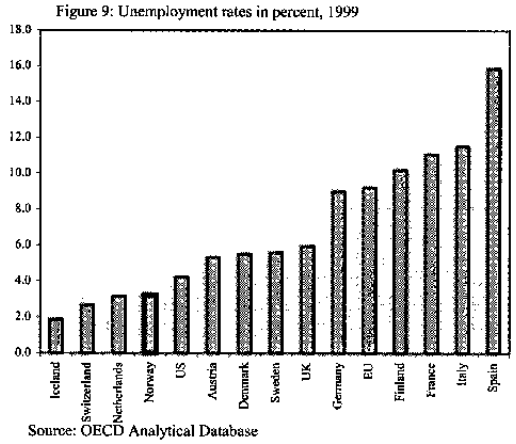
[22] Kahn (2000) found a statistically significant positive effect of centralized bargaining on school attendance of younger individuals. He attributes this effect to the lower opportunity cost of schooling for youth and the need for additional training to secure employment when bottom deciles are relatively highly paid.

[23] See for example Fischer and Straubhaar (1996).

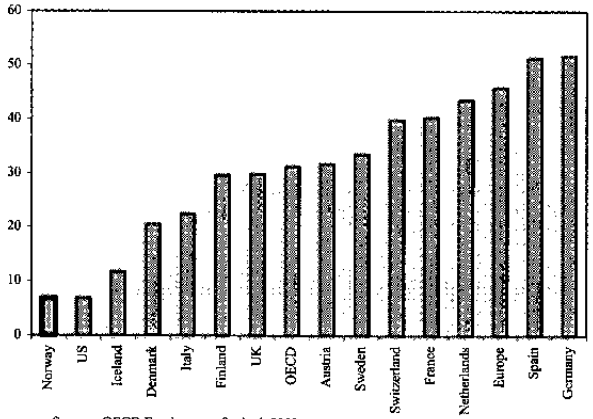
has been facilitated by Norway's undertaking in the European Economic Area Agreement to implement EU policies on employment and migration, and by a reformulation of the Nordic Social Security Convention to ensure non-discrimination toward EU immigrants.

Figure 9: Unemployment rates in percent, 1999



Source: OECD Analytical Database

Figure 10: Share of long-term unemployment, 1999



Source: OECD Employment Outlook 2000

80. **The Norwegian labor market is advanced in terms of gender equality and the availability of part-time employment**. The 1979 Gender Equality Act stipulated equal pay for work of equal value at the same employer, and equality in terms of employment, promotion and lay-offs. This has paved the way for the growth in female employment by 11.5 percent from 1995 through the third quarter of 2000, 3.2 percentage points faster than male employment, facilitating improved utilization of available labor resources. Female employment growth was particularly strong in the public sector.[24] The gender difference in the increase in actual hours worked is likely to be smaller than in employment, reflecting the higher proportion of female workers who are employed part-time (throughout the 1990s, women's share in part-time employment hovered around 80 percent). While survey-based employment data indicate some shift toward full-time employment in 1998–99, part-time employment has remained fairly stable at just over a fifth of total employment throughout the 1990s, placing Norway 5 percentage points above the OECD average (OECD, 2000).

81. **Temporary employment has remained less prominent in Norway than in other OECD countries.** The growth of Temporary Help Services (THS) employment has been dramatic in some OECD countries, particularly the United States.[25] It enabled employers to

[24] Dølvik et al (1997) also argues that a strong link existed between the expansion of the public sector and rising female participation rates.

[25] For example Estevão and Lach (2000) point to a tripling of THS employment in the United States during the 1990s, and its average annual increase of 11 percent since 1972.

adjust employment rapidly and at a low cost in response to shocks, and gain access to better screened and trained employees than temporary help hired off the street. Employers could observe THS employees perform on the job and decide to hire them permanently if they proved themselves, an important vehicle of entry for long-term unemployed or new entrants to the labor market. THS employment also facilitated employee specialization, creating scope for scale economies, and a wider pooling of idle work periods than in a single firm, raising productivity. Empirical studies for the U.S. have found THS employment to be highly variable and cyclical, consistent with firms using it as a buffer for shocks; but found no evidence for THS employment to be underpaid, typically part-time, or to have a gender bias. Labor Unions in Norway considered it important to maintain permanent jobs as the standard, arguing that THS employment resulted in less security, lower pay, and diluted benefits. They also noted that THS employment led to lower unionization rates. While data are scarce, it appears that THS employment has played a lesser role in Norway so far. In fact, temporary employment more broadly defined has marginally declined between 1997 and mid-2000.

82. **An analysis of unemployment and vacancies revealed improvements in the labor market since 1992.** The analysis follows Bleakley and Fuhrer (1997), relying on the Beveridge curve—a scatter plot of the unemployment rate against the vacancy rate, typically showing a negative association between the two. A movement along the curve can indicate changes in labor market buoyancy—e.g. moving from a low vacancy rate—high unemployment position to one characterized by high vacancy rates and low unemployment. A shift of the curve away from the origin reflects a change in the overall activity level in the labor market. This in turn depends on a number of underlying economic factors, including the degree of churning (gross job creation and destruction), and the growth rate of the labor force. Labor market developments displayed a distinct pattern during the period January 1989 – August 2000 (data prior to 1989 were not available). In terms of annual averages, the economy drifted along the Beveridge curve toward higher unemployment through 1992 but moved toward lower unemployment and higher vacancy rates from 1993, reflecting a steadily improving labor market (Figure 11). This suggested a breaking up of the available monthly sample into two parts: one preceding and one following the Solidarity Alternative.

83. **The favorable results reflect the joint effect of the upturn in the business cycle and the implementation of the Solidarity Alternative.** Plots of the monthly data and simple OLS regressions confirmed that the Beveridge curve shifted toward the origin on average and became negatively sloped from 1993 onwards (Table 1 and Figure 12). The shift was caused by a substantial increase in the number of available vacancies, suggesting an improved job creation process most likely stemming from a cyclical upswing in the business sector and the steady increase in public sector jobs. The statistically significant change in the slope indicates a change in the association between unemployment and vacancies reflecting an improved process matching job-seekers and vacancies, and the strength of the economy which could absorb job-seekers despite their numbers being boosted by a sharp acceleration

in labor force growth during 1993–98.[26] However, the observations for 1999–2000 in Figure 11 provide a sobering note, indicating that the tide may be turning again.

[26] While direct observations for this period are not available, Salvanes (1999) found labor market churning (gross job creation and destruction flows) in Norway to be substantial, at comparable levels to those in the United States using microeconomic data for 1987-1994.

Table 1. Beveridge Curve Regression Results

Dependent Variable: Unemployment rate
Explanatory variable: Vacancy Rate
Regression method: OLS

Equation 1.

Sample: January 1989 - December 1992

Regression Statistics	
R Square	0.066
Adjusted R Square	0.045
Standard Error	0.452
Observations	48

	F	*Significance F*
Regression	3.233	0.079

	Coefficients	*Standard Error*
Intercept	6.841	0.533
Vacancy Rate	-3.097	1.723

	t Stat	*P-value*
Intercept	12.827	0.000
Vacancy Rate	-1.798	0.079

Equation 2.

Sample: January 1993 - August 2000

Regression Statistics	
R Square	0.889
Adjusted R Square	0.888
Standard Error	0.421
Observations	93

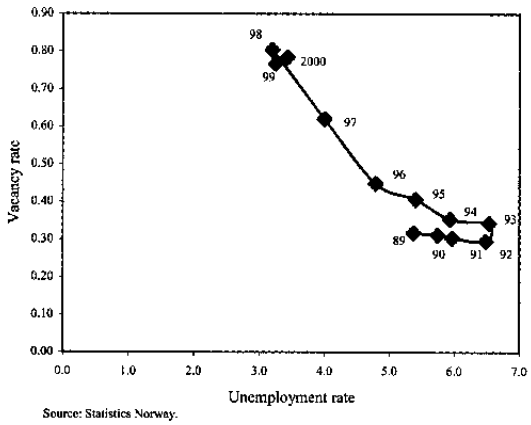
	F	*Significance F*
Regression	727.341	0.000

	Coefficients	*Standard Error*
Intercept	8.029	0.133
Vacancy Rate	-6.138	0.228

	t Stat	*P-value*
Intercept	60.230	0.000
Vacancy Rate	-26.969	0.000

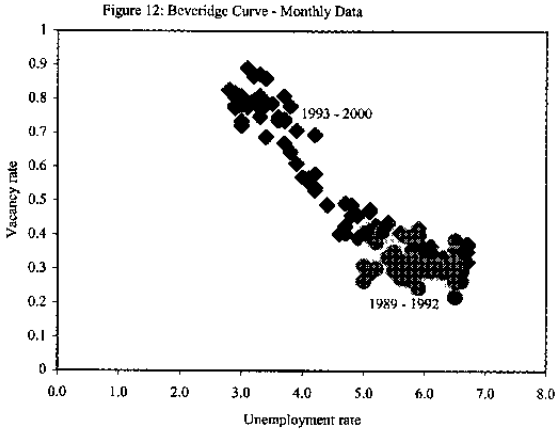
Source: Statistics Norway and staff calculations.

Figure 11: Beveridge Curve -- Annual averages



Source: Statistics Norway.

Figure 12: Beveridge Curve - Monthly Data

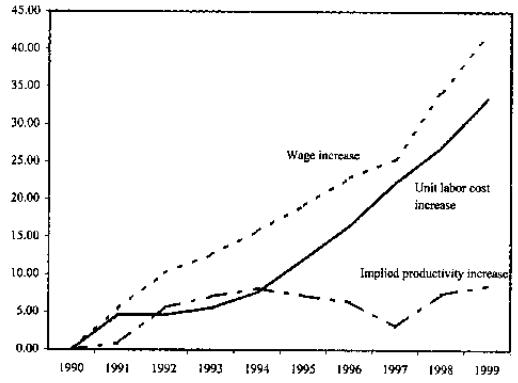


Source: Statistics Norway

84. **Productivity developments have been less favorable.** With changes in unit labor cost closely shadowing changes in wages in the business sector, implied productivity growth has been anemic since the early 1990s (Figure 13). Direct productivity measures show an increase in the first few years following the agreement on the Solidarity Alternative, but they also indicate a leveling off in the second half of the 1990s. These observations in part reflect the labor-intensive nature of public sector employment, but are in contrast with the argument advanced in Holden et al (2000) that centralized wage setting enhances aggregate labor productivity by imposing a uniform job wage. The argument maintains that as a result, the destruction of jobs is accelerated in the least efficient plants (which cannot afford to pay the going wage), and job creation is favored in most efficient ones (which gain by having lower wage costs than they could afford). However, this argument does not work for the public sector, which has been steadily expanding for decades outpacing other OECD countries during the past 15 years (Figure14). It also ignores the weakness of the incentive to destroy inefficient jobs when wages account for a small share of total costs; the resulting wage compression, which can reduce labor supply (e.g. through less hours worked). Efficient firms could choose to pay out the windfall as dividends to shareholders instead of creating new jobs owing to considerations of cost, risk, or uncertainty. Moreover, centralized wage setting could also have dynamic repercussions owing to lower returns to educational investment, and incentives for net emigration of high-skill workers, although empirical support for these hypotheses is not readily available.[27]

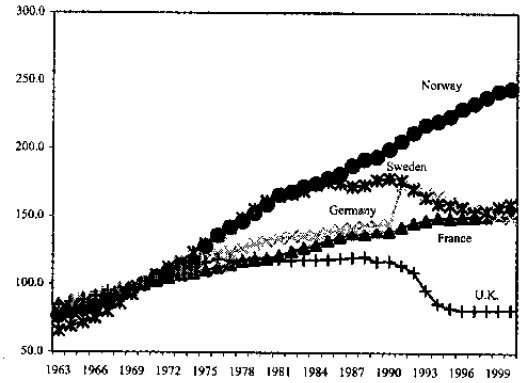
[27] Hægeland et al (1999) examine returns to education in Norway, an important component of increasing wage dispersion in OECD countries, and find it remaining stable through 1990.

Figure 13: Cumulative change in business sector compensation, unit labor cost and implied productivity in percent



Source: OECD Analytical Database and Staff calculations.

Figure 14: Government Employment Index, 1970 = 100



Source: OECD Analytical Database.

The Interaction of the Labor Market and Welfare Programs

85. **The labor market is critically affected by welfare programs, including sickness benefits, and disability and early retirement.** Generous effective replacement ratios—often exceeding 100 percent for low-income or part-time workers taking into account taxes and the cost of working—provide perverse incentives for a temporary or permanent exit from the labor force. With eligibility criteria not always vigilantly enforced (a particular problem for early and disability retirement, which permanently reduce both labor supply and the number of contributors to social security), the earlier decline in the take-up rate of welfare programs gave way to a rapid increase. About 9 percent of total working days is expected to be lost in 2000 owing to sickness absence (with about half accounted for by absences over eight weeks), reflecting an average of 24 sick-days per employed person. The number of disability benefit recipients has also surged in recent years, with 43 percent of workers claiming disability by age 62 in 1997–99, an increase of 11 percentage points during the preceding five years (15 percent for women). Demographic developments are likely to further exacerbate these trends: the sickness absence rate and the number of people claiming disability are both expected to continue increasing through 2005. This could lead to escalating costs of employment, higher budgetary expenditures and a drastic reduction in the ratio of contributors to beneficiaries.

86. **In response, the Sandman Committee set up to investigate these problems has proposed several changes in welfare programs in September 2000.** The focus was on the national sick pay scheme, which provides 100 percent wage compensation from day one of sickness absence, with the employer responsible for compensation during the first 16 days, after which the National Insurance Office takes over. The Committee suggested changes aiming to leave sick employees' income unchanged on average by:

- reducing employee's compensation to 80 percent during the first 16 days, offsetting this by lowering the national insurance contribution;

- providing full compensation to the employee thereafter, with the employer contributing 20 percent of wage compensation from the 17th day through one year;

- enhancing the monitoring of sickness absences, while protecting people with chronic diseases.

87. The effect of the changes on individual employees would vary. However, incentives would be marginally improved on average, with those accumulating fewer sick-days benefiting from the changes. As for disability benefits, the proposals are more general. They include precluding the possibility of combining work and receiving disability benefits; the introduction of temporary disability support to allow a reversion to active work status; improved rehabilitation arrangements; and introduction of stricter rules ensuring that all reasonable options for rehabilitation have been exhausted prior to granting permanent disability status. However, progress will take time since these suggestions have not been incorporated into the 2001 state budget pending agreement with social partners.

D. Summary, Main Challenges and the Policy Response

88. **The Norwegian labor market has performed well during the past eight years, but faces serious long-term challenges.** The existing system of centralized bargaining has contributed to relatively tranquil labor market relations, strong employment growth and a record low unemployment rate by 2000. However, it has resulted in a strong compression of the wage scale, and has not been able to deliver the degree of aggregate wage restraint envisaged in the Solidarity Alternative. The public sector has increasingly become the source of net employment gain, and economy-wide productivity growth has tapered off. Centralized bargaining has also become more fragile. An erosion of trust among social partners, or a stronger presence of multinational companies could undermine centralized bargaining, as it did in other countries. The system could also be destabilized by intensifying calls for sharp wage increases across the board to reverse the decline in labor's share in income stemming from the recent cyclical increase in the share of capital. Finally, recent legal challenges arguing for ILO-conformity in applying compulsory arbitration under the Wage Law would remove the threat of interventions and could open the door to effective minority strikes that could unravel the centrally agreed wage settlements.

89. **Norway's oil wealth probably contributed to retaining centralized bargaining.** The availability of oil wealth may have been a factor, with centralized bargaining a useful coordination mechanism to help avoid an appropriation of oil rent and to provide legitimacy to its intertemporal transfer. Accumulated oil wealth in the SPF facilitated the substantial and steady increase in public sector employment, which boosted employment, and helped smooth cyclical fluctuations in the labor market. Finally, oil income flows supported centralized bargaining by providing an insurance service for the budget by being available to finance temporary shortfalls, lowering the need for a cushion and thereby enabling the maintenance of extensive welfare programs supporting the labor market arrangements. However, with

increasing calls to spend the oil wealth, and the recent declines in oil prices, the cushion provided by oil may be less readily available in the future.

90. **Further adjustments are critical to the continued health of the Norwegian labor market.** The most important objective is to achieve macro-level wage moderation in line with the Solidarity Alternative, while easing wage scale compression. For private sector employers, changes in work organization to reduce labor costs and maximize work time in peak season will be essential in maintaining their competitiveness. A pruning of the extensive employment protection framework would enhance labor market flexibility. More effective training and lifelong learning will be critical to satisfy the increased demand for skilled labor and the needs of those who lose out because of the increasing use of part-time workers or subcontractors at all skill levels and emerging new technologies. As for the public sector, as the limits to further efficient employment expansion are reached, the negative effect of wage compression on the employment of low-skill and young workers documented in Kahn (2000) may become apparent.

91. **The recent recommendations of the Holden Committee on Employment and Productivity provide broad guidelines for progress.** The Holden committee, representing all social partners was appointed at end-1998 to lay out a long-term strategy for wage negotiations that would ensure macroeconomic stability, improve the functioning of the labor market, provide a balance between sheltered and exposed sectors, while incorporating additional groups representing employers and trade unions in addition to LO and NHO. It recommended continuing coordinated wage bargaining aimed at wage moderation with wage increases anchored to central agreements with lead professions in the exposed sector. However, it pointed to the need to set aside a greater portion of wage growth to be determined in local negotiations to enhance the flexibility of wage determination and maximize employment. The Holden Committee also stated that while there appeared to be no reason for public wage increases to be different from those in the private sector, the optimal profile of wages in the public sector could well be different from that in the private sector.

92. **Trade unions are likely to remain strong proponents of centralized bargaining, supporting the Holden Committee approach.** In the past the role of trade unions encompassed unemployment insurance services, protection of workers' interest in competing for rents available to firms in less than fully competitive sectors, and representing workers' interest at the national level. All but the last of these areas are under siege in an increasingly global economy with highly mobile capital, an increasing share of services in GDP (which have a lower unionization rate), and rapidly changing new technologies and work organization (Blanchard, 2000). Trade unions do not have clear comparative advantage in unemployment, sickness or disability insurance. Rents in areas where unions are traditionally strong are being eroded, while in new areas where they appear (e.g. the new economy) they are more transient and much more out of reach for unions to tap. An additional threat to unions is that workers' interests may diverge, with highly skilled ones seeing their wages bid up at the expense of less skilled ones, whose wages may no longer be as easily isolated from competition as before. These forces point toward a declining role of trade unions in a number of their traditional areas of activity. Although membership in Norway has not declined as in

most other countries, unions clearly have a strong interest in retaining a strong role in centralized bargaining to avoid being marginalized.

93. The critical issue is whether the suggested changes will suffice to ensure enhanced labor market flexibility and the survival of the present institutional framework. While narrow wage differentials, generous welfare benefits, and highly regulated employment relations have so far coexisted with benign labor market outcomes, several key factors supporting this equilibrium may change course in the future, exposing the system to strains. The rapid expansion of the public sector cannot continue forever; labor market rigidities may undermine sustained growth; the shrinking exposed sector may cease to be able to provide a credible anchor to wage growth in the expanding sheltered sector; and a reversal in the oil boom or a cyclical downturn may intensify the centrifugal forces acting on the solidaristic labor market framework. If these risks were to materialize, the present framework will face the challenge of rapid and substantial adjustment in a more hostile macroeconomic environment.

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