

OECD Economic Surveys: Norway 2010



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Table of contents

Executive summary	8
Assessment and recommendations	11
Chapter 1. Emerging from the crisis	19
The impact of the financial crisis was limited	20
A swift recovery is expected.	26
It is time for macroeconomic policy to adjust.	27
The financial stability framework is well-founded but could be strengthened	47
Notes	65
Bibliography	66
Annex 1.A1. Is there a housing market bubble?	69
Annex 1.A2. Taking stock of structural reforms.	73
Chapter 2. Addressing the long-term challenges of fiscal policy	77
Long-term fiscal challenges require policy changes.	78
Improving the efficiency of public spending.	83
It is necessary to rethink central-local relations.	87
Reforms to raise human capital must be continued.	89
Health and long-term care spending is under pressure.	92
There is some scope to improve tax neutrality.	98
Notes	103
Bibliography	104
Chapter 3. Sustainable development: Climate change and fisheries policies	107
Sustainable development in Norwegian economic policy.	108
Climate change.	112
Fisheries	131
Notes	143
Bibliography	144
Boxes	
1.1. The impact on potential output should be limited	20
1.2. The fiscal multiplier	29
1.3. Improving the communication of the central bank.	30
1.4. Norwegian households are highly leveraged	34
1.5. Factors behind the strong credit growth to the household sector.	35
1.6. Should the central bank lean against the wind?	37
1.7. Should Norway join the euro area?	39
1.8. Fiscal councils in OECD countries.	47

1.9.	Characteristics of the Norwegian financial sector.....	50
1.10.	Competition in the financial sector.....	53
1.11.	The oil tax payment system.....	58
1.12.	The covered bonds swap arrangement.....	60
1.13.	A three-pillar system for ensuring financial stability.....	61
1.14.	Summary of macroeconomic policies recommendations.....	64
2.1.	The Pension Reform.....	80
2.2.	Implementing best practice in the public sector.....	86
2.3.	Reasserting control over municipal spending.....	88
2.4.	Reforms bearing on health-service efficiency.....	94
2.5.	Summary of longer-term fiscal policy recommendations.....	102
3.1.	Priorities and principles in the Strategy for Sustainable Development.....	109
3.2.	Norwegian indicators for sustainable development.....	110
3.3.	Recommendations on the sustainable development strategy.....	111
3.4.	Key climate change policy targets.....	114
3.5.	Main policy measures to reduce GHG emissions.....	118
3.6.	Aspects of CO ₂ emissions trading in Norway.....	121
3.7.	Can an emission permit price be “too low”?.....	129
3.8.	Recommendations on climate change policy.....	131
3.9.	Implicit subsidies in fisheries: Energy and CO ₂ taxes.....	133
3.10.	To discard or not to discard?.....	137
3.11.	Recommendations on fisheries policy.....	143

Tables

1.1.	Sources of real income differences.....	22
1.2.	Norway: Demand, output and prices.....	26
1.3.	Norwegian households are highly indebted.....	33
1.4.	Many of the anti-crisis measures have been extended or made permanent... ..	44
1.5.	Banks’ assets and liabilities at the end of 2007.....	48
1.6.	Supervisory limits on inclusion of hybrid instruments as Tier 1 capital.....	51
1.7.	Financial institutions indicators.....	55
2.1.	The Norwegian pension system before and after the NIS reform.....	82
2.2.	Government sector production and employment.....	84
2.3.	Potential for hospital cost reductions based on standardised DRGs.....	94
3.1.	Policy measures, estimated effect on domestic emissions.....	118
3.2.	The evolution of the carbon tax, 1991-2009.....	119
3.3.	Total allowable catch and national quotas in 2004 and 2005 for some of the important species in Norwegian fisheries.....	135

Figures

1.1.	Mainland GDP fell moderately and unemployment increased very little.....	20
1.2.	Active labour programmes have limited the rise in unemployment.....	23
1.3.	Norwegian equity markets plunged.....	24
1.4.	The spread on the interbank market increased.....	24
1.5.	Small currencies depreciated in the wake of the financial crisis but have recovered since then.....	25
1.6.	Oil prices are increasing again whilst production continues to fall.....	25
1.7.	Comparing Norwegian recovery to the rest of OECD.....	28
1.8.	Comparing Norwegian recessions over time.....	28

1.9. The crisis brought a drastic change in the monetary stance	30
1.10. Liquidity injections had a relatively small effect on the central bank's balance sheet.	31
1.11. Simple rules for monetary policies.	32
1.12. Norwegian house prices are rising again.	36
1.13. Price to income ratios are increasing again	36
1.14. European central banks often move together.	38
1.15. The NOK is volatile, but it appears to work counter-cyclically	41
1.16. A large deviation from the 4% path in 2009 and 2010	42
1.17. The implementation of the fiscal guidelines has been slightly asymmetrical over the cycle	43
1.18. Public employment growth is linked with expenditure drift	46
1.19. Exposure to the Baltics.	49
1.20. Risk-weighted capital declined in recent years	52
1.21. Loans extended as a share of core capital.	52
1.22. Banks return on equity grew strongly in the previous upturn.	54
1.23. A relatively well-funded guarantee deposit system	56
1.24. Banks increased their debt position in foreign currency until very recently. . .	57
1.25. The oil tax payment system affects banks' liquidity	59
1.A1.1. Structural determinants of house prices.	70
1.A1.2. Actual price-to-rent ratios are higher than theoretical equilibrium values. . . .	71
1.A1.3. Recurrent taxes on immovable property, 2006.	72
2.1. Population ageing will impose an increasing burden on public finances	79
2.2. The long term fiscal gap strongly depends on assumptions about labour-force participation	79
2.3. Norway spends a large share of mainland GDP on public expenditure, 2008 . .	84
2.4. Grants and student loans in higher education are large by OECD standards, 2007	91
2.5. Efficiency in the health care sector could be improved, 2003	93
2.6. The tax burden is high in Norway	99
2.7. Tax revenue composition in the OECD area, 2006	99
2.8. Effective tax rates on housing are low	101
3.1. Total primary energy supply and GHG emissions per capita, Norway and selected countries.	112
3.2. Energy by source	113
3.3. The marginal cost of CO ₂ emissions, 2009	119
3.4. Electricity prices for industry in Norway and neighbouring countries, 2008. . .	123
3.5. Hydropower potential as of 1 January 2009.	124
3.6. Greenhouse gas emissions, 1990-2005.	126
3.7. Capacity in the fishing industry	132
3.8. Total fishing catch, 1980-2007.	133
3.9. Sharing fish with other countries.	134
3.10. Aggregate fishing quotas are not always well respected	138
3.11. Total catch and the total stock	139

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The Secretariat's draft report was prepared for the Committee by Paul O'Brien, Romina Boarini and Robert Price, with research input from Steinar Juel and statistical assistance from Annette Panzera, Valéry Dugain and Lilana Suchodolska, under the supervision of Patrick Lenain.

The previous Survey of Norway was issued in August 2008.

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BASIC STATISTICS OF NORWAY

THE LAND

Area (1 000 km ²):		Major cities (thousand inhabitants, 1.12.2009):	
Total (2005)	385.2	Oslo	584.3
Mainland (2005)	323.8	Bergen	256.6
Agricultural (2004)	10.4	Trondheim	168.2
Productive forests (2003)	74.7		

THE PEOPLE

Population (thousands, 1.12.2009)	4 768.0	Total labour force (thousands)	2 506
Number of inhabitants per km ² (1.1.2008)	12.4	Civilian employment (thousands)	2 436
Net natural increase (thousands, 2007)	62.0	Civilian employment (% of total):	
Net migration (thousands, 1.1.2007)	53.5	Agriculture, forestry and fishing	1.2
		Industry and construction	21.3
		Services	77.6

PRODUCTION (2008)

Gross domestic product:		Gross fixed capital investment:	
NOK billion	2 548	% of GDP	21.3
Per head (USD PPPs)	58 716	Per head (USD)	20 393

THE GOVERNMENT

Public consumption (% of GDP, 2008)	19.3	Composition of Parliament (number of seats):	
General government (% of GDP, 2008):		Labour	64
Current and capital expenditure	39.9	Progressive	41
Current revenue	58.7	Christian Democrats	10
		Conservative	30
		Centre	11
		Socialist Left	11
Last general elections: September 2009		The Liberals	<u>2</u>
		Total	169

FOREIGN TRADE (2008)

Exports of goods and services (% of GDP)	48.1	Imports of goods and services (% of GDP)	28.9
of which: Oil and gas	24.4		
Main goods exports (% of total):		Main goods imports (% of total):	
Food products and live animals	4.4	Food products and live animals	5.4
Finished goods	9.6	Finished goods	16.3
Machinery and transport equipment (excluding ships)	9.4	Machinery and transport equipment (excluding ships)	40.2
Mineral fuels	68.1	Chemical products	9.1
Goods exported by destination (% of total)		Goods imported by country (% of total)	
Denmark and Sweden	9.9	Denmark and Sweden	21.2
Germany	12.8	Germany	13.4
United Kingdom	26.9	United Kingdom	6.0
United States	7.3	United States	8.7

THE CURRENCY

Monetary unit: Krone		2009	
		NOK per USD	6.29
		NOK per euro	8.75

Executive summary

Norway has ridden out the financial crisis better than most OECD countries, with a shallower recession and unemployment likely to peak below 4%. Its advantageous fiscal position made room for a massive budgetary stimulus complementing steep cuts in interest rates and substantial liquidity measures. The key challenge is now to withdraw the extraordinary policy support sufficiently early to avoid overheating. Norway's bold embrace of green growth objectives deserves praise, and the search for more cost-effective ways to pursue these objectives must continue.

Fiscal policy stimulus was supplied generously in 2009 and somewhat more is built into the 2010 budget. With the recovery well in train, the stimulus should be gradually withdrawn, especially as further fiscal expansion would risk entailing a tighter monetary stance and higher exchange rate, with adverse consequences for exposed industries. If the recovery unfolds as projected, some tightening should come soon. After that, it would be wise to bring the structural deficit back to 4% of the Government Pension Fund Global value by 2013, or even earlier. Rapid return to the 4% path would strengthen credibility of the fiscal guidelines and help meet aging costs. Completion of the pension reforms and sustained effort to reform the sickness and disability schemes are needed to improve labour supply and secure the public finances in future years.

Monetary policy also needs to return to normality. This has in fact already begun and the extraordinary liquidity measures have been phased out, as financial markets no longer need them in order to function. The appropriate pace of tightening will depend on the development of the Norwegian economy and associated inflationary pressures, the fiscal stance and, since Norway is small and very open, the pace of tightening in Europe. The inflation targeting framework is well adapted to the task, and the authorities should continue to pay attention to the developments of housing and commercial property prices when setting policy interest rates.

In the financial sector, a sound regulatory and supervision framework and memories of the Nordic banking crisis meant banks had little exposure to the worst of the toxic assets and risky loans. The three institutions with responsibility for financial stability work well together on macro-prudential issues. Financial regulation and supervision is being reformed at the European and worldwide levels and Norway is closely involved, including through its participation in the new EU supervisory architecture. Areas for strengthening regulation before international recommendations are finalised should be explored, for instance requiring Norwegian banks to meet higher capital ratios.

Climate change policy in Norway features laudably ambitious targets for emission reduction and the promotion of technologies and projects that may reduce the cost, for all countries, of mitigating greenhouse gas emissions. Meeting ambitious unilateral targets, with their valuable demonstration effect for the rest of the world, requires long-term political commitment. Policy would be most effective by adopting cost-minimising policies, notably by removing exemptions and special rates from the CO₂ tax and widening the coverage of emissions trading. Care must also be taken to ensure that Norwegian policies remain consistent with the evolving provisions of the European Economic Area agreement.

Fisheries policy contributed to the successful recovery of important northern fish stocks, but others, mainly fish stocks managed in co-operation with the EU, are overexploited. Norway will have to work closely with other countries, notably those in the EU, to set more cautious catch limits with effective monitoring and enforcement. Domestically, the governance of the industry is well designed from the point of conservation, but further rationalisation of the quota regime and ending exemptions from competition law could further enhance productivity without jeopardising sustainability.

Assessment and recommendations

The Norwegian economy is emerging early from a mild recession

The global financial crisis hit Norway less severely than many other OECD countries. The recession was shallower than elsewhere and consumer demand picked up relatively early. This relatively early and strong recovery can be ascribed to a number of factors. The dynamism of household demand and the direct effect of public expenditure growth were major factors in sustaining demand, while the bounce back in oil prices also supported investment in the petroleum sector. By Norwegian standards, there has been a significant rise in the unemployment rate, though it is not expected to exceed 4% and it will fall back as the recovery gathers strength. Good growth is expected for the mainland economy this year, strengthening somewhat in 2011. Amid global uncertainty, some downside risks remain, however, both for the world economy and within Norway.

Policy measures to deal with the crisis were substantial

The economy's resilience can be partly ascribed to the strong policy response. Norway went into the global financial crisis with an expansionary fiscal stance. Augmented by exceptional measures taken early in the year, 2009 saw a massive fiscal stimulus, followed by another expansionary budget for 2010. In addition, the central bank reduced interest rates by 450 basis points between October 2008 and June 2009 and it increased the supply of liquidity. The authorities' response also included a number of unconventional measures: a scheme was set up by which banks could temporarily swap covered bonds against treasury bills, which improved the banks' access to longer term funding. Furthermore, the government established a Finance Fund to supply core capital to banks to strengthen their lending capacity, and a Government Bond Fund to boost the supply of credit in the bond market.

Interbank market liquidity seems to have recovered

The interbank market in Norway seized up as in other countries when the financial markets storm hit. Norwegian banks are heavily reliant on foreign funding and even interbank borrowing is largely dependent on foreign interbank markets, completed by swaps between US dollars or Euros and Norwegian krone (NOK), making the NOK-denominated interbank market very small. In addition to the measures taken in Norway

itself, the supply of dollar liquidity from foreign central banks thus directly helped to restore the functioning of the Norwegian interbank market, and it has subsequently benefited from the better situation of global financial markets.

Extraordinary liquidity measures are being wound down and policy interest rates have begun to rise

As the financial market situation improved, the central bank began to phase out many of the exceptional liquidity measures in summer 2009. Credit conditions have eased, first for households, then for the corporate sector, with less uncertainty in the markets and perceptions of an improved economic outlook. The rebound in the housing market since the drastic cuts in interest rates in late 2008 has been remarkable. High incomes and employment explain some of the strength of house prices, but some indicators such as price-to-rent ratios suggest that prices are above long-term average values. It is thus unclear if a bubble is developing. Even if it were possible to identify such an asset price bubble, there is much uncertainty and discussion internationally about the appropriate response and it is not clear in any case whether monetary policy alone could easily head it off. While the target for monetary policy should remain price stability, it is advisable to ensure that asset prices – notably house prices and the exchange rate – are sufficiently taken into account in the monetary policy reaction function, in the light of their implications for the real economy and thus for inflation. In fact, partly in response to rising house prices, the central bank was one of the first among OECD countries to begin reversing monetary easing, increasing the policy rate by 25 basis points in October 2009, a further 25 basis points in December, and pointing to a rise of another 100 basis points over the next year. *This appropriate tightening will, if the recovery proceeds as currently foreseen, need to continue firmly, but progressively so as to reduce the risk of excessively sharp exchange-rate appreciation.*

A timely exit strategy calls for prompt fiscal tightening

With a recovery apparently underway, the large fiscal stimulus needs to be withdrawn to avoid overheating in 2011-12. Such fiscal consolidation would reduce the need for a tighter monetary stance, which would push up the exchange rate and might induce destabilising capital inflows. A better policy mix would be to begin to reduce fiscal deficits, allowing a more gradual withdrawal of monetary stimulus. *In this light, the further expansion embodied in the 2010 budget of about 0.6% of GDP, while useful as insurance at the time the budget was formulated, now appears excessive in retrospect. If the recovery evolves as expected, deficit reductions need to start in earnest soon, aiming at a return to the 4% path – that is, the structural non-oil central government deficit should be 4% of the Government Pension Fund Global (GPF) – by 2013, or even earlier. A fiscal consolidation package should include a reversal of the remaining anti-crisis measures; many have been terminated already but some have been converted into new spending. In addition, generous transfer schemes such as sick leave and disability should be reformed and spending cuts may be envisaged in those areas of public spending where there is evidence that resources are used inefficiently, as discussed below.*

Pro-cyclical deviations from the 4% path should be avoided and its implementation integrated with multiannual budgeting

The purpose of the GPFG is to support long-term management of petroleum revenues. Proceeds from the fund are used to finance the non-oil budget deficit. Since 2001 this framework has been supplemented by the fiscal guideline stating that only the expected long run real returns can be channelled into the budget; the long run real rate of return is estimated to be 4%, and over time the non-oil structural deficit should correspond to this. *Taken together, the GPFG and the 4% guideline have had a major, highly favourable impact on both the economy and public finances. It is important to maintain this framework.*

In practice, the structural non-oil central government deficit has averaged only slightly more than 4% of the GPFG since its inception in 2001. However, in 2009 it overshot by a very wide margin in response to the recession. Returning quickly to the 4% path, as suggested above, will be key to maintaining its credibility as a guide to fiscal policy. Moreover, it will help to preserve the GPFG for future generations, as intended, helping to finance the expected substantial increase in ageing costs. *Indeed, the authorities should seize the opportunity of periods of above-trend growth after 2013 to undershoot the 4% path. This would reinforce the credibility of the framework by confirming that it is operated symmetrically. Credibility of the 4% guideline would also be strengthened by developing a multi-year approach to budgetary planning, which would specify the fiscal measures envisaged by the government in the coming years; this would prove especially useful in the context of the need for a period of fiscal consolidation. Norway could also follow the example of some OECD countries and create a fiscal council, which would periodically evaluate budgetary developments, including the implementation of the fiscal guidelines, thus providing further transparency and enhanced credibility.*

Current fiscal policy must also be seen in the context of longer-term objectives, as overspending today widens the long-term fiscal gap. Filling this gap, estimated by the Finance Ministry at an excess of spending over revenue of 6% of GDP in 2060 (the pre-crisis estimate was 3.5%), despite expected revenue from the GPFG, will require *the completion of the pension reform*, both to reduce expenditure and to encourage higher labour participation. The latter is one of the most effective ways to reduce the long-run gap. In this regard, a key piece of the reform will be to harmonise the actuarial adjustment in disability benefits with those already implemented in old-age pensions.

Fiscal consolidation should include measures to reduce sick leave and disability spending and also focus on low-efficiency spending

Reforming sick leave and disability benefits would be doubly beneficial for public finances, by on the one hand allowing sizeable expenditure savings and, on the other, increasing participation and hours worked, thereby boosting tax revenue. As recommended by the previous Survey and by the 2006 OECD *Sickness, Disability and Work Review*, it is necessary to tighten the access to sickness and disability benefits. In addition, employers should co-finance sickness and disability benefits and a reduction in the rate of long-term sickness benefit should be considered.

The share of public spending in mainland GDP is one of the highest in the OECD and there is evidence of spending inefficiencies, for example in education, which was the subject of a special chapter in the 2008 *Economic Survey*, and health care, which was reviewed in the 2005 *Economic Survey*. Comparisons of outcomes (such as pupil performance for education, or life expectancy for health) and expenditure across countries, controlling for factors such as socioeconomic conditions and income levels, show that Norway is not getting as much as it could from its public expenditure.

In education, closing cost-ineffective schools should lead to resource savings and the government could consider funding incentives to encourage municipalities to pursue this faster. In higher education too, there are too many institutions for economies of scale to be pursued effectively and some of these could be closed. Significant savings could be made from reducing the subsidy to students in higher education, some of which could be diverted to early childhood education where the impact on improving equity would be greater. Other reforms, such as giving teachers outcome-based targets, and merit-based salary policies, could improve results and, later, make room for improved utilisation of resources.

In the health care sector, there were reforms some time ago designed to improve efficiency, notably the centralization of hospital responsibility and the organization of hospitals as enterprises, and moves towards fee-for-service financing. Though some measures of efficiency have improved over the last decade or so, overall spending climbed rapidly partly because of the fee structures themselves, partly because of the lack of hard budget constraints imposed on hospitals; the number of doctors and nurses relative to the size of population is at present significantly above OECD average, for example. *Restructuring and merging of cost-ineffective healthcare institutions must be pursued, including through more effective cost control. Co-payments should be introduced or increased where there is evidence of excessive consumption, compared with assessed care needs, and demand is price-sensitive; this may be the case in physiotherapy and care for the elderly, for example. Co-ordination between municipalities and hospitals also needs to be improved.*

Spending efficiency should be improved further, including at the local government level

This and previous Surveys highlight the need to increase the efficiency of public spending. *The growth of public employment, especially at local level, must be better controlled. Existing tools, such as regulatory impact analysis and cost-benefit analysis, should be used systematically and given more weight in policymaking. Wide dissemination of information on performance of schools, hospitals and other public services can also be useful in securing support for expenditure rationalisation.*

Efficiency and neutrality of the tax system can be improved

The already high level of taxation should not be increased. Tax expenditures in Norway are not especially high but are growing fast, especially in housing. Generous tax treatment of housing, for which there is no obvious economic justification, is likely to distort investment decisions and may have contributed to the house price boom. Reform of housing

taxation should include measures to phase out the asymmetries resulting from the deductibility of interest payments on owner-occupied dwellings without taxing imputed rent, and from the remaining substantial discount applied to housing for the wealth tax. Marginal tax rates at high income levels could be reduced, partly to reduce the incentive to misreport labour income as more favourably treated capital income. Reducing progressivity could also increase returns to education, and thus provide stronger incentives to undertake higher education studies. Revenues losses from such measures could be fully compensated by the increases in housing taxation.

Banks, and the supervisory system, performed well in the crisis

In the last two years, banks' losses have increased, though less than in other OECD countries. The strong earnings that Norwegian banks had accumulated over the previous upturn had given them some buffer to face the crisis. Relatively risk-averse behaviour in the financial sector was partly due to sound financial regulation for all types of financial institutions, including uniform capital requirements, with conservative treatment of subsidiaries, off balance sheet assets and securitisation. The existing deposit guarantee scheme helped to avoid runs on banks, and it was not necessary to increase the coverage level or provide a government guarantee for banks. *Eksportfinans*, the public export credit agency, made substantial losses on the securities market and was supported by the government; one other Norwegian-based institution, a subsidiary of an Icelandic bank, also got into trouble. The macro-prudential framework appears to have performed well, with the three responsible institutions – the Ministry of Finance, Norges Bank and the Financial Supervisory Authority (FSA) – maintaining close contact and co-operation. *It will be critical to maintain such relationships in the future, and for all three institutions to maintain heightened awareness of systemic risks posed by excessive credit growth, asset price increases or indebtedness.*

In the aftermath of the crisis it would be useful to strengthen further the macro-prudential framework in line with the decisions adopted at the European and worldwide levels. Norway's participation in the new EU supervisory framework seems assured. It should in addition examine areas where it would be feasible to adopt its own reforms, if doing so would address possible areas of weakness. *For example, risks linked to high household indebtedness could be reduced by introducing a limit on loan-to-value ratios, which would also give mortgage borrowers additional protection against overly-aggressive lending practices.* The supervisors should continue to encourage banks to build additional capital cushions against future risks, such as potentially bad loans for commercial property and shipping, and in the Baltic States. For DnB NOR, the dominant institution in the market of banking insurance and fund management, raising private equity could give the opportunity to significantly reduce government ownership, helping to reduce perceptions of an uneven playing field. However, the authorities are concerned that this would risk DnB NOR being no longer subject to Norwegian prudential regulation and supervision if it were acquired by a foreign bank and operated as a branch. Also, to reduce the incentives to risk-taking, fees paid to the Bank Guarantee Fund could vary more as a function of the risk characteristics of banks' portfolios than they do now. The ceiling on the size of the Fund should also be removed, and fees could vary inversely with the cycle.

The sustainable development strategy establishes useful principles for promoting green growth...

Norway has long been a key promoter of environmental and social sustainability as well as sustainable economic growth as essential objectives of economic policy. The incorporation of the current strategy for sustainable development into the 2008 budget documentation was partly intended as a sign that it should be central to all policy making. The strategy sets out a number of indicators for judging progress as well as some key principles that are to be applied in policy making. In addition, the strategy makes clear that policy options should also be subject to a test of cost-effectiveness, once these principles have been applied. *This test could usefully be incorporated into the principles themselves, to foster maximum progress for given use of resources.*

... though the objectives and potential trade-offs could be clearer

These indicators should not be treated as objectives. As objectives the indicators may suffer from two important defects: a narrow focus on certain problems to the exclusion of others; and the inclusion of indicators which represent policy inputs rather than policy outcomes; for example, the level of official development aid. *The list of indicators should be kept focused, but would benefit from a clearer and explicit separation of input from output indicators.* As an approach to policy in all sectors, rather than specific sectors, sustainable development may not need the same level of attention in every budget. However, if the government wishes to maintain sustainable development as a central policy objective, *the budgetary and policymaking process should periodically start with an assessment of progress and needs from the sustainable development perspective, in line with the four-yearly revision of the Sustainable Development Strategy.*

Climate change is a key priority: Norway's ambitions can be a valuable example to other countries

Blessed with enormous hydroelectric and petroleum energy resources for its small population, Norway is also cursed with responsibility for significant and growing emissions of greenhouse gases from the petroleum industry itself. Moreover, the substantial use of hydro power means that, for domestic purposes, Norway already has a very high share of renewable energy and that further cuts in greenhouse gas emissions will come at a relatively high cost. In any case, Norway plans ambitious emissions cuts, in part to encourage other countries to follow its lead. It has announced a target for 2008-12, 10% below its commitment under the Kyoto Protocol and a 30% cut compared with 1990 by 2020. Norway has declared its ambition to become carbon neutral (taking into account Norway's contribution to emissions reductions abroad) by 2050 at the latest and, as part of a global agreement in which sufficient other countries also take on major obligations, it would bring this target forward to 2030. However, despite reductions in some industries, domestic emissions have risen and, as planned, Norway will use offset schemes such as emission trading and the clean development mechanism (CDM) to meet its short and medium-term commitments. To keep down the cost of meeting its future objectives, and

to better demonstrate to other countries how to effectively cut emissions, Norway should rationalise its domestic policies.

Norway could get more out of the CO₂ tax and the emission trading system, and could address leakage at lower cost

More than 70% of GHG emissions are covered by emissions trading or the variable rate CO₂ tax. *The remaining sectors should be brought into the post-2012 trading system; emission allowances should be auctioned or sold, not issued for free.* The CO₂ tax could logically be abolished for sectors covered by the trading system if Norway were content with the emission targets implicitly reflected in the price in the EU trading system. Stronger action could be achieved with a supplementary domestic trading system or a flat-rate CO₂ tax applying to all emissions. While there is concern about potential leakage from certain industries, research shows that the likelihood of significant leakage is rather small. In Norway, the real concern is often regional, as some vulnerable plants are located in remote areas. Allowing such concerns to distort climate change policy does not set a good example. Norway will almost certainly be a big user of the clean development mechanism, and thus has a strong interest in verification and enforcement. In part to demonstrate its commitment in this area and to promote improvements, *Norway should consider making extra efforts to improve and develop UN procedures to validate and monitor the effects of CDM projects.*

Other policies to reduce emissions, ranging from waste management, urban and transport planning to building standards and educational programmes, also have important roles. *The KlimaKur programme should be used not to specify sectoral targets but to provide information on cost-effectiveness to guide priorities in these areas.* In parallel, cost-benefit analyses of public investment, and of other programmes designed to reduce emissions, should all use the same, explicit assumption on the cost of emissions (i.e. the price of emission allowances plus any general tax) over their lifetime. For example, given the increasing urgency of action on climate change, *consideration could be given to a comprehensive assessment of constraints on cost-effective increases in the supply of hydropower and other renewable energy, which could for example supply European electricity markets, thereby reducing the cost of emission reduction there and earning significant economic returns for Norway.*

Sustainability is an essential part of fisheries policy and depends on international co-operation

Following periods of stock collapses and very poor stock levels in a number of important fisheries, sustainability has become a key preoccupation of fisheries policy. The treatment in this Survey is insufficient to draw comprehensive conclusions on what policies make for successful stock management, but it is clear that, in addition to setting maximum limits on the fish catch, *some regulation of the fishing technology used, such as net design, remains indispensable.* Also indispensable is effective co-operation between the different countries fishing the same stocks; such co-operation needs to cover both agreeing the policy setting, such as maximum catches, and effective enforcement.

Co-operation seems to be easier when few countries are involved than when there are many: the two key stocks that are shared largely between Norway and Russia, with other

countries relatively insignificant, have recovered quite strongly over the last decade; but those in the North Sea, shared more equally with a number of countries (the European Union has a common fisheries policy but implementation is delegated to individual countries), are generally still struggling. But Norway too sometimes subordinates the interests of longer-term sustainability to the interests of coastal communities, such as in the case of the coastal cod fishery. Extending and widening the use of a discard ban by the European Union, as experimented with in the North Sea, could be a fruitful area for discussion between Norway and its European partners.

The fishing industry has been weaned off most subsidies but is largely self-regulated and exempted from parts of competition law

In the past, the fishing industry was quite heavily subsidised. As some fisheries have recovered and prices have generally remained high, average profitability is now quite high and the remaining subsidies, though substantial, are through exemptions on fuel and pollution taxes and income taxes for fishermen. In line with the recommendations above, *fuel tax exemption should be phased out, if possible in co-operation with neighbouring countries*, all of which have similar tax breaks. One reason for improved profitability is that the system of vessel-specific quotas, self regulation and exemption from competition law allow the supply side of the industry to collect a combination of monopoly and resource rents and protect them from new entrants. Such an organisation of the fishing industry may be helpful for resource management purposes, but should not go unchallenged. *Without prejudice to the current exemptions, the competition authority should be asked to investigate the operation of the quota system and the governance structure to verify that constraints on competition are no more than is necessary to manage the stocks effectively. Untying quotas from specific vessels and removing restrictions on quota trading would allow competition to improve the economic efficiency of the industry.*

Chapter 1

Emerging from the crisis

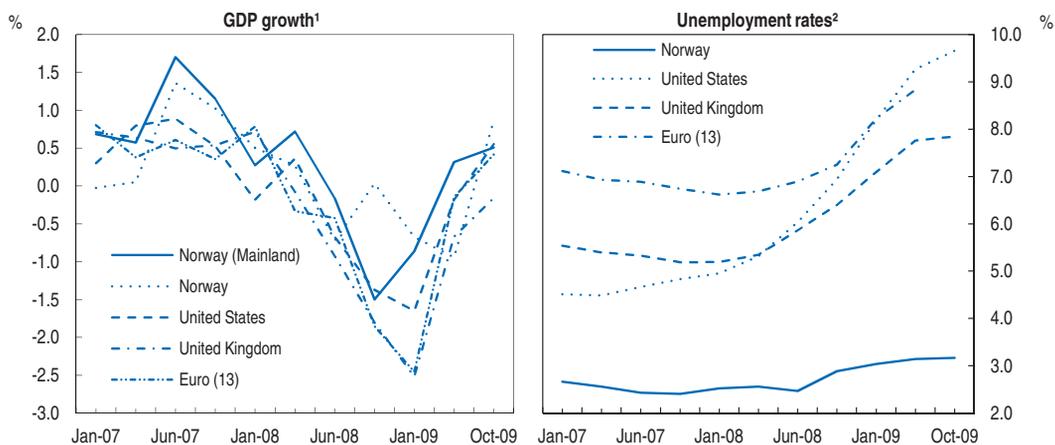
The Norwegian economy has been particularly resilient during the financial crisis with a relatively shallow recession and moderate increase in unemployment. As Norway moves into what is projected to be a strong recovery, the authorities need to plan how to unwind the extraordinary measures that were taken to confront the crisis. Interest rates have already been raised, the special liquidity measures have been progressively withdrawn and monetary policy will need to tighten further over the next two years. The appropriate pace of tightening will primarily depend on developments of the Norwegian economy and the outlook for inflation. Policymakers should also continue to pay attention to developments in the property market, which are fuelled by low interest rates, and trends in the foreign-exchange market, which could react to widening interest-rate differentials. An early consolidation of fiscal policy would reduce the need for monetary tightening and the related risk of exchange-rate appreciation. It is essential to maintain the basic fiscal framework, built round the “4% rule”, and soon start the process of bringing down the non-oil structural deficit to a level consistent with the rule. The Norwegian financial sector came through the financial crisis without serious damage. In the aftermath of the crisis it is important to strengthen the macro-prudential approach, in co-ordination with European and other international initiatives. In addition, banks should be required to build up further their equity capital buffer, so as to prepare for possible losses in the future. Finally, aggressive bank lending practices should be discouraged.

The impact of the financial crisis was limited

The recession was relatively shallow

The global financial crisis did not spare Norway, but the economy has been more resilient than in many other OECD countries. The recession was short-lived, starting two quarters later than in the rest of the OECD area and ending one quarter earlier, and while overall GDP in the OECD area fell by 5% between mid-2008 and mid-2009, the fall was less than half of this in Norway (Figure 1.1). The impact of financial crisis on longer-term growth should be relatively limited as well (Box 1.1), though here there is particular uncertainty over the impact of the recession on participation rates and on immigration.

Figure 1.1. **Mainland GDP¹ fell moderately and unemployment increased very little**



1. Growth rate, quarter-on-quarter.

2. Euro (13) average unavailable for third quarter of 2009.

Source: OECD Economic Outlook Database.

StatLink  <http://dx.doi.org/10.1787/807653312817>

Box 1.1. The impact on potential output should be limited

In most OECD countries, the financial crisis has affected not only short-term growth but also medium-term potential. In fact, economists are struggling to understand the different mechanisms through which the crisis will have affected potential output. A key one is the decline in capital intensity following the fall of business fixed investment, in part explained by the higher cost of capital and reduced access to credit. Investment in the petroleum sector, which has continued to grow quite rapidly up to mid-2009, has positive effects on mainland investment and is dampening this effect in Norway. Another mechanism depressing potential output is the increase in the structural unemployment rate which has followed high levels of unemployment in the past. Some estimates suggest that the OECD area-wide level of potential output will have been reduced by about 3%, with

Box 1.1. The impact on potential output should be limited (cont.)

most of the impact being felt over the period 2009-10, and two-thirds of it due to the fall in capital intensity and the rest from higher structural unemployment (OECD, 2009a). With both these effects being less strong in Norway, the loss of potential output will be correspondingly lower, perhaps no more than 2%. These estimates do not include possible additional negative effects coming from declining trend labour force participation rates, or adverse effects on TFP from lower R&D expenditure. Among the anti-crisis measures, there were some to increase R&D expenditures, hoping to boost longer term productivity growth.

Losses to potential output could be greater if there were more exits from the labour market through welfare schemes, which have been observed in past recessions in Norway. Downturns cause an increase in long-term unemployment, which tends to result in higher sick leave which in turn leads to more recipients of disability benefits. Such losses in potential employment are reversed only slowly, if ever (in what is referred to as the hysteresis effect) as exit rates from disability schemes to employment are extremely low, even when the economy grows fast. This reinforces the urgency of an effective reform of the sickness and disability systems (see later sections).

Migration is an additional factor influencing structural unemployment. As pointed out in the last *Economic Survey*, the substantial inflow of labour from Nordic and Eastern European countries of recent years has helped to keep wage growth down, effectively resulting in a lower NAIRU. A strong recession in Norway might be expected to reverse much of earlier migration. However, although the net inflow declined in 2009, it was still substantial. Some surveys show that the demand for foreign workers with an Eastern European background was rising again in late 2009, particularly because the demand for highly-skilled technicians seemed to be increasing (EIU, 2009).

The fall in output was lower in Norway than elsewhere partly because of the basic macroeconomic policy framework, based on saving most petroleum revenue in an offshore fund and spending only the underlying returns; this very successfully suppresses most of the effect of large swings in the terms of trade on both the mainland economy and budgetary policy. The short-term impact of the sudden fall in the terms of trade in 2008-09, following the equally large run-up in 2006-07, was thus minimal. This framework and the strong underlying fiscal position allowed automatic stabilisers to work fully. In addition, large fiscal and monetary stimulus was introduced in the economy in 2009.

The recession came after one of Norway's strongest periods of economic growth in the last 50 years. In the five years after 2003, mainland GDP annual growth averaged over 4%. This was initially driven by higher productivity growth and later by higher employment, with a significant proportion supplied by immigration (Table 1.1). Both productivity and employment fell in 2009, albeit less than in many other OECD countries. Exports fell significantly, but in a break with the trend of the last decade or more, Norway made relative gains in market share in 2009. The specialisation of Norwegian exports on commodities (oil, gas, non-ferrous metals) moderated the impact of the collapse of global trade as, although the traditional export sector suffered, trade in commodities was less affected by falling demand.

Underlying inflation remained above 2.5%, the central bank's medium term inflation target,¹ from mid-2007 to mid-2009, while in the OECD as a whole underlying inflation fell from 2.2% in early 2008 to less than 1.8% in late 2009. A temporary exchange-rate

Table 1.1. Sources of real income differences

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Norway, mainland	Real output growth	2.9	2.0	1.4	1.3	4.4	4.4	4.6	5.6	2.2	-1.2
	Productivity growth	2.6	1.6	2.4	0.8	3.2	0.7	0.6	2.5	3.0	-1.2
	Employment growth	0.6	0.3	0.4	-1.0	0.5	1.2	3.6	4.1	3.1	-0.8
Norway, overall	Real output growth	3.3	2.0	1.5	1.0	3.9	2.5	2.1	2.7	0.0	-1.3
	Productivity growth	2.7	1.6	1.1	2.1	3.4	1.3	-1.5	-1.3	-3.1	-0.6
	Employment growth	0.6	0.3	0.4	-1.0	0.5	1.2	3.6	4.1	3.1	-0.8
OECD	Real output growth	4.3	1.3	1.7	2.0	3.2	2.7	3.1	2.7	0.6	-3.5
	Productivity growth	2.6	0.7	1.8	1.7	2.1	1.4	1.5	1.4	0.1	-1.2
	Employment growth	1.7	0.5	-0.1	0.2	1.1	1.3	1.6	1.3	0.4	-2.3
Sweden	Real output growth	4.5	1.2	2.4	2.0	3.5	3.3	4.5	2.7	-0.4	-4.7
	Productivity growth	2.0	-0.9	2.4	2.6	4.2	3.0	2.8	0.5	-1.3	-2.3
	Employment growth	2.5	2.1	0.0	-0.6	-0.7	0.3	1.7	2.2	0.9	-2.4
Denmark	Real output growth	3.5	0.7	0.5	0.4	2.3	2.4	2.4	3.3	1.6	-1.2
	Productivity growth	3.0	-0.2	0.4	1.5	2.9	1.4	0.5	0.7	0.8	1.7
	Employment growth	0.5	0.9	0.0	-1.1	-0.6	1.0	2.0	2.7	0.9	-2.9

Source: OECD Economic Outlook Database, based on national accounts definitions (employment expressed as number of employed people).

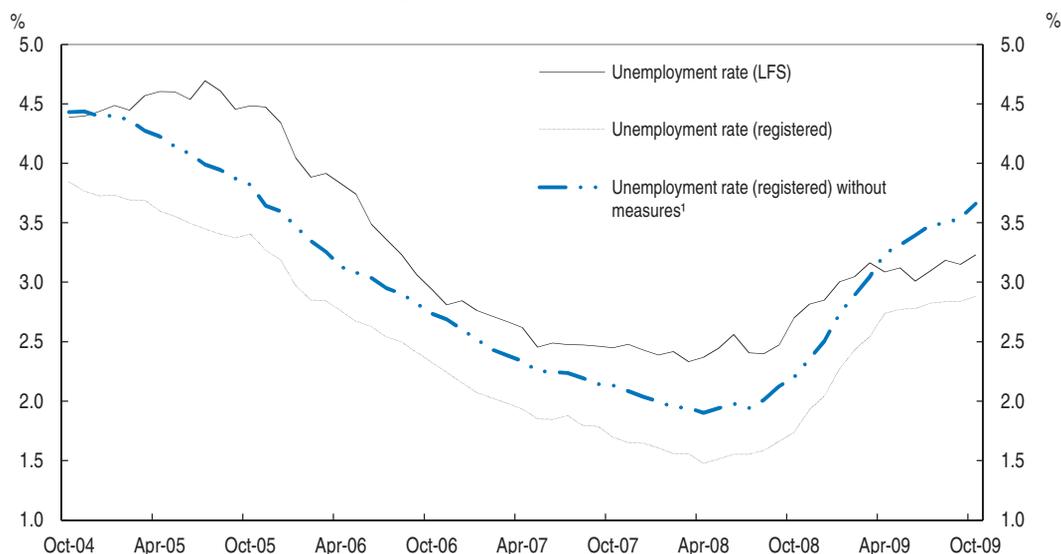
depreciation early in the financial crisis contributed to higher inflation, as well as food prices, which rose twice as fast in Norway as in the rest of the OECD, reflecting the effect of Norway's agricultural policy. By the end of 2009, underlying inflation was a little below the central bank target, and headline inflation much more so, with the short-term outlook for declining inflation during 2010.

The labour market was strong

With a shallower recession than elsewhere, the labour market was also relatively resilient. Having reached a historic low of 2.3% in 2007, the unemployment rate has increased in Norway by $\frac{3}{4}$ percentage points, a relatively small increase compared with the OECD area average. An increase in active labour market programmes (Figure 1.2) and other measures to secure employment in labour-intensive sectors such as construction combined to limit the rise in unemployment. Some groups of the population have however been hit by the crisis, as shown by the fact that by mid-2009, one third of the registered unemployed were under the age of 30. This was partly accompanied by a withdrawal from the labour force of this group of the population, who appear to have decided to remain in or return to education, as often occurs during recessions. The resilience of employment was also due to firms retaining more workers than needed for production in the short term, a phenomenon which has been observed in other OECD countries with similar economic conditions such as Australia. Indicators of employment protection also show the cost of dismissal to be relatively high for firms, especially for older workers (Venn, 2009).

Financing was restricted but both banks and non-financial companies were in relatively good health

The number of bankruptcies has been rising, especially in the construction sector. Asset write-downs have also been substantial. The credit tightening of the last year has restricted new project financing and, while lower interest rates should be beneficial, lending rates to non-financial companies have not fallen in line with money market rates, as banks have widened their margins. Corporate debt growth also fell, especially for those

Figure 1.2. **Active labour programmes have limited the rise in unemployment**

1. This is calculated as the registered unemployment rate that would be observed if specific government measures (active labour market programmes) had not been adopted.

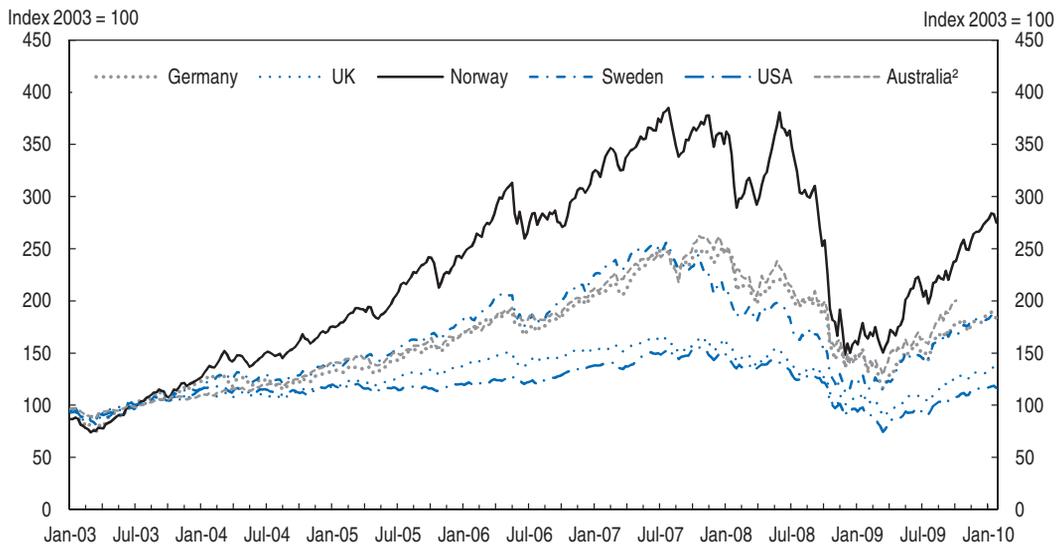
Source: Statistics Norway.

StatLink  <http://dx.doi.org/10.1787/807677853318>

sectors which are more dependent on the cycle, such as commercial property. However, although increases in unit costs hit profitability after the onset of recession in mid-2008, profits had been rising prior to then and even in 2009 operating margins for many companies were increasing, indicating improved profitability prospects for the future.

The Norwegian financial sector's relatively good health has been both a cause and a consequence of the resilience of the real economy. Financial institutions were little exposed to risky assets and banks' losses have been contained. The only Norwegian institution that was severely hit was Eksportfinans (a public export credit agency), which experienced substantial losses in its liquidity portfolio. In addition, a Norwegian subsidiary of an Icelandic bank, Glitnir, experienced problems and was sold to new owners. Following the collapse in its home country, the Norwegian branch of the Icelandic banks Kaupthing was placed under administration and the Norwegian government guaranteed payments to Norwegian depositors from the Icelandic deposit guarantee scheme. Kaupthing was also a "topping up member" of the Norwegian deposit guarantee scheme.² Equity and bond markets plunged in Norway just as, if not more than, in the rest of the OECD, having run up somewhat higher prior to the crash (Figure 1.3). A later section of this chapter discusses the experience of the financial sector and the policy response during the crisis in some depth.

Like the rest of the OECD area, however, Norwegian banks suffered from a reduced access to liquidity (Figure 1.4), accentuated by the Norwegian money market's dependence on foreign currency funding. At the same time, the currency depreciated sharply, in a "flight-to-quality" that affected the currencies of many small economies (Figure 1.5). The temporarily weaker krone helped to dampen the effect of the global crisis on the tradable sector, which in the last few years has been suffering significantly from decreased international competitiveness.

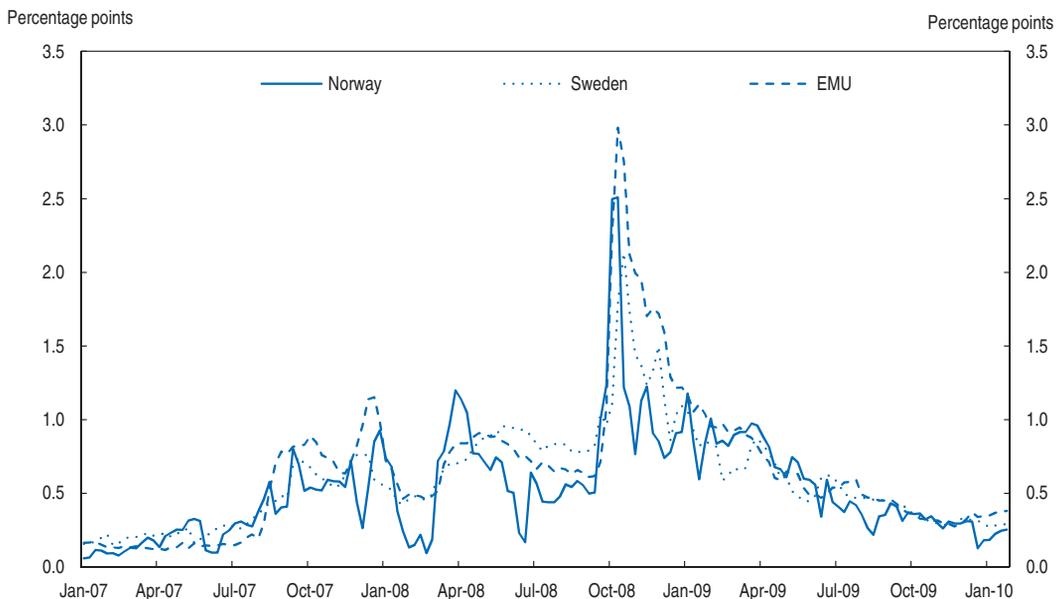
Figure 1.3. Norwegian equity markets¹ plunged

1. The market indices refer to the ASE (Australia), Dax 30 (Germany), OSEBX (Norway), OMXS (Sweden), FTSE 100 (UK) and the DJI (US).

2. Data unavailable after October 2009.

Source: Reuters.

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Figure 1.4. The spread¹ on the interbank market increased

1. The spread is calculated as the difference between the 3 month money market rate and the treasury bill rate.

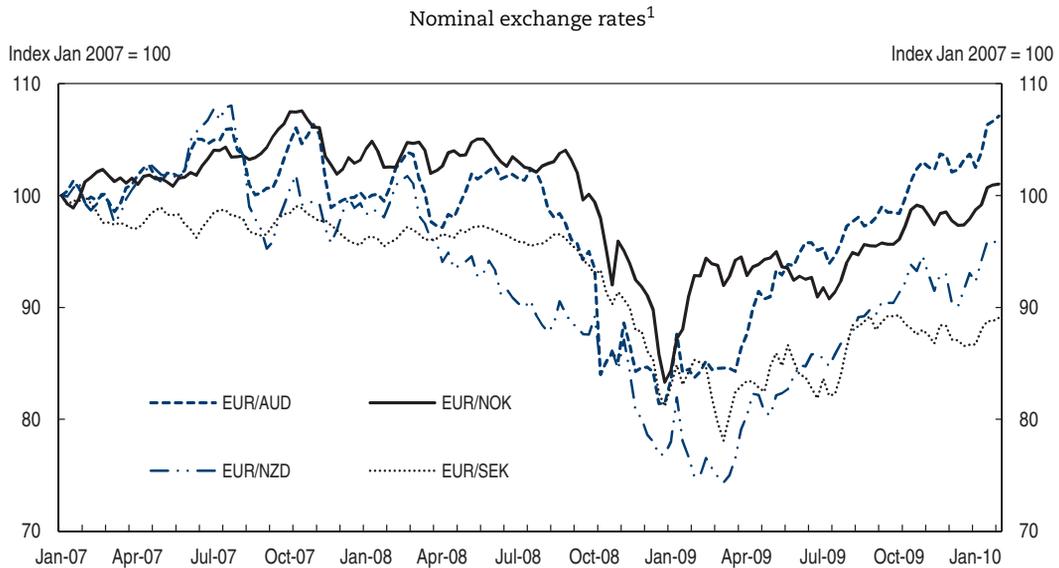
Source: Reuters.

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A strong contribution from the petroleum sector

While oil prices fell 75% between July and December 2008, they started picking up again during the spring of 2009 and have recovered further since then (Figure 1.6). There was no immediate impact of financial crisis on investment in the petroleum industry,

Figure 1.5. **Small currencies depreciated in the wake of the financial crisis but have recovered since then**

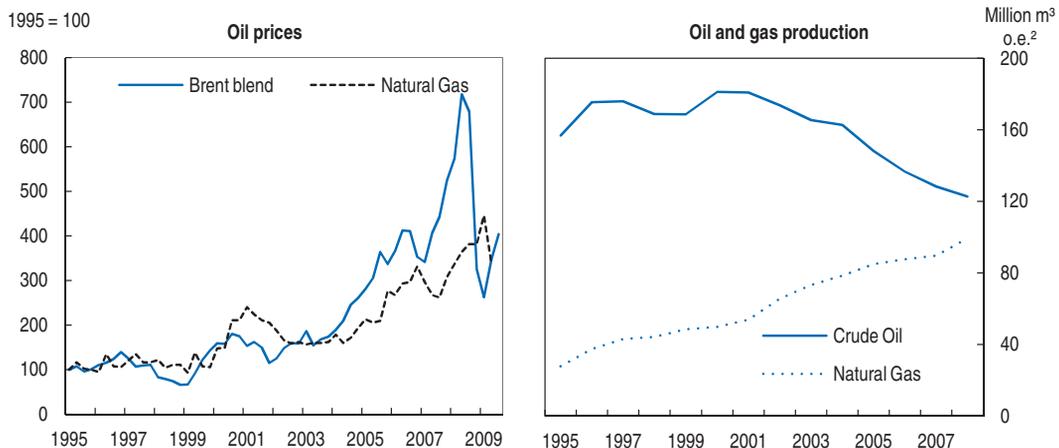


1. A rise in the index indicates an appreciation.

Source: Reuters.

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Figure 1.6. **Oil prices are increasing again whilst production continues to fall¹**



1. The amount exported and the value of exports are measured at the entrance of the pipeline to terminals abroad.

2. Standard cubic metres (Sm³) in oil equivalent. (1 Sm³ = 0.84 toe crude oil).

Source: OECD Economic Outlook and Statistics Norway.

StatLink <http://dx.doi.org/10.1787/807784737061>

which was still growing strongly in the first half of 2009. The impact of the offshore sector on the mainland economy has thus been significant: in 2008 the Ministry of Finance estimates its direct and indirect effects on the mainland economy to have contributed 0.5% to GDP growth in 2008 and 0.7% in 2009. With oil production now in secular decline, increases in gas production are however insufficient to prevent petroleum sector output as a whole from declining (Figure 1.6). Lower oil and gas prices were also the main factors behind the falling trade surplus in 2009, the value of net exports falling by an average of 30% (year on year) over the first two quarters of 2009. Together with a negative net balance

of international transfers the result was a fall in the current account surplus of 2 percentage points of GDP in 2009.

A swift recovery is expected

The economy is recovering earlier and faster than elsewhere

By the end of 2009, the economy appears to have already embarked on a recovery, which is projected to accelerate over the next two years (Table 1.2). After a contraction of 1.2% in 2009, mainland GDP growth is projected to recovery in 2010 (2.8%) and accelerate in 2011 (3.2%). Private consumption growth resumed relatively early. It is likely to return to its pre-crisis path thanks to strong growth in disposable income, itself supported by rather dynamic wage growth, lower interest payments and increased public transfers. The resumption of house price growth is also likely to fuel consumption through wealth effects.

Table 1.2. **Norway: Demand, output and prices**

	2006	2007	2008	2009	2010	2011
	Current prices NOK billion	Percentage changes, volume (2007 prices)				
Private consumption	881.8	5.4	1.3	0.0	4.4	4.5
Government consumption	413.0	3.0	4.1	5.9	3.2	2.3
Gross fixed capital formation	424.2	12.5	1.4	-3.9	0.4	5.3
Final domestic demand	1 718.9	6.6	1.9	0.4	3.1	4.1
Stockbuilding ¹	51.0	-1.1	0.5	-1.6	0.0	0.0
Total domestic demand	1 769.9	5.0	2.5	-1.7	3.0	4.2
Exports of goods and services	1 002.5	2.3	0.9	-7.8	-0.4	2.6
Imports of goods and services	612.8	8.6	2.2	-11.5	4.3	5.4
Net exports ¹	389.7	-1.4	-0.3	-0.5	-1.3	-0.3
GDP at market prices	2 159.6	2.7	1.8	-1.4	1.3	3.2
GDP deflator	-	2.4	10.0	-3.3	3.7	2.9
<i>Memorandum items</i>						
Mainland GDP at market prices ²	-	5.6	2.2	-1.2	2.8	3.2
Consumer price index	-	0.7	3.8	2.3	1.6	2.2
Private consumption deflator	-	1.2	3.7	2.9	1.7	2.2
Unemployment rate	-	2.5	2.6	3.3	3.7	3.5
Household saving ratio ³	-	1.5	3.3	3.3	2.0	2.0
General government financial balance ⁴	-	17.7	18.8	9.6	9.9	10.8
Current account balance ⁴	-	14	18.3	17.4	18.6	18.1

Note: National accounts are based on official chain-linked data. This introduces a discrepancy in the identity between real demand components and GDP. For further details see *OECD Economic Outlook Sources and Methods* (www.oecd.org/eco/sources-and-methods).

- Contributions to changes in real GDP (percentage of real GDP in previous year), actual amount in the first column.
- GDP excluding oil and shipping.
- As a percentage of disposable income.
- As a percentage of GDP

Source: *OECD Economic Outlook 86 Database* integrating national accounts revisions as of November 2009.

Although public investment is still growing due to massive infrastructure projects carried out under the fiscal stimulus package, private non-petroleum investment is still sluggish. But as credit tightening is unwound and global demand recovers, non-petroleum private investment is likely to strengthen during 2010 and could then quite rapidly return to its pre-crisis level (around 15% of mainland GDP).

Global trade prospects are also improving strongly. In particular, demand from emerging countries already picked up in 2009 and is growing again at a brisk pace, favouring commodity rich countries like Norway. The traditional export sector is also improving its competitiveness, in particular thanks to increased productivity and moderating wage growth; though this will probably not be enough to avoid a further deterioration of market performance; market share losses should, however, be lower than in the recent past.

Given the strong rebound in domestic and external demand, the labour market is expected to improve during 2010. While the labour force continues to increase gradually over the next three years, employment will rise progressively as output picks up and unemployment will start falling in 2011. Favourable developments are also expected on the productivity side, as labour hoarding will level off and recession-induced restructuring in firms is completed.

The benign short-term inflation outlook may deteriorate

By the end of 2009 the very short-term inflation outlook was looking relatively benign, as recovering output helped to moderate unit labour costs and prices of imported goods fell due to the recovery of the exchange rate. But underlying inflation, though just below the target, is higher than Norges Bank had expected and, under the projections presented here, the mainland economy will be growing above its estimated potential growth rate for much of 2010 and 2011. Surveys on inflation expectations report that 2 to 5 years ahead expectations have risen since the end of 2008, and are above the official target (Figure 1.7). An implicit indicator of inflation expectations in the financial market, measured as the expected five years interest rate differential between Norway and the euro area, also indicates that expectations have edged up.

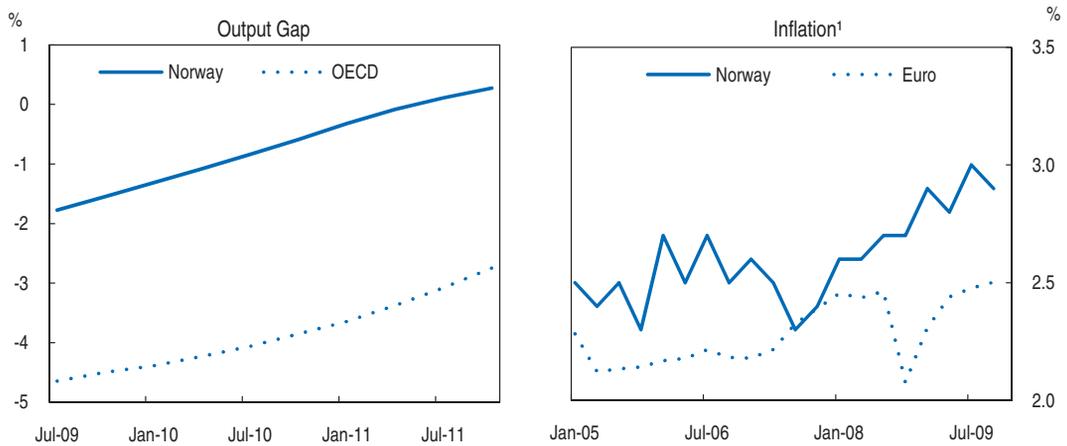
It is time for macroeconomic policy to adjust

The authorities face some difficult choices in designing their “exit strategy”. Even as the economy was still in recession, the housing market had begun what now appears to be a very strong recovery (Annex 1.A1 for a discussion of some of the underlying factors in the Norwegian housing market). The recession is turning out less severe than the authorities (and most forecasters) were expecting, in fact less severe than most recent recessions (Figure 1.8) and with respect to the OECD area (see Figure 1.7). As demand pressures throughout the economy now seem likely to continue to build up, there is a strong likelihood that the overheating that was evident in late 2007 may begin to re-emerge in 2011 or 2012. Monetary tightening has already begun but if the authorities wish to avoid the real exchange rate appreciation that is likely to generate for widening interest-rate differentials, action on fiscal policy is also needed. Over time, some quite substantial adjustment of both monetary and fiscal policy will be needed, to unwind the strong and appropriate stimulus that the authorities provided as the recession first hit.

The authorities met the crisis with a massive fiscal stimulus and dramatic cuts in interest rates

The fiscal and monetary policy response has played a prominent role in the resilience of the Norwegian economy during the crisis, building on the favourable position provided by the underlying macroeconomic framework. This response included a large fiscal stimulus, a dramatic reduction in interest rates and the provision of short-term liquidity and longer-

Figure 1.7. Comparing Norwegian recovery to the rest of OECD

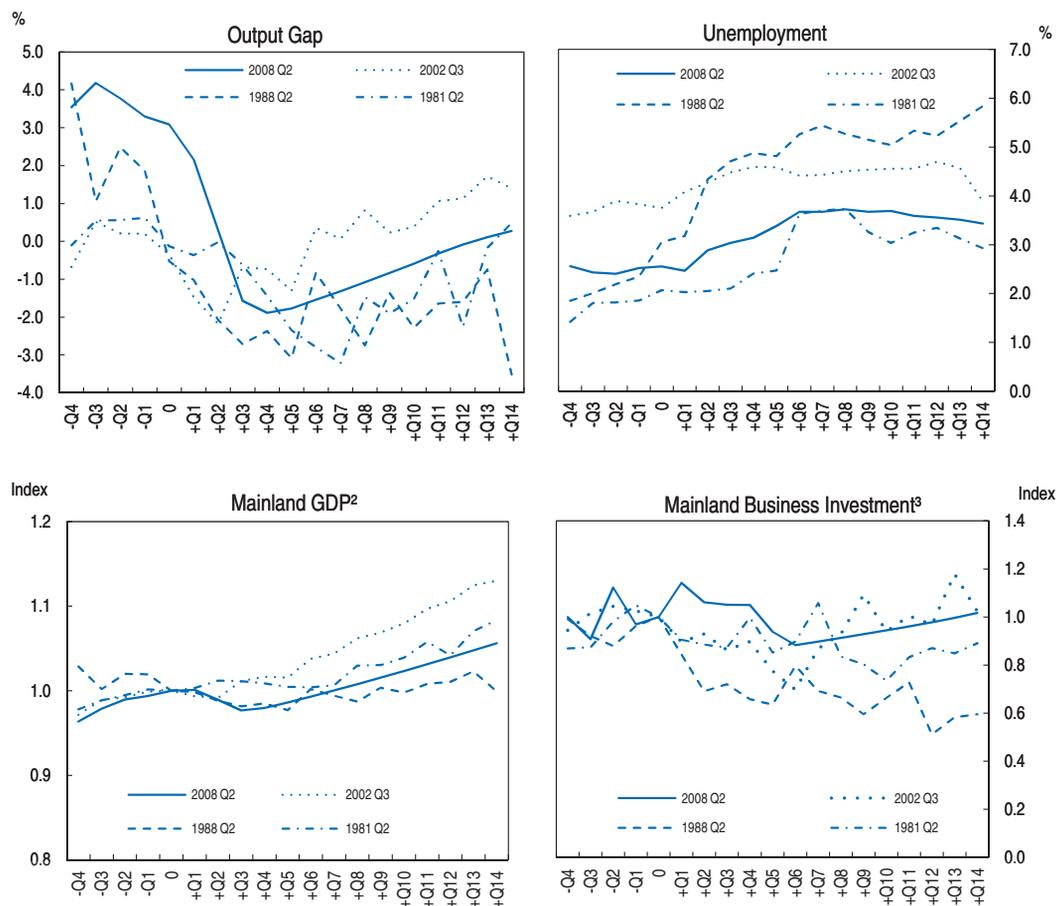


1. Inflation expectations 5 years ahead.

Source: OECD Economic Outlook, ECB and Norges Bank.

StatLink <http://dx.doi.org/10.1787/807811547128>

Figure 1.8. Comparing Norwegian recessions¹ over time



1. Each recession starts at time period 0.

2. Mainland GDP is expressed as an index, period 0 = 1.

3. Mainland business investment is expressed as a % of GDP, indexed on period 0 = 1.

Source: OECD Economic Outlook.

StatLink <http://dx.doi.org/10.1787/807813106102>

term finance. Pre-crisis plans for the 2009 (pre-election) budget were already somewhat expansionary and following additional measures taken in January and May 2009 the final result was real expenditure growth of nearly 7% in 2009; tax reductions were worth approximately 0.5% of GDP. Expenditure measures included increased infrastructure spending and transfers to finance local services, but also transfers to the business sector, for example to encourage R&D (Table 1.4). Overall, the structural non-oil deficit increased by about 3.6% of GDP in 2009-10, compared with a cumulative 2.7% for the average of the OECD area. The deterioration in the actual budget balance (including petroleum revenues) was much larger, with the surplus falling from 19% of GDP to 8% between 2007 and 2009 (compared with a widening of about 6 percentage points for the OECD area-wide deficit), about half of this is due to the cycle and about one quarter to lower petroleum prices. The impact of a fiscal stimulus in such a crisis period is uncertain, estimates for Norway show an impact on growth of about 1.5% (Box 1.2).

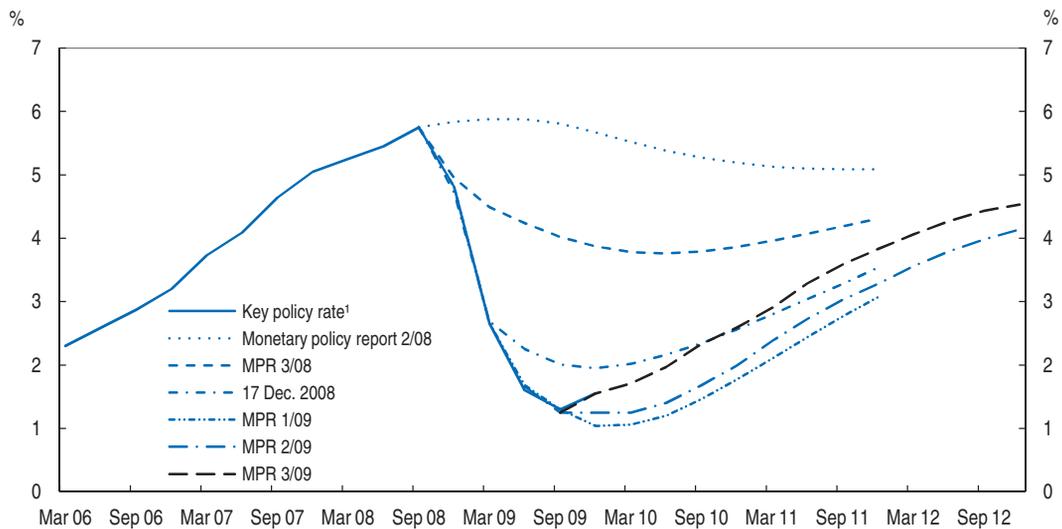
Box 1.2. The fiscal multiplier

Providing a quantification of the impact of the fiscal stimulus is quite difficult, especially in a crisis period when the multiplier associated with different kinds of action may be different from normal. Historical studies show that direct spending on goods and services, or infrastructure investment is generally the most effective in terms of the short term stimulus to activity, while tax cuts and transfers to the business sector have much weaker effects (OECD 2009b). Taking into account these composition effects and factors such as the openness of the economy, OECD methodology suggests that the fiscal stimulus will have boosted GDP by a little over 1% of GDP in 2009 and by 0.6% in 2010. Compared with other OECD countries, this is among the strongest impact of the fiscal stimulus in 2009 and around average in 2010. The Statistics Norway estimates that the overall fiscal stimulus in 2009-10 will imply a cumulative increase of 1.3% of GDP in these two years. In this context it is useful to remind that the objective of the fiscal package was not only to stimulate the economy in the short term, but also in the longer term, through measures to support long term growth drivers, such as infrastructure investment that, when appropriately targeted – can support potential growth in the medium term.

Most of the extraordinary spending was originally set to be temporary, to be phased out in 2010. However, in practically all cases, the 2010 budget either made the temporary measures permanent or replaced them with other, permanent, measures; more resources were allocated to education, health and child care (via larger transfers to municipalities) as well as to the minimum old age pension. Hence the structural budget deficit is set to increase further in 2010.

As in many other OECD countries, the large fiscal injection was accompanied by an unprecedented monetary easing. The Norwegian central bank was in fact one of the last to start easing its stance, as inflation in mid-2008 was well above the 2.5% target, but between October 2008 and June 2009 it cut the policy rate by a cumulative 450 basis points (Figure 1.9). During this period Norges Bank's forecasts of the future interest rate path were systematically revised downward. Throughout the crisis, Norges Bank's flexible inflation targeting policy, along with the exceptional measures taken in co-ordination with the government, stood up well to the crisis, although at one point its communication strategy, which is based on a clear explanation of how and why it expects interest rates to evolve, gave some obscure signals (Box 1.3).

Figure 1.9. **The crisis brought a drastic change in the monetary stance**
Successive projections of key policy rates



Note: The chart shows the various interest rate paths forecasted by the central bank in June 2008 (“MPR 2/08”), October 2008 (“MPR 3/08”), in the meeting convened on the 17th December 2008, in March 2009 (“MPR 1/09”), in June 2009 (“MPR 2/09”) and in October 2009 (“MPR 3/09”).

1. The key policy rate is actual until 2009, Q4. After this point it is forecasted by the Norges Bank.

Source: Norges Bank.

StatLink  <http://dx.doi.org/10.1787/807836832851>

Box 1.3. Improving the communication of the central bank

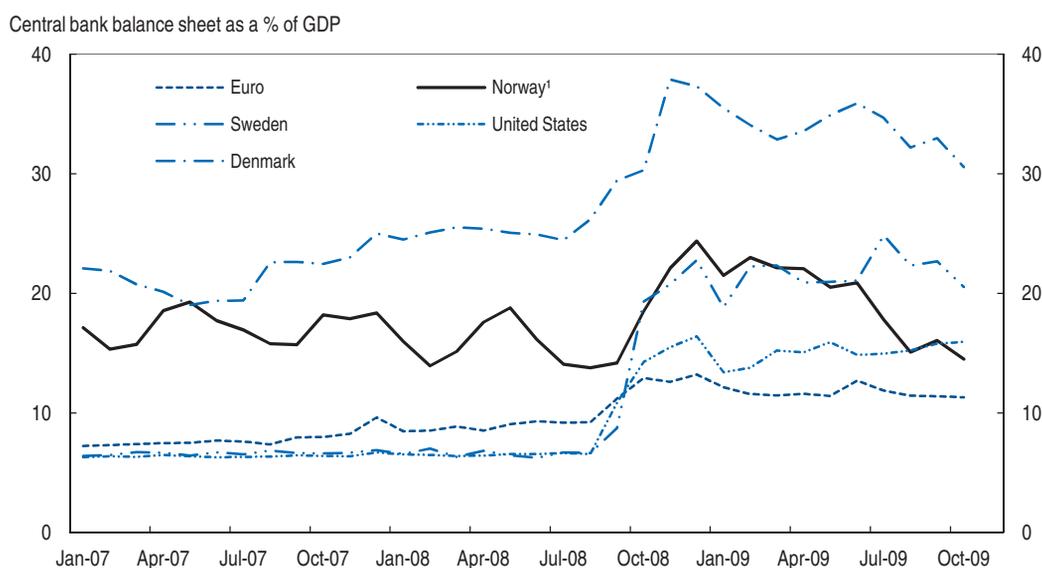
As in many other countries, the financial crisis confronted the central bank with a strong challenge. Norges Bank’s response to the crisis was prompt but communication could have been better (Bergman *et al.*, 2009). The first clear reaction to collapsing financial market occurred only in mid October 2008, after the co-ordinated cut by some large central banks. In previous meetings Norges Bank had pointed to the increasing uncertainty worldwide but nevertheless left its projected interest rate path unchanged and had not given a strong signal of a downward revision. A revised projection came at the end of October, together with the publication of the *Monetary Policy Report*. Six weeks later, the Bank decided to lower the interest rate by 175 basis points, and revised the projected interest rate path down further. In the meantime, however, the uncertainty in the markets was growing but the Bank did not make any announcement about its likely change of strategy. The 175 basis point cut was a surprise to many observers.

During the autumn 2008 Norges Bank also decided to innovate in the presentation of the factors accounting for deviations from the interest rate trajectory, by introducing some new elements, like “premiums in the money market” and “acceleration”. While the “acceleration” was a one-off effect, the premiums in the money market were retained in later monetary policy reports, indicating that the Bank put increased emphasis on the money market rates as their target rate. Acceleration was in fact referring to the big uncertainty prevailing at the moment. While consideration of uncertainty should certainly enter monetary policy setting, it can be questioned whether quantifying it as a “residual” from an explainable model is really meaningful. In fact it appears really to correspond to some – quite plausible – judgmental guesses about what degree of loosening was appropriate. Factors like uncertainty are usually translated into a distribution of risk that surrounds the projection of interest rates. Fan charts already do this relatively well. Alternatively, the central bank could present various scenarios for the interest rate path (as in fact did in June 2009), each associated with a different set of assumptions on the main forces driving the economy. This, provided the bank is able to act in line with such scenarios, could help to sustain the credibility of monetary policy following large deviations from the central forecast path.

Special short-term and long-term liquidity measures

The authorities also supported liquidity through supplying fixed-rate loans with various maturities (from three months to three years) to banks and other financial institutions, including some loans in dollars, as well as facilitating exchange rate swaps; this foreign currency support was necessary because the banking sector is highly dependent on foreign currency funding. Collateral requirements were also eased in various ways:³ for instance, the Ministry of Finance arranged for swapping covered bonds against Treasury bills that could then be sold, used as collateral *e.g.* at the central bank, or kept to strengthen banks' balance sheets (see Box 1.12). In some cases special measures were addressed to more vulnerable institutions, like the extension of maturity of fixed rate loans to smaller banks suffering from inability to access long term funding. As for many other central banks, the balance sheet of Norges Bank was significantly affected by all these measures although much of the effect was already being unwound in mid-2009 (Figure 1.10).

Figure 1.10. **Liquidity injections had a relatively small effect on the central bank's balance sheet**



1. Excluding Government Pension Fund holdings.

Source: Norges Bank.

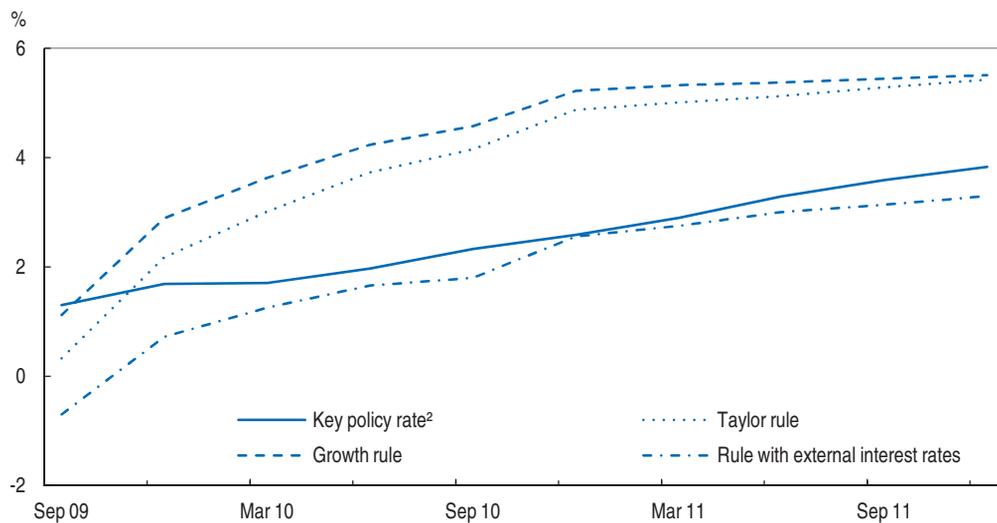
StatLink  <http://dx.doi.org/10.1787/807866626118>

The Ministry of Finance also took measures to strengthen the capital base of the financial system, instituting the Norwegian State Finance Fund with capital of NOK 50 billion (3% of mainland GDP). The State Finance Fund is to make capital contributions to Norwegian banks through the acquisition of hybrid Tier 1 securities or Tier 1 preference capital instruments issued by Norwegian banks. Banks applying for capital injections should be in a relatively healthy situation (*i.e.* meet the Tier 1 capital ratio requirement by a good margin). Overall 34 banks applied to the Fund, and 28 banks have received capital injections. At the same time as the State Finance Fund, the Ministry of Finance also launched the Government Bond Fund, also with capital of NOK 50 billion, in order to strengthen the bond market. The Bond Fund is to be invested in the Norwegian corporate bond market (25-65% in banks and financial institutions and 35-75% in non-financial firms, including industry). Some restrictions are imposed on the type and quantity of assets to invest.

Monetary policy tightening has already begun

As signs of recovery in Norway and elsewhere multiplied, Norges Bank first signalled a possible tightening in the summer of 2009 and then increased policy rates in October and in December. In late 2009 the central bank projected that the key policy rate would be near 2% by mid-2010 rising fairly steadily to around 4½ per cent by the end of 2012. The current interest path lags behind some simple rules such as the “Taylor rule” and the “Growth Rule” (Figure 1.11), possibly because of remaining uncertainty in global financial markets and real economy worldwide. These simple rules neglect the role played by other key factors in a small open economy, such as the transmission of credit and other asset bubbles, as well as the exchange rate influence. Monetary policy has to strike a balance between domestic and imported risks, as the following sections argue.

Figure 1.11. Simple rules for monetary policies¹



1. The methodology used to compute the various interest rates shown above are as follows: The Taylor rule: interest rate = inflation target + equilibrium real interest rate + 1.5 × (inflation – inflation target) + 0.5 × Output gap. The growth rule: interest rate = inflation target + equilibrium real interest rate + 1.5 × (inflation – inflation target) + 0.5 × Growth gap, where growth gap = actual growth – trend growth. Rule with foreign interest rates: interest rate = inflation target + equilibrium real interest rate + 1.5 × (inflation – inflation target) + 0.5 × Output gap + 1.0 × (real interest rate among trading partners – real interest rate in Norway).
2. September and December 2009 refers to the actual policy rate, thereafter Norges bank projections as of October 2009.

Source: Norges Bank and OECD calculations.

StatLink  <http://dx.doi.org/10.1787/807882846648>

Household debt and housing market developments must be considered when deciding the exit strategy for monetary policy

Credit growth to households rose tremendously in the last upturn and continued to rise even after the start of the financial crisis (Box 1.4). Many factors are at the origin of this (Box 1.5): innovation and financial market liberalisation; the leniency of regulation regarding household leverage; and a long period of relatively accommodative monetary policy, in Norway as in many other OECD countries. While real income has strongly grown, households have massively invested in the housing sector, reaching high levels of leverage (Table 1.3 and Box 1.4). High loan-to-value ratios have for many years been a concern for the Norwegian Financial Supervisory Authority (FSA), which indicated in 2007 that 40% of

Table 1.3. Norwegian households are highly indebted

	Non-financial assets		Percentage of GDP		Growth rate of loans for house purchase, 1999-2007 (%)	Nominal house price growth rate, 1999-2007 (%)	Owner occupancy rate (%)	Growth in mortgage debt	Residential debt to GDP ratio	Per capita mortgage debt, in thousands of euros	Leverage 1		Interest payment as a % of disposable income	
	Non-financial assets	Gross financial assets	Net financial wealth	Total debt from MFIs							Housing debt from MFIs	(gross financial and non-financial assets/Net financial wealth)		Leverage 2 (liabilities/financial assets + dwellings)
Belgium	n.a.	248.8	199.8	44.3	35.8	11.5	9.5	71.3	36.8	11.5	n.a.	0.12	87.7	3.3
Germany	216.5	188.4	124.5	58.7	40	3	-0.4	43	47.7	14.1	3.27	0.19	102.0	0.0
Ireland	n.a.	163.6	60.1	90.5	73.9	23.4	11.1	74.7	75.3	32.2	n.a.	n.a.	n.a.	7.8
Greece	n.a.	139.4	85.8	43.6	30.3	30.3	9.1	79.6	30.2	6.2	n.a.	n.a.	n.a.	n.a.
Spain	580.3	182.1	93.2	82.7	61.5	19.8	11.9	86.3	61.6	14.5	8.05	n.a.	148.7	4.3
France	350.1	188.8	126.3	47.4	35	10.1	10.3	57.2	34.9	10.2	4.05	0.18	99.1	3.1
Italy	362.9	240.9	192.8	34.7	21.8	20.3	6.3	69.1	19.8	5.1	3.13	0.08	62.8	2.5
Luxembourg	n.a.	n.a.	n.a.	77.7	40.7	14.1	10.5	74.7	38.5	29.0	n.a.	n.a.	n.a.	n.a.
Netherlands	252.8	256.6	145.6	97.7	89.4	13.4	8.1	56.6	100.0	34.1	3.14	0.29	250.0	0.0
Norway¹	234	245.1	136.3	109	77	10	10.3	81	53.3	32.5	3.52	0.45	213.2	10.6
Austria	n.a.	167.8	114.4	45.6	24.9	13.2	1.2	58	23.9	7.8	n.a.	n.a.	89.4	3.0
Portugal	215.2	220.6	120.5	85.9	69.4	14.9	3.3	74.5	62.1	9.5	3.30	n.a.	161.5	4.2
Finland	n.a.	119.9	65.9	48.2	34.6	14	5.7	65.1	34.3	11.7	n.a.	0.27	113.4	4.3
Euro area	n.a.	200.5	133	57.1	41.5	10.4	6.1	62.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Australia	340.8	215.5	109.1	102.1	77	n.a.	n.a.	69.3	n.a.	n.a.	5.10	0.33	194.0	2.1
USA	164.7	323.6	221	101.7	76.1	n.a.	n.a.	59	n.a.	n.a.	2.21	n.a.	n.a.	2.5
United Kingdom	351.3	295.9	180.7	108.7	81.9	n.a.	n.a.	69.8	86.3	28.8	3.58	n.a.	n.a.	8.9

1. Mainland GDP

Source: OECD, EIB, EMA, NCBs and Eurostat.

Box 1.4. Norwegian households are highly leveraged

During the last economic upturn Norwegian households increased their level of debt by 15% on average every year. Housing debt increased by 10% per annum over the period 1999-2007, somewhat less than in many other countries (Table 1.3). But, as Table 1.3 shows, the overall level of debt, compared with GDP or with household assets, is relatively high. The ratio of housing debt alone to GDP is around 77% in Norway versus a euro area average of 41%. Finally, the share of disposable income spent on interest payments is substantially higher in Norway, though this varies considerably from one year to another, reflecting the almost exclusive use of variable rate loans. Most mortgages have floating interest rates based on money market rates. Only 5% of banks' outstanding loans to households had rates fixed for 1 year or more.*

With a substantial stock of non-financial assets, the balance sheet of the Norwegian household sector appears quite solid. However: i) leverage seems quite high (although the cross-country comparability of balance sheet data is not always fully reliable); ii) the ratio of debt to gross financial assets is much higher than in continental European countries and, iii) the ratio of housing debt to non-financial wealth is among the highest in OECD countries. In aggregate, then, the household sector appears vulnerable to large swings in both house prices and interest rates.

This vulnerability may be mitigated by the fact that the richest group of the population holds the largest portion of debt, a feature which has not changed in the last few years, suggesting that credit growth and financial innovation has not increased the vulnerability of the most disadvantaged individuals, as happened in some OECD countries (*inter alia* United States and Ireland). Vatne (2008) find that, while over 50% of households have taken on new debt, growth and overall debt is essentially dominated by relatively few large loans. Nevertheless, increases in leverage were the highest among young households and the interest burden is highest in the 25-44 age group, considerably above its level ten years ago (Berge and Vatne, 2009). But, so far, young first-time homebuyers do not seem to have a higher probability of default than other household groups, possibly because their mortgages are often secured by parents' collateral. The overall mortgage default rate is rather low.

* In addition to mortgages, fixed rates are also offered on loans for education provided by the State Educational Loan Fund.

the mortgages contracted in that year had a loan-to-value ratio above 80%. Action to discourage banks from aggressive lending practices consisted mainly of publicly focusing on the potential risks.

The dramatic reduction of interest rates that accompanied the financial crisis caused a strong rebound of house prices: with the exception of Australia, Norway is the only OECD country where the housing market has been recovering fast through 2009, despite weak underlying economic activity (Figure 1.12). A key question is whether this represents the emergence, or re-emergence, of bubble behaviour. The empirical evidence on this is very mixed (Annex 1.A1). In general fundamentals can explain a lot, suggesting housing may not be particularly overvalued in Norway. Nevertheless, there are matters of concern, such as the fact that the price-to-rent ratios are significantly above long-term average values and that price-to-income ratios are increasing relatively fast (Figure 1.13).

Box 1.5. Factors behind the strong credit growth to the household sector

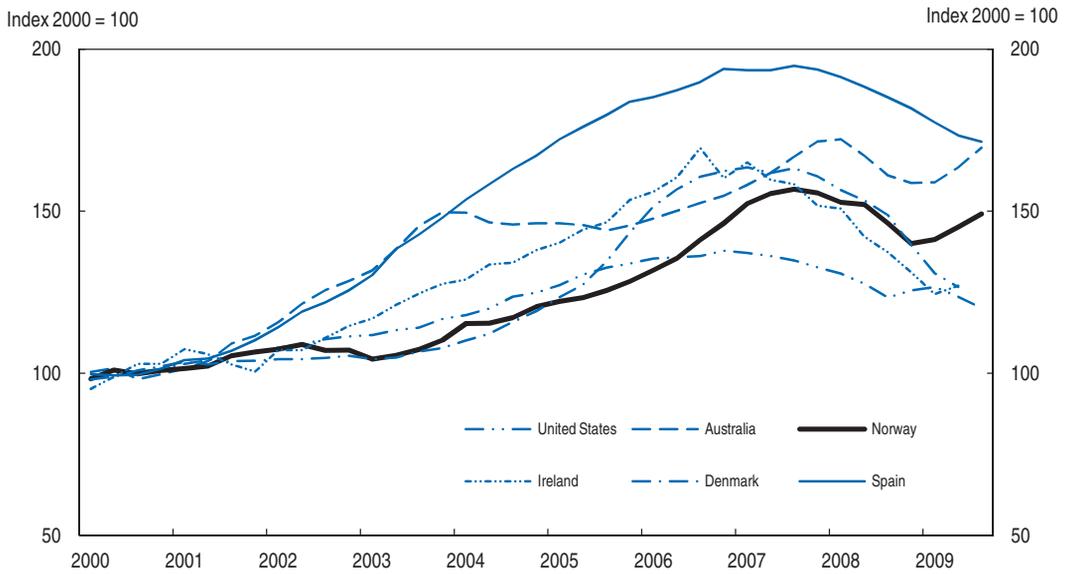
In countries where the majority of households typically borrow at floating interest rates, like Norway, but also Finland and the United Kingdom, the transmission of monetary policy is particularly fast. In both recent episodes of drastic monetary loosening (2003 and 2008), Norwegian households reacted quickly and strongly. House prices were also immediately affected and began to rise again, as did private consumption. Since household debt is high, the income effect of rate changes is significant (equivalent, in this latest crisis, to a reduction in household interest payments of around 2% of GDP). Surveys indicate that households indeed expect interest rates to rise again when they are at very low levels, but that they may underestimate how high they could go. There are no systematic studies about the formation of household's interest rate expectations, but the share of fixed rate loans decreased when Norges Bank's short term policy rate was raised and increased again in 2009 after the policy rate cuts, though its level remains very low. On the other hand, a survey by the financial supervision agency shows that when interest rates are very low, banks may not grant loans to customers who would be unable to service the loan if the interest rate were 4-5 percentage points higher. In addition banks have a duty to evaluate the borrower's financial means and ability to service the loan, and warn against borrowing if loan repayment is estimated to be unlikely. If sufficient advice is not provided to customers, their debt may get reduced.

Innovations and adjustments in the structure of mortgages may have contributed to the strong growth in household debt and house prices. The typical amortisation period has increased, from 15-20 years in 2000 to 20-25 years today. Another radical innovation was the introduction, in 2005, of interest only mortgages. Interest only mortgages have the same characteristics as credit lines or overdraft facilities and are extremely flexible. For example, they may be used to make financial investments, and there is no cost for having an unused credit line. Banks usually require stricter (*i.e.* lower) loan-to-value ratios when granting mortgage credit lines than for standard mortgages. Mortgage credit lines have become very popular, accounting for about 70% of growth in mortgages in 2006-2008; by mid-2009 they represented 22% of total outstanding mortgage debt. This clearly influenced the strong growth in private consumption and the fall in the overall household saving rate to zero and below.

High loan-to-value ratios have been long highlighted by the Financial Supervisory Authority (FSA). Its home mortgage survey showed that 40% of the mortgages contracted in 2007 had a loan-to-value ratio above 80%. In such cases extra collateral or guarantees are often required by the lending bank and most lenders have an interest rate which varies according to whether the loan is below 60%, between 60% and 80%, or above 80% of the price. The appraisal of borrowers' financial position is usually only done at the time the mortgage is granted. Banks typically condition high loan-to-value ratio mortgages on proven ability to service the loan and a good track record, while collateral plays a secondary role. However, the FSA's mortgage survey during the spring 2009 indicated that banks have become more careful in granting mortgages with high loan-to-value ratio since the recession.

Norges Bank has been criticised in the past for not having paid more attention to the effects of monetary policy on house prices, particularly in 2004 and 2005 when the interest rate was at 1.75% and house prices were booming. Long-lasting accommodative monetary policy might have contributed to increased imbalances prior to the recent financial crisis, with cheap money fuelling bubbles in the housing and credit markets, though evidence on this remains inconclusive (Fátas *et al.*, 2009, and Annex 1.A1). This has renewed the debate on whether central banks should take into account asset prices, and what should be the optimal approach to "leaning against the wind" (Box 1.6).

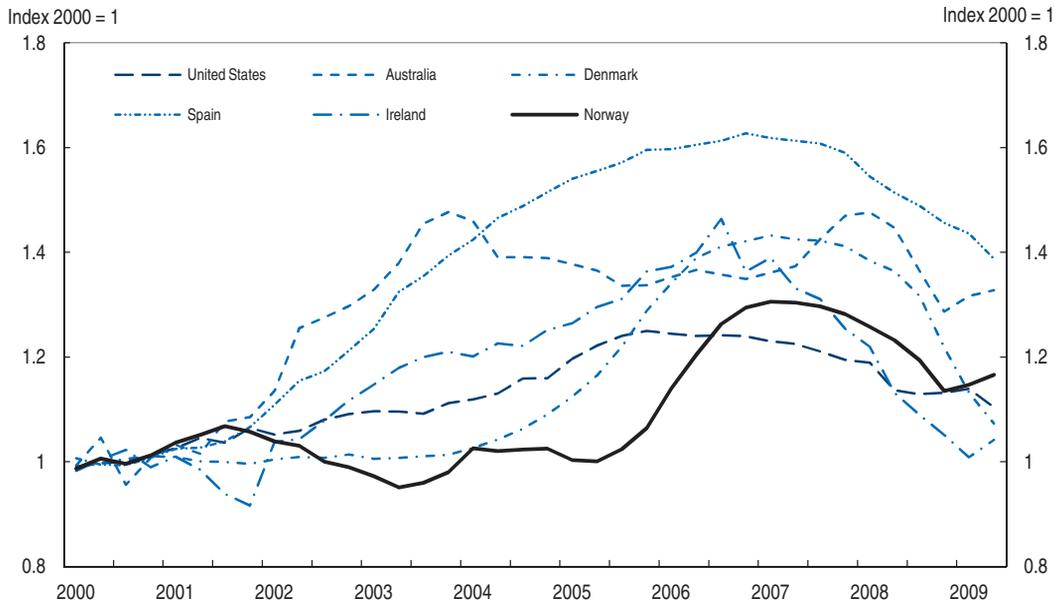
Figure 1.12. **Norwegian house prices¹ are rising again**



1. The chart shows an index of nominal house prices deflated by the CPI.

StatLink <http://dx.doi.org/10.1787/808020571658>

Figure 1.13. **Price to income ratios are increasing again¹**



1. The chart shows an index of nominal house prices deflated by an index of nominal incomes.

Source: OECD calculations.

StatLink <http://dx.doi.org/10.1787/808058546466>

Monetary policy and asset prices

Housing prices have caused concern...

The fact that Norwegian households respond quickly to interest rates raises the question of how monetary policy should react to asset price movements, in particular to movements in house prices and to movements in the exchange rate. The debate on this question is far from being settled (Box 1.6). The high level of variable-rate household debt

means that aggregate demand is relatively responsive to interest rate policy, in general likely to be an advantage for an inflation-targeting bank, in that it should reduce somewhat the “long and variable” lags that complicate policy decisions. However, when it seems desirable to raise interest rates to head off a housing bubble or possibly unsustainable levels of household gearing, too-rapid tightening could cause a strong increase in saving, dampening demand more than required, so a relatively early response to house prices might be required.

Housing prices can thus reasonably be expected to show up in the policy reaction function even if they are not being targeted themselves (which, as with the exchange rate, would not be possibly anyway without sacrificing the inflation target itself). The current position of the Norwegian central bank is essentially in line with this view, since it has recently asserted that

Box 1.6. **Should the central bank lean against the wind?**

Central banks reaction functions are rarely found to incorporate asset prices movements in their policy decisions (Ahrend *et al.*, 2008). Exceptions include Bjørnland and Leitomo (2009), who find that changes in stock prices in the US have triggered short-run reactions in key-policy rate and Bjørnland and Jacobsen (2009) who found that the Norges Bank, the Bank of England and the Bank of Sweden tend to respond to house prices, though to varying degrees. However monetary policy conditions are known to be a relatively inaccurate indicator of house price booms and busts (Fatás *et al.*, 2009). That suggests that, if monetary policy exerts an effect on house prices, it is likely to be indirect, *i.e.* through an effect on long-term rates, on the demand for mortgage loans and residential investment.

There is however an international debate on whether the central bank should “lean against the wind”, which is far from being settled. In this debate the partisans of the leaning against the wind position argue that central banks should move against possibly unsustainable price developments, even at the cost of more variability in inflation and output (Cecchetti *et al.*, 2000; White, 2009) as this would improve both macroeconomic and systemic stability and ultimately social welfare. It could also reduce the moral hazard problem generated by the alternative “benign neglect” approach, under which monetary authorities intervene only *ex-post* to clean up after periods of financial instability (Bordo and Jeanne, 2002). An objection to the interventionist view is that many of the standard macroeconomic variables looked at by central banks are not consistently and systematically associated with asset prices (Fatás *et al.*, 2009). However credit growth, residential investment and the current account are variables statistically correlated with house price increases and busts and thus monitoring and reacting to these additional variables could effectively improve a macroprudential approach of monetary policy.

Whatever is the conclusion of the debate about leaning against the wind, specific macro-prudential tools, such as counter-cyclical capital requirements and dynamic provisioning, would be beneficial to prevent financial instability (White, 2009). Simulations carried out in Fatás *et al.* (2009), illustrate that such macro-prudential policy can be more effective in pre-empting credit bubbles than simply raising policy rates. To moderate the imbalances that may emerge from excessive variation in credit conditions (rather than targeting asset prices), it is not necessary to determine whether there is indeed a bubble; it can suffice to use various indicators to detect deviation from what the fundamentals seem to suggest. It is also possible that the credible announcement of official concern and determination to act could in themselves help to stabilise behavior in the economy, as can happen with inflation-targeting announcements, though credibility would have to be built up first, lest unclear communication end up doing more harm than good.

the monetary policy reaction function already includes these variables, though the policy objective function only incorporates one operational target, which is the inflation rate.⁴

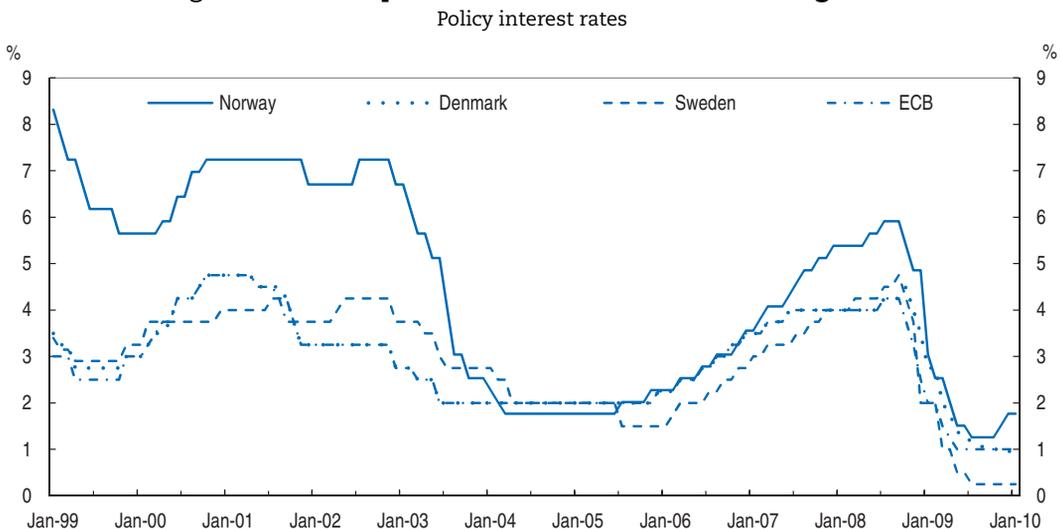
... as has exchange rate volatility...

Since Norway is a small open economy, one of the routes by which monetary policy operates is through changes in the nominal exchange rate. Equally, movements in the exchange rate can occur for reasons independent of Norwegian monetary policy and the authorities are likely to need to adjust interest rates from time to time to take the effect of such exogenous changes into account, as confirmed by the revealed monetary policy reaction function discussed above.

Financial market behaviour interacting with the exchange rate and interest rate differentials can make this more complicated than simply assessing the stance of monetary policy through a weighted average of the level of interest rates and the exchange rate (such as calculated in a financial conditions index). If strong domestic credit growth calls for a tighter monetary stance, higher interest rates in Norway and an appreciating exchange rate can make foreign currency borrowing by Norwegians look very attractive, at least temporarily. In some countries there have been periods when capital inflows resulting from monetary policy tightening undermined the attempted tightening and caused significant exchange rate appreciation, with the likelihood of an eventual sharp reversal. To avoid this, a central bank may not be able to move interest rates too far from those of trading partners as much as it would like to.

The volatility of the real exchange rate has in fact increased since Norway has switched to an inflation-targeting regime (Boug *et al.*, 2005), which has obliged the central bank to follow more closely the interest rates of trading partners (Figure 1.14). Indeed, Figure 1.11 also shows that, when foreign interest rates are taken into account, a modified Taylor rule predicts an interest rate path quite similar to that recently published by the central bank. In the past Norges Bank has observed that carry-trade and speculative behaviour are amplified in periods of falling equity prices, expectations of increased

Figure 1.14. European central banks often move together



Source: ECB and Datastream.

StatLink  <http://dx.doi.org/10.1787/808068614420>

exchange rate fluctuations between major currencies and rising oil prices. Equity markets are no longer falling in general, but the latter conditions are met at the moment.

As the dramatic recent experience of Iceland has shown, mismanaged financial liberalisation, as the entire financial sector gears up on foreign borrowing can mean that the carry-trade and other forms of arbitrage make monetary policy practically impossible for a small economy. Icelandic monetary policy was ineffective as carry-trade investors exploited the efforts of the Icelandic Central Bank to achieve its inflation target amid rising overheating of the economy. In Norway inflation expectations are much better anchored and financial liberalisation process has not led to such risk-taking as in Iceland. However, since for the next couple of years the Norwegian business cycle is likely to be decoupled from that of its trading partners, the difference between domestic and foreign interest rates will be positive, probably constraining the rate at which monetary policy can be tightened.

... but if exchange rate volatility is a concern, Norway could abandon its currency in the medium-longer term

When the exchange rate is free to move, the impact of monetary policy is amplified. Whether this advantage outweighs the potential costs of volatility and risks associated with arbitrage is an empirical matter. In practice there seems to be a positive correlation between the exchange rate and the business cycle in Norway, suggesting that in general the exchange rate has worked counter-cyclically (Figure 1.15). This may be explained by the fact that commodity price cycles are strongly correlated to business cycles in Norway. Thus, a sharp increase in the oil price, which would boost the economy (even if the effect is moderated by the GPF), is likely to be attenuated by an exchange-rate appreciation, and *vice versa*.

Box 1.7. Should Norway join the euro area?

Joining the euro area, abandoning the domestic currency in favour of the euro, would eliminate the exchange rate risk. In the early 2000s, when the authorities reconsidered the whole macroeconomic framework, many were worried that the exchange rate could fluctuate a great deal if inflation targeting was adopted by the central bank (Svensson *et al.* (2002) and Bergmann *et al.*, 2009). However, a flexible exchange-rate regime was thought to be superior to a fixed exchange-rate regime for achieving low inflation. In addition, due to its high dependence on the petroleum sector, Norway is likely to experience a strong volatility of the real exchange rate, which would make it hard to achieve exchange-rate stability in the absence of a currency union (Svensson, 1997 and Svensson *et al.* (2002). However, the issue remains worth considering to resolve the difficult dilemmas discussed above.

The question of cost and benefits of being a member of the European Monetary Union remains, at least theoretically, interesting. Clearly the possibility of joining the euro area is subordinated to the integration of the European Union, which Norway has formally rejected twice (in 1972 and 1994). Norway is already part of the EEA and thus has adopted most of the *acquis communautaire* and EU directives, including for labour mobility, but not for agriculture and fishing.

Joining the euro area would lead to tighter economic integration with the members of the area, with potentially positive effects on trade and increased business cycles synchronization (the endogenous optimal currency area theory). The evidence on the reduction of transaction costs and the pro-trade effects is however mixed. The pioneering work by Rose (2000), pointing to a significant trade increase following the adoption of a common currency, was questioned by subsequent work (Thom and Walsh, 2002; De Souza, 2002; Anderton *et al.*, 2002; Fidrmuc and Fidrmuc, 2003; De Sousa and Lamotte, 2006). Some authors find that trade effects do

Box 1.7. Should Norway join the euro area? (cont.)

exist, but are of varying magnitude (Micco *et al.*, 2003; Flam and Nordstrom, 2003; Berger and Nitsch, 2005) or only present in sectors marked by differentiated products (Taglioni, 2002; Baldwin *et al.*, 2005) or at specific point in time (Mancini-Griffoli and Pauwels, 2006). All in all, the conclusions from the existing literature (Baldwin, 2006) are that the pro-trade effect of the euro is quite modest, happens quickly but is not sustained over time and it is not exclusive (euro usage boost imports from outside the euro area as much as from inside the euro area). Also, the positive effects decline significantly with the distance to other countries and are highly dependent on the sectoral structure of the economy, being higher in sectors with increasing returns to scale but vanishing in sectors characterized by fairly homogenous products (including mining and refined petroleum).^{*} These results suggest that the trade gains for Norway would be quite modest, given the relatively homogenous structure of the economy and the relatively long distance from the bulk of the euro area.

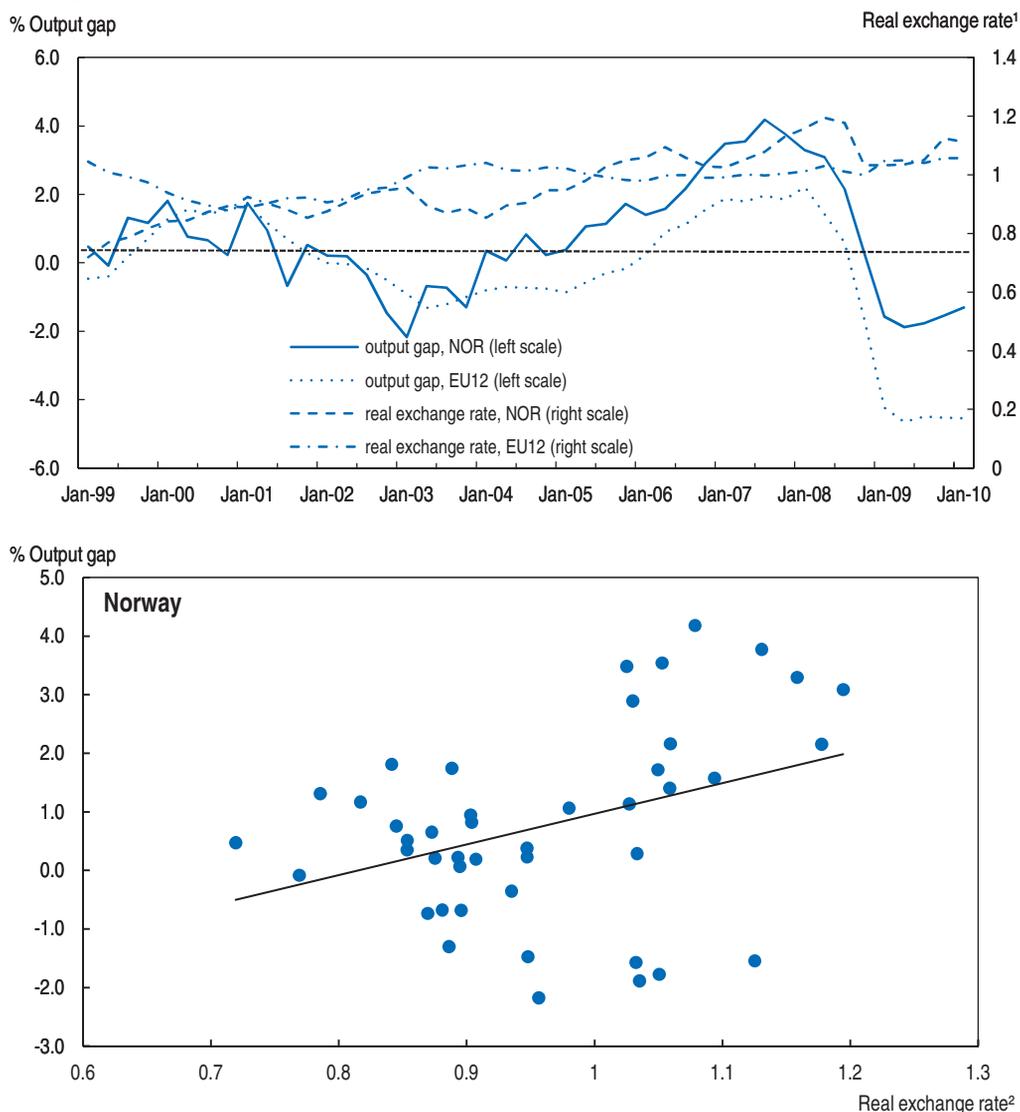
Another benefit from joining the euro area would be greater financial market integration, which has been shown to increase domestic financial development, in turn having a positive effect on economic growth. For instance, there is evidence that the euro boosted investment by financially-constrained firms. Portfolio flows in equity and bonds among Euro area countries increased significantly due to EMU (De Santis, 2006). However, benefits from financial integration do not necessarily stem from the adoption of the same currency. EEA regulation leads to harmonized legislation, which could also promote financial-market integration.

In the absence of an independent monetary policy, labour flexibility is needed to avoid cyclical fluctuations leading to volatile employment and persistent unemployment. This argument could be particularly relevant for Norway, where wages are sometimes seen as being rigid downwards (Holden and Wufsberg, 2009). A strict inflation target favours wage moderation in countries with centralised wage setting (Bratsiotis and Martin, 1999); Soskice and Iversen, 2000) and leads to a lower NAIRU. Entry into a monetary union may remove such wage moderation: there would no longer be a clear link between national wage setting and the interest rate, since it would be set for the whole euro area. However, critics of this view argue that, precisely because a national inflation target may discipline wage setters, it also weakens their incentives to co-ordinate on wage restraint (Holden, 2005). For instance in Finland the monetary union membership has reinforced demands for centrally agreed solution (Tiilikainen, 2005). Other studies find that wage restraint has increased not only in many EMU countries after the introduction of the euro, but also in Sweden and the United Kingdom (Posen and Popov Gould, 2006).

If Norway were to join the euro, fiscal policy would be the only tool available for stabilising the economy and adjusting to adverse shocks. Within the current fiscal framework, deviations from the 4% rule can already be used over the cycle to smooth economic growth. However, fiscal policy is less able to adjust rapidly than monetary policy, and may distort economic behaviour. Respecting Maastricht criteria would not be a problem for Norway, which expects to run a budgetary surplus for the next 50 years with no net debt, although this surplus would be largely the result of the running down non-renewable energy resources. Furthermore, a considerable long-term financing gap is likely to emerge (see Chapter 2) in the absence of significant structural reforms.

Overall, the economic case for the adoption of the euro area is not clear cut. Continued public debate of its potential merits would be worthwhile, in particular if Norwegian macroeconomic policies become less effective in the future or if exchange rate volatility turns out to be more disruptive than in the past.

^{*} Baldwin (2006) also shows that reduced transaction costs were not the main reason behind pro-trade effects, but these were caused by export of new goods to euro area countries. "The mechanism driving this may have been a reduction in the fixed cost of introducing new goods into euro area markets. This mechanism, which is tantamount to a unilateral product-market liberalisation, would account for the lack of trade diversion (it would stimulate the introduction of new goods from Eurozone-based and non-euro area-based exporters alike) and it would account for the jump up in trade without price convergence."

Figure 1.15. **The NOK is volatile, but it appears to work counter-cyclically**

1. Real exchange rates are effective, i.e. trade-weighted. These are obtained by dividing nominal effective exchange rates by GDP deflator. An increase in the exchange rate means an appreciation.
2. The second panel shows the observations for Norway over the period 1999 to 2009.

Source: OECD Economic Outlook.

StatLink  <http://dx.doi.org/10.1787/808081864004>

However, volatility may be more difficult to handle in the future. Furthermore, in political economy terms, perceptions of hardship in the export sector and more generally the uneven impact of monetary policy are frequent sources of strong criticism of the monetary authority. Since no central bank can control both the exchange rate and inflation at the same time, there would be some advantages (subject to its political feasibility, which cannot be dealt with here) in joining the euro area (Box 1.7).

The massive fiscal stimulus must be withdrawn to support monetary policy and ensure the credibility of the 4% rule

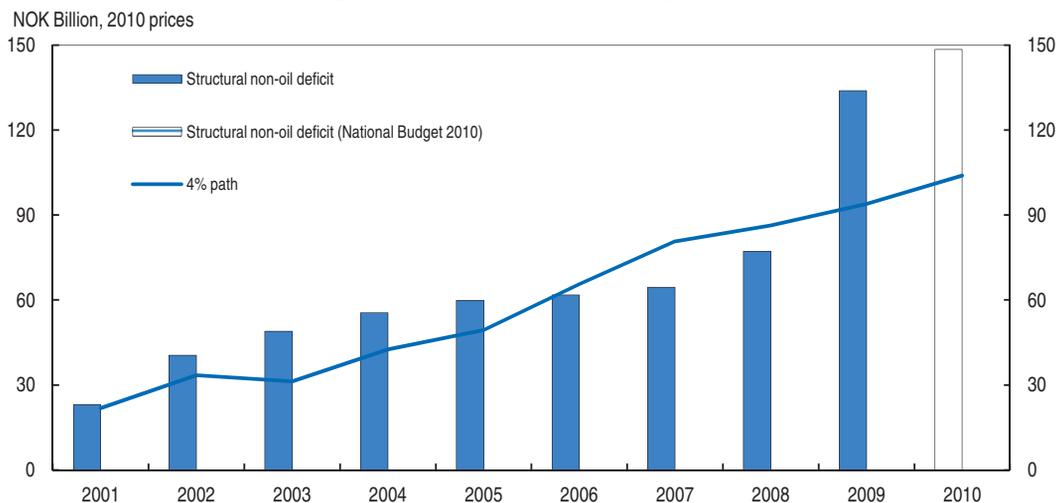
In the short term, since political-economy concerns related to too-rapid exchange rate appreciation limit the manoeuvrability of monetary policy, fiscal policy has to play a more

prominent short-run stabilisation role (Schmidt-Hebbel, 2006). Fiscal tightening will lighten the task of monetary policy in containing emerging labour-market pressures and resurging inflation, thus reducing upward pressure on the exchange rate. Withdrawal of the fiscal stimulus will also boost the credibility of the fiscal framework, allowing a rapid return to a deficit in line with the 4% rule. Finally, fiscal tightening will increase the value of the Government Pension Fund Global (GPF), reinforcing long-term fiscal sustainability.

The key anchor of fiscal policy since 2001 has been the 4% rule, which stipulates that the non-oil structural central government budget deficit should average, over time, 4% of the value of GPF. This rule helps to insulate the economy and the budget from swings in energy prices, as the large returns from the exploitation of petroleum resources are phased in gradually into the economy. This rule also allows to preserve a significant proportion of wealth from non-renewable resources for future generations. Government net earnings from the exploitation of oil and gas resources are transferred to the GPF which holds its funds exclusively in foreign assets (thus largely “sterilising” petroleum revenue inflows in the balance of payments). In this framework, each year’s budget is planned on the basis that the structural non-oil deficit should be equivalent to a 4% real return on the value of the fund, unless exogenous shocks or sudden changes in the value of the GPF materialise. Thus in periods of strong economic growth, the 4% path can be undershot while downturns allow discretionary fiscal policy to operate counter-cyclically. The economy was hit by strong exogenous shocks in 2008-09 and the GPF was severely hit by the financial crisis (although it recovered afterwards). The large fiscal stimulus of 2009 and the additional budgetary measures of 2010 entailed a large deviation from the 4% trajectory (Figure 1.16).

The structural non-oil budget deficit has risen more sharply than in most previous recessions, reflecting the magnitude of the discretionary stimulus. A comparable increase in the structural non-oil deficit was recorded during the 1988-93 banking crisis, though the output loss at that time was more severe. After the crisis of the early 1990s, Norway embarked on a bold fiscal consolidation process that lasted seven years and reduced the deficit by 6% of GDP (1% per year on average). Given that the recovery from the recent

Figure 1.16. **A large deviation from the 4% path in 2009 and 2010**



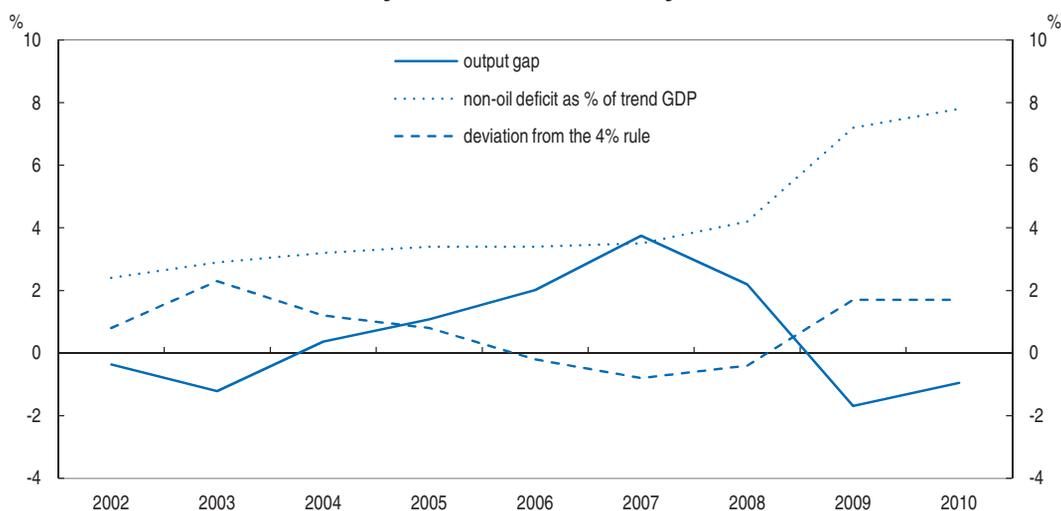
Source: Ministry of Finance.

StatLink  <http://dx.doi.org/10.1787/808134253837>

recession is likely to be faster and stronger than after the 1988-93 crisis, it should be feasible to withdraw the stimulus at a similar rate, though some factors, including global demand, demographic developments, competitiveness of the exposed sector and monetary policy are likely to be less supportive. In addition, in political economy terms, it might have been perhaps easier to accept that the country needed a strong fiscal consolidation given the very difficult situation faced at that time. The government is committed to return to the 4% path but has not specified any particular timetable. With early action, and if the structural non-oil deficit were to be cut by 1% of GDP per year, as after the 1988-93 crisis, the return to the path could occur by 2013 or even earlier.

Fiscal consolidation might be needed beyond 2013 to strengthen the medium term framework. The current fiscal guidelines are not usually interpreted as requiring that periods of overshooting the 4% path should automatically be followed by a period of undershooting. According to the current guidelines the overall objective of the fiscal policy is to smooth the phasing in of the expansionary fiscal stance implied by the 4% path, remaining broadly neutral through the cycle (i.e. allowing stabilisers to work fully). In fact there has been some mild asymmetry in the interpretation of the deviation from the 4% target in cases of good and bad economic times: the average overshooting was 1.5% as compared to an average undershooting of 0.5% (Figure 1.17). So far the fiscal framework has been very effective and credible and it is important that this approach is maintained in the future. For example, it is important that the government refrains from giving in to pressure to finance public spending outside the budget, e.g. through loan programmes, to circumvent the fiscal rule; such pressure may be likely in a period of fiscal consolidation. However, the approach would gain in credibility if the authorities seized the opportunity of any period of above-trend growth after 2013 to undershoot the 4% rule. This would indeed show clearly that the fiscal framework works symmetrically over the business cycle.

Figure 1.17. **The implementation of the fiscal guidelines has been slightly asymmetrical over the cycle**



Source: OECD calculations.

StatLink  <http://dx.doi.org/10.1787/808136252548>

How to achieve fiscal consolidation in the short and medium term

In the very short-term Norway could consolidate its public accounts by withdrawing the extraordinary anti-crisis measures enacted in 2009 and 2010 (Table 1.4). Temporary tax releases for the corporate sector are already phased out and their budgetary effect terminates by the end of 2010. The 2009 fiscal stimulus package included essentially infrastructure investment but also employment and requalification measures and a number of grants (many of which not directly addressed to the household sector). Although the original intention was that these measures be purely temporary, some of these measures have been extended (about one quarter of them) and some other have been converted into new spending of a more permanent character (about one third of the initial measures). It is unfortunate that some of the measures that were initially conceived as being “timely, temporary and targeted” were replaced by structural spending, especially when there is no strong economic rationale for them (e.g. the revenues transferred to municipalities to finance public services provision see Chapter 2).

Table 1.4. Many of the anti-crisis measures have been extended or made permanent

Type of measure	<i>Of which:</i>	Extended in 2010	Not extended in 2010	Replaced by new measures in 2010
Employment or qualification measures	1 278 (0.08%)	1 263	15	0
Infrastructure and maintenance	11 094 (0.65%)	719	6 429	3 946
Grants	2 191 (0.13%)	1 234	957	0
R&D spending	2 288 (0.13%)	793	160	1 335
Other	32 (0%)	14	13	5
Total	16 882 (1%)	4 023 (0.2%)	7 574 (0.4%)	5 286 (0.3%)

Note: Figures in the table are expressed in NOK (million), figures in brackets refer to % of 2009 mainland GDP.
Source: OECD calculations on Ministry of Finance data.

If the economic recovery unfolds as expected, the reversal of the extended measures should start soon to avoid that an expansionary fiscal policy remains in place longer than necessary; in that case the central bank would be likely to react by stronger policy tightening, but the constraints on its freedom for manoeuvre discussed above could lead to overheating later. Reversing the special anti-crisis measures that have not been phased out yet would cut the deficit by around 0.5% of mainland GDP (this includes the phasing out of the tax measures). Other measures are therefore required for further fiscal adjustment.

Research shows that fiscal consolidation is likely to be more successful when: it is enacted from the spending side (Guichard *et al.*, 2007); favours cuts to low-priority spending over more growth-friendly spending or raising taxes (OECD, 2003; Cournede and Gonand, 2006). Since Norway has a relatively high level of taxes and since high taxes may

distort economic behaviour, resulting in lower growth, it is advisable for Norwegian fiscal consolidation to concentrate on expenditure cuts.

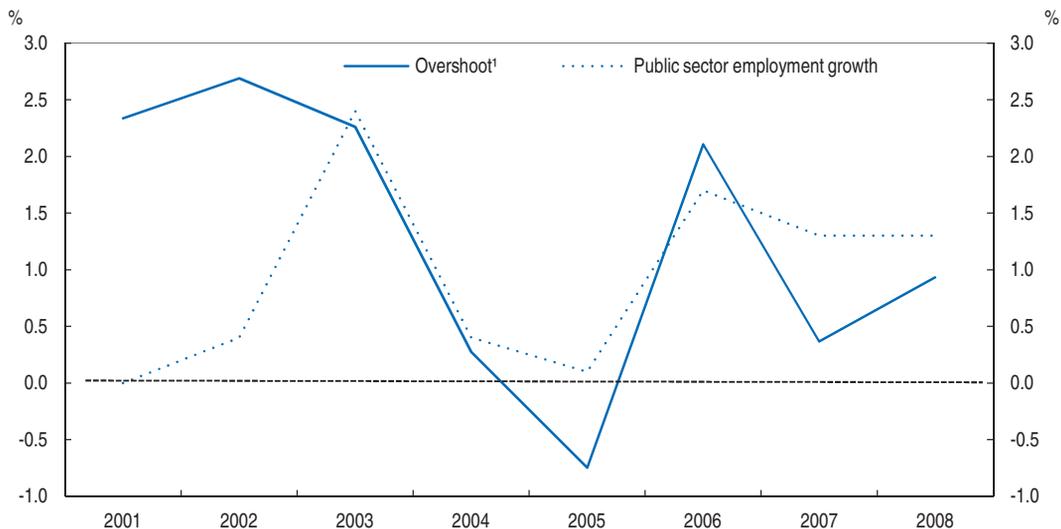
Typically, spending on useful infrastructure has a positive effect on growth (Sutherland, 2009), while R&D spending contributes to higher innovative activity and productivity (OECD, 2003) and spending on active labour market policy can contribute to better labour market performance (OECD, 2006). Such spending – provided it meets relevant standards of cost-effectiveness – should therefore be sheltered from cuts, though in practice making the distinction is not easy (OECD 2009a). It can be politically easier to make cuts across the board (Henriksson, 2008).

To make room for spending cuts while protecting levels of service provision there is potential to enhance public sector efficiency, as discussed in Chapter 2. For example, recent OECD work found potential gains of efficiency in Norwegian compulsory education of 40%, implying potential budgetary saving of 1.3% of GDP (Sutherland *et al.*, 2007). Similarly, in the health care sector, possible efficiency gains to move to international best practice could be up to one third (Joumard *et al.*, 2008). These estimates are highly uncertain and provide only an illustrative indication of savings that efficiency reforms could generate. Furthermore, education and health care are two areas where reforms could improve efficiency but where they meet some of the strongest opposition from stakeholders. Chapter 2 discusses and details reforms to raise efficiency in these two sectors and puts forward strategies to overcome political-economy resistance.

The already strong fiscal framework could be enhanced

Earlier deviations from the 4% path have never been as large as at present, and have had negligible consequences for the value of the GPFG. The guidelines do not include any rule for how fast over – or under – shooting should be reversed. Given the government's intention of reverting to the 4% path relatively soon, such a rule may be unnecessary in the short run, although it might be a useful addition in the longer term, and would prove particularly beneficial in the context of the need for a period of fiscal consolidation.

However, the current approach to budgeting implements medium term plans only one year at a time, with no multi-year targets or expenditure ceilings. The budget documents do contain three-year rolling projections that take into account expected budgetary implications of demographic changes, investment programmes and new policy initiatives, but there have been deviations from these projections, though relatively small, with an apparent link with government employment growth in recent years (Figure 1.18), though of course this link does not prove causality. In a multiannual budget, such projections could be complemented by multi-year spending ceilings for each spending centre, and each centre would be responsible for adapting policy so as to use resources most efficiently. Changing circumstances would obviously mean that expenditure plans would be revised from time to time, but this would be in a medium term framework that could help avoid pro-cyclicality and keep spending pressures under check. In countries where multiannual budgeting exists, *e.g.* in Sweden, governments have managed to systematically stick to medium-term projections, effectively preventing overspending. For this tool to work, it is however necessary to specify that multiannual targets are not interpreted as a floor on spending.

Figure 1.18. **Public employment growth is linked with expenditure drift**

1. Deviations from budget projections.

Source: OECD calculations on data from Statistics Norway and the Ministry of Finance. Overshoot is calculated as the difference between budget projections in T-1 and outturns, as a percentage of government spending. Employment growth refers to total government (i.e. central, counties and municipalities), data are register based. A caveat is that overshooting refers to central government outlays while employment refers to the total public sector, thus the two aggregates are not fully comparable. The differences are however likely to be small, and most importantly, don't vary over time. Thus, this does not affect the relationship between employment and budget overshoot.

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Overall, the fiscal framework is relatively transparent and has worked credibly. However, there remain some aspects where the framework could gain in transparency even further. In particular, the methodology for measuring the fiscal stance is rather different from those used by international organisations such as the OECD and the EU, notably because it makes specific adjustments for a large number of components in calculating cyclical adjustments; the Ministry of Finance contributes to transparency by publishing some considerable detail of its calculations but they are quite complex and difficult to compare internationally. It is true, however, that there is no precise internationally accepted methodology for such calculations. In this respect and especially in the context of a medium-term view of budgetary policy, a useful role could be played by a fiscal council, which would periodically evaluate budgetary developments, including the implementation of the fiscal rule. Fiscal councils are relatively new in the experience of the OECD area and are often organised according different models (Box 1.8); very often they evaluate *ex post* fiscal policy and provide a complementary view of economic developments in the country in question. For example, the Swedish Fiscal Council is charged with assessing whether short-term and long-term fiscal policy objectives are achieved, but its responsibility is also to promote clarity and transparency of the budget. In Denmark the Economic Council is an advisory body to the Ministry of Finance which is supposed to analyse fiscal and monetary policy in relationship to economic developments and to co-ordinate a multilateral dialogue among various Danish institutions. These experiences and those of other OECD countries with analogous boards have resulted in more transparent and thus effective decision-making frameworks. Norway could follow this example and create a fiscal council, of which international experts could be useful members.

Box 1.8. Fiscal councils in OECD countries

The Swedish Fiscal Policy Council is a new government agency charged with independently assessing the extent to which the government's fiscal policy objectives are being achieved. These objectives include long-run sustainability, the budget surplus target, the ceiling on central government expenditure and the consistency of fiscal policy with the cyclical situation of the economy. The council also evaluates whether the development of the economy is in line with healthy long-run growth and sustainable high employment. Additional tasks are to examine the clarity of the government's budget proposals and to review its economic forecasts and the economic models used to generate them. Finally, the Council should try to stimulate public debate on economic policy. The Council is to achieve its objectives primarily through publishing an annual report. The annual report will be used by the Swedish Parliament in evaluating the government's fiscal policy.

The Danish Economic Council was established in 1962. The objectives of the Council include monitoring the Danish economy and analysing long-term economic development as well as improving co-ordination between the different economic interests in Danish society. The Council therefore plays an important role in the public debate on economic policy issues in Denmark. The Economic Council has 26 members representing unions, employers' federations, the Central Bank and the government. The members are proposed by the individual organizations, and are formally appointed by the Minister of Economic Affairs. The council is presided over by a chairmanship, consisting of 4 independent economic experts, usually university professors. The report to the Economic Council contains economic analyses and statements on economic policy. The reports always contain a forecast of the Danish economy for the next 2 to 3 years. Special analyses on issues such as labour market policies, distribution, the welfare state or the EMU are also included in the reports.

Established in 1950, the SER is the main advisory body to the Dutch government and the parliament on national and international social and economic policy. The SER is financed by industry and is wholly independent from the government. It represents the interests of trade unions and industry, advising the government (upon request or at its own initiative) on all major social and economic issues.

The financial stability framework is well-founded but could be strengthened

The financial system coped well with the crisis

As in other OECD countries, the Norwegian financial sector was hit by the global crisis, notably by the temporary seizure of funding markets and higher borrowing costs, but it went into the global storm in strong health and with the help of a swift reaction from the authorities returned back on its feet rapidly by international standards. Financial losses were limited because hardly any investments in toxic assets were held on balance sheets and investments in securities were relatively small (Table 1.5).

Some risks remain

Problems on non-performing loans have so far been remarkably contained⁵ despite two quarters with negative growth in mainland GDP and an abrupt decline in international sectors where Norwegian banks have large exposures, such as the shipping market. This is partly due to the structural features of the financial sector (Box 1.9), which is not very exposed to business activity in the rest of the world.

Table 1.5. Banks' assets and liabilities at the end of 2007

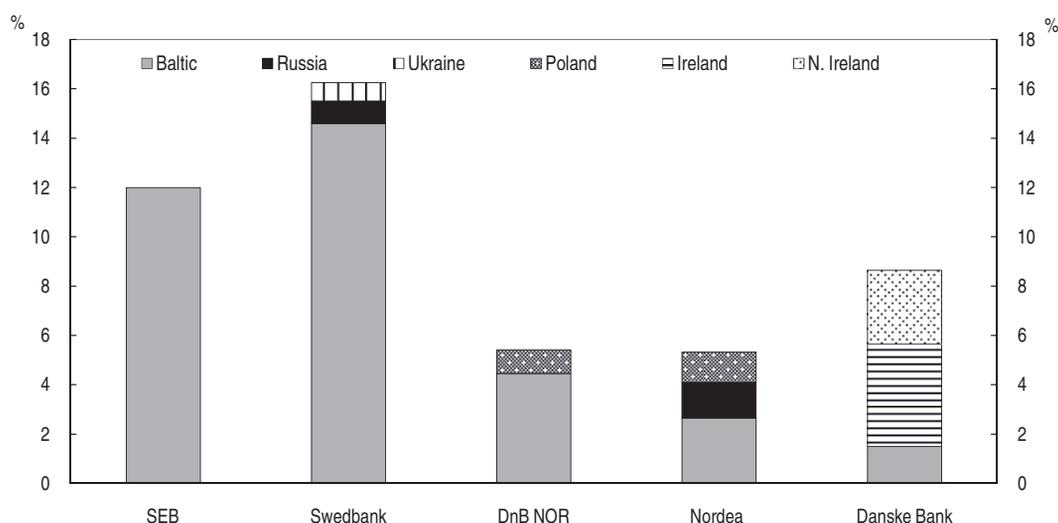
Assets	Norway		Germany		Sweden		Spain		Ireland	
	M NOK	%	M EUR	%	M SEK	%	M EUR	%	M EUR	%
Cash and balance with the central bank	60 289	0.02	79 894	0.01	28 143	0.00	60 458	0.02	15 762	0.01
Interbank deposits	239 114	0.08	1 482 507	0.22	1 599 052	0.27	371 034	0.13	190 062	0.14
Loans	2 394 404	0.77	3 093 261	0.47	2 654 958	0.44	1 785 763	0.63	655 811	0.49
Securities	252 610	0.08	1 712 413	0.26	1 224 912	0.20	440 327	0.16	211 919	0.16
Other assets	172 408	0.06	240 426	0.04	519 194	0.09	179 249	0.06	273 285	0.20
Total	3 118 825		6 608 501		6 026 259		2 836 831		1 346 839	
Liabilities	Norway		Germany		Sweden		Spain		Ireland	
	M NOK	%	M EUR	%	M SEK	%	M EUR	%	M EUR	%
Capital and reserves	160 669	0.05	272 820	0.04	334 320	0.06	199 177	0.07	56 583	0.04
Borrowing from central bank	75 394	0.02	223 193	0.03	7 223	0.00	73 433	0.03	0	0.00
Interbank deposits	507 369	0.16	1 731 508	0.26	1 551 554	0.26	520 314	0.18	307 575	0.23
Customer deposits	1 423 506	0.46	2 967 629	0.45	2 009 380	0.33	1 452 939	0.51	352 406	0.26
Bonds	532 017	0.17	1 012 048	0.15	1 285 013	0.21	395 917	0.14	340 620	0.25
Other liabilities	419 870	0.13	401 303	0.06	838 768	0.14	195 051	0.07	289 655	0.22
Total	3 118 825		6 608 501		6 026 258		2 836 831		1 346 839	

Source: OECD, Bank Profitability.

The main risks are confined to two sectors, the shipping sector and the commercial property sector, and to one geographical area, the Baltics:

- Although exposure to the shipbuilding industry is on average small (though some banks have up to 12% of their lending portfolio invested in shipping), failures in the sector through difficulties in finding customers for ships or defaults on orders could lead to a downward spiral in ship prices and aggravate the situation in the second hand market. So far, however, losses on loans to the shipping sector have been much smaller than on loans to other sectors and are projected to increase only moderately in the baseline scenario of Norges Bank (*Financial Stability Report 2/2009*).⁶
- As in other countries, the commercial property market represents a clear risk, following boom years during when office prices increased by 10% annually. Since the beginning of 2008 the market has been contracting, and new orders were still falling at annual rates of 30% in mid-2009. Losses on loans are manageable so far. Unlike housing finance, about 50% of commercial property loans are at fixed rates. That may partly explain why the strong monetary loosening has not led prices in this market to rebound.
- The largest Norwegian bank (DnBNOR) and the biggest Swedish and Danish banks operating in Norway have some exposure to the Baltic countries and other emerging European economies (Figure 1.19). DnBNOR's exposure to Baltic countries was about 4% of the banking group's total lending at the end of 2009. About one half of DnBNOR's individual write-downs on loans and guarantees during the first nine months of 2009 were on loans and guarantees to customers in the Baltic countries.

Figure 1.19. **Exposure¹ to the Baltics**



1. Banks' loans to different regions as a share of existing loans.

Source: Nordea.

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Stress testing suggests that while these weak sectors do not on their own represent a source of systemic risk, there are still potential dangers ahead: in a scenario with prolonged disfunctioning in financial markets, sluggish recovery of global trade, low oil prices (i.e. around USD 40) and a sharp fall of commercial property prices, Norges Bank calculates that problem loans would triple by 2012 to around 11% of total lending. Under

plausible assumptions about actual losses on problem loans, banks would be writing off losses equivalent to about 3% of total lending in that year (by comparison loan losses peaked at close to 4.5% of total lending in 1991). Under this scenario negative bank profitability results in lower capital adequacy levels; the average equity ratio would fall just to 4%, just below the level it reached at the end of 2008 before the increases in capital that most banks achieved during 2009. In other words, if the overall financial crisis resumed and world trade did not recover, serious problems (but less serious than those caused by the banking system collapse in the early 1990s) could still emerge.

Box 1.9. **Characteristics of the Norwegian financial sector**

The Norwegian financial sector is not particularly remarkable by international standards. Its recorded share of mainland value added, about 5¼ per cent, is similar to that in the EU-15. Credit institution assets correspond to 225% of mainland GDP, somewhat lower than in other countries. This follows relatively low asset growth in recent years, partly reflecting the limited cross-border operations of Norwegian financial institutions. The only significant operations abroad, other than in the Nordic-Baltic region, which is in many ways a local market, is in the international shipping business (DnBNOR, the largest Norwegian bank, and the Swedish owned Nordea that has a large subsidiary in Norway, are the two largest shipping banks in the world). The number of employees in the sector has declined slightly since 2000, to about 2% of total mainland employment in 2008.

Foreign owned banks have a significant market share. Total assets of branches and subsidiaries of foreign credit institutions are about 30% of all credit institutions' assets and their share has been increasing. Given the small absolute size of the economy, a high foreign share is not surprising. Foreign-owned credit institution market shares are higher in Finland, United Kingdom and in some emerging economies in Europe, but lower in other Scandinavian countries and in European countries like France and Germany. The main Norwegian-owned bank, DnB NOR, is majority owned by the government (the government holds 34%, with another 11% held by the DnB NOR Savings Bank Foundation) with the explicit aim of ensuring domestic ownership of this large institution.

The current banking system was shaped in the aftermath of the Nordic banking crisis of 1988-93. At that time the three largest commercial banks suffered severe losses, mainly on commercial property lending, and were rescued by the government for recapitalisation and restructuring after the value of the shares was written down to zero. Many other banks failed and a number of regional savings banks were propped up with equity capital from the government. After the crisis, the government quickly privatised part of the three largest commercial banks, but maintained public ownership to avoid foreign takeovers of the largest banks. In 1999 two of the largest banks were finally privatised, but control of the third (DnB) was strengthened. The current largest bank, DnB NOR, is the result of the 2004 merger of DnB with the largest saving bank. The three largest banks are subsidiaries of financial conglomerates which own life insurance companies, mortgage companies, fund management companies and specialised finance companies.

Memories of the last banking crisis induced more prudent regulation and moderated risk appetite among banks

Bank regulation played an important role in limiting risk taking by Norwegian institutions, arguably thanks to lessons learnt in the last banking crisis. Financial market regulation in Norway is built around the principle of regulating analogous risks across

different types of institutions in a similar way. An important aspect of Norwegian regulation is the requirement for full consolidation of subsidiaries in group accounts, with regulatory ratios applying at the consolidated and individual levels, with the same capital requirements for specialised mortgage companies as for banks, for example; this avoided any regulatory incentive to set up special investment vehicles (SIVs). Norwegian rules do not allow the type of securitisation seen in the United States for instance. Strict requirements apply to securitisation. The main vehicle for securitisation is preferential bonds issued by a mortgage credit institution, where the bond-holders have a preferential claim over the covered pool. Eligible assets for the covered pool are primarily residential mortgages, commercial mortgages, and public sector loans. Even where loans are passed to separate vehicles and the bonds are sold in the market, banks continue monitoring that customers service the loans, though there is no legal obligation to do so.

Some macroeconomic indicators followed a similar pattern between 2004 and 2007 to that in the years before the Norwegian banking crisis of 1988-93: the household saving rate fell below zero, private consumption boomed, house prices grew at double digit rates, as did households' debt. However the response of the financial system and that of its supervisors was very different. Capital requirements had been relaxed in the 1980s, as a result of limited loan losses over the years with credit rationing and strict regulations. Part of the present regulatory set up was enacted before 1988, like the establishment of a single Financial Supervisory Authority (FSA) in 1986 and the principle of consolidated supervision. But the quality of the regulation and the supervision of the financial market improved after the 1988-93 banking crisis. Recent FSA inspection and risk assessment activities have been much more comprehensive, especially in higher risk sectors such as real estate and shipping, and generally more pre-emptive than before the 1988-93 crisis. The FSA had hardly any on-site inspections of banks at that time (Moe et al., 2004). Banks also seem to have retained good risk control routines during the recent upturn even though credit policies in some areas were relaxed, such as for lending to real estate projects.

The experience of a banking sector with a weak capital base during the previous banking crisis has probably pushed Norway to take a more restrictive position than many countries in accepting hybrid capital as Tier 1 capital (Table 1.6). Norway's membership of the European Economic Area (EEA) means that financial market regulations follows EU legislation, in line with Basle agreements. But the Norwegian authorities retained stricter definitions on core capital than many EU countries. Although the banks' actual risk-weighted core capital declined in 2006-08 (Figure 1.20), it remained above the legal requirement. The decline in the ratio probably reflected banks' adjustment to the Basle II

Table 1.6. Supervisory limits on inclusion of hybrid instruments as Tier 1 capital

	Norway	Sweden	Denmark	Netherlands	Austria	Spain	UK	Ireland	Germany	France
Hybrids with incentives to redeem	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Hybrids excluding non-cumulative preference shares (including the first row)	15% ¹	15%	15%	50%	30%	30%	15%	49%	50%	25%
Perpetual non-cumulative preference shares	No limit ¹	No limit ²	No limit	No limit	33% ¹	50%	No limit	No limit	Does not exist ⁴	25% ^{1, 5}
Maximum limits on all types of hybrids	15%	15% ³	15% ³	50%	33%	30%	50%	49%	50%	50%

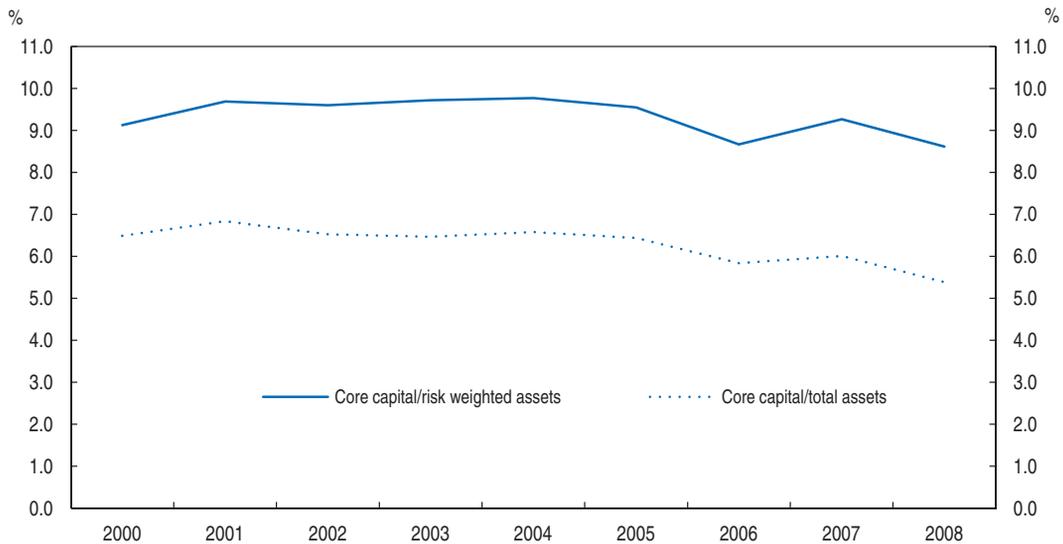
1. No issuance.

2. Issuance in unusual.

3. Does not cover non cumulative preference shares as they are not hybrids in the law.

4. Preference shares can only be cumulative and therefore only eligible as Tier 2 capital.

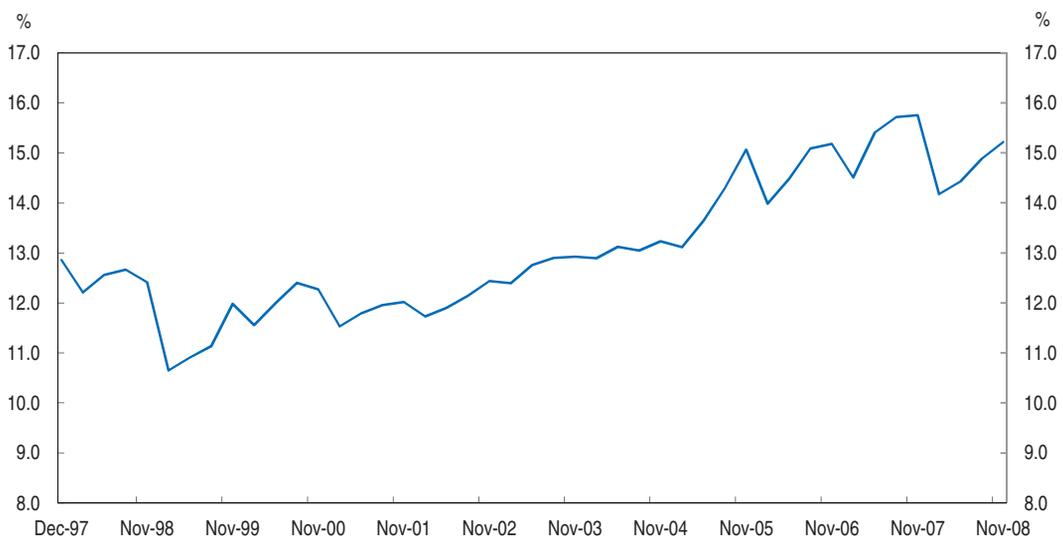
Source: Committee of European Banking Supervisors (CEBS), April 2007.

Figure 1.20. **Risk-weighted capital declined in recent years**

Source: Norwegian Financial Supervisory Authority.

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accord where capital requirements on credit risk, especially on residential mortgages, were reduced, and residential mortgages represent a large part of Norwegian banks' loan portfolio. The reduced core capital ratio over recent years is also reflected in banks' leverage. The ratio of outstanding loans to core capital increased to 16, from below 13 in the years prior to 2004 (Figure 1.21).

Figure 1.21. **Loans extended as a share of core capital**

Source: Norwegian Financial Supervisory Authority.

StatLink  <http://dx.doi.org/10.1787/808233216580>

During 2008, in connection with banks' internal capital adequacy assessment processes, the FSA was already asking a number of banks to increase their capital adequacy. More recently, observing that a Tier 1 capital ratio of 10-12% is becoming the

yardstick internationally when banks have been recapitalised, the FSA is encouraging Norwegian banks to aim for such a ratio. This seems particularly appropriate for banks which need to build additional capital cushions against future risks, such as potentially bad loans for housing and shipping, and in the Baltic States.

But the significant public shareholding in the main Norwegian bank may encourage moral hazard

According to available indicators, competition in the banking sector is fairly healthy (Box 1.10). Nevertheless, competition can be hampered and profits elevated (which is the case in Norway) if key banks in practice are protected from failure. The large public ownership of the biggest Norwegian institution may increase the perceived threshold for failure, on top of having a negative effect on competition. The fact that many smaller banks were closed in the previous crisis, while the big ones were rescued, could also help to create a divide between the small and the large banks, even though the government did not hesitate to write down to zero the value of the large banks' shares. Suspicions emerge from time to time that DnBNOR receives preferential treatment from the authorities. For instance the 2004 proposed merger between DnB and Sparebanken NOR was opposed by the Norwegian Competition Authority but pushed through by the government in exchange for the sale of some branches. The combination of government ownership and its perceived status as too big to fail could also encourage the bank to take on too much risk,

Box 1.10. Competition in the financial sector

Competition is important to ensure cost efficiency in financial intermediation and efficient allocation of capital. A high degree of concentration in the banking sector reduces the availability of financing for firms, especially for small and medium sized firms and hampers growth. The negative effect of a high degree of concentration is lower in countries with well-developed institutions, a higher level of economic and financial development and a large share of foreign-owned banks, features that seem to characterise Norway. A high degree of competition may on the other hand increase the risk for bank failures (Bolt and Tieman, 2004); at the same time large institutions may induce riskier behaviour through a "too big to fail" effect.

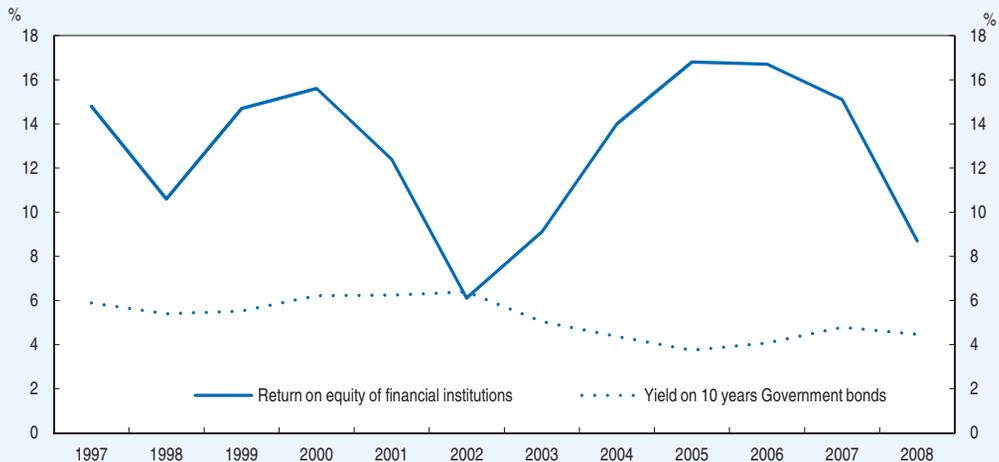
As a member of the EEA, the Norwegian financial sector is subject to EU competition rules and financial market regulations. Among others, they set the requirements to new start-up, cross border establishments, provision of services, and for major mergers and acquisitions. Entry costs to the banking sectors are relatively low, though a joint working group of Nordic countries competition authorities concluded in 2006 that the fees and access conditions for the payments system could discourage new entry. The Norwegian competition authority has not however objected to the current fee system and some fifteen new banks were established between 2000 and 2008, all of which joined the payment system.

The Norwegian financial sector is relatively concentrated compared with other OECD countries (Table 1.7). The five largest conglomerates-alliances hold about 60% of all assets and for banking activities alone this share rises to just over 70%. The five largest banks' combined market share has increased in the last few years. Concentration is significant in other areas: the five largest management companies manage more than 70% of all mutual funds, and about two thirds of the management companies are owned by banks or insurance companies.

Box 1.10. Competition in the financial sector (cont.)

Overall, these indicators do not suggest a significant lack of competition; entry barriers are low and concentration may be high but it is higher in some other small countries. The cost of joining the deposit guarantee fund is in fact probably too low, as discussed below. Indirect measures of competition are not conclusive – profitability has been high and rising, but the ratio of banks' operating costs to income has fallen to a relatively low level (Table 1.7), suggesting that profits are at least partly due to efficiency. The return on equity of Norwegian banks has been very high compared with other countries, and also compared with risk-free long term interest rates in Norway (Figure 1.22), this has been reflected in the increase of the sub-index for financial equities relative to the broad benchmark index OSEBX on the Oslo Stock Exchange. High profitability may indicate weak competition but it could also reflect the strong general expansion in the Norwegian economy. Part of the explanation for strong recorded profits could also be that banks tended to underestimate the risks contained in their balance sheets during the good years.

Figure 1.22. Banks return on equity grew strongly in the previous upturn



Source: Reuters.

StatLink  <http://dx.doi.org/10.1787/808247862751>

a behaviour that other banks might imitate – the Norwegian banking crisis in 1988-93 saw banks acting “in herds”, following the leading bank as a role model (Steigum, 2004). To avoid moral hazard among banks and help to reduce perception of an uneven playing field, the government should consider abandoning the control of DnBNOR (when market conditions allow doing so). Due to its high exposure to shipping and Baltics investment, DnBNOR has just gone through a process of recapitalisation; if further recapitalisation were to be needed, the government should take the opportunity to allow its stake to fall below the threshold where it has effective control. However, if DnBNOR were acquired by a foreign bank and operated as a branch, a substantial part of the Norwegian banking system would no longer be subject to Norwegian prudential regulation, and only subject to host country supervision by the Norwegian Financial Supervisory Authority. This is a great concern for the Norwegian authorities.

Table 1.7. **Financial institutions indicators**

	Norway	Germany	Sweden	Denmark	Austria	Belgium	France	EMU average
5 largest credit institutions' share of total bank assets	58.5	22	61	64.2	42.8	83.4	51.8	44.1
Cost/income all banks ¹	0.53	0.63	0.59	0.50	0.59	0.51	0.69	n.a.
Return on equity in 2007	15%	8.8%	11.1%	12.0%	11.1%	16.1%	10.3%	n.a.
1st half of 2009	12.1%							n.a.
Return on assets in 2007	1.2%	1.1%	1.1%	1.3%	1.1%	2.3%	0.7%	n.a.
1st half of 2009	0.9%							n.a.
Banks' leverage (Total assets/Tier 1 capital, end of year)	21.0	n.a.	19.7	14.8	15.2	21.5	n.a.	n.a.
Increase in financial equity indices from 2 January 2003 to peak ²	272.6%	416.6%	183.3%	254.3%	n.a.	n.a.	154.5%	153.3%
Decline in financial equity indices from peak to troughs ³	-77.6%	-74.3%	-66.6%	-77.1%	n.a.	-84.2%	-79.6%	-78.6%
Increase in financial equity indices from tough to 15 October 2009	209.5%	92.3%	92.6%	122.3%	n.a.	130.2%	151.9%	158.4%

1. Total operating costs' share of total income.

2. Peaks: Norway 2/2/2007, Germany 31/12/2007, Sweden 20/4/2007, Denmark 23/4/2007, Belgium 18/5/2007, France 11/5/2007, and euro area 1/6/2007.

3. Troughs: Norway 20/1/2009, Germany, Denmark, France and euro area 9/3/2009, Sweden and Belgium 6/3/2009.

Source: ECB, Kredittilsynet, OECD, *Bank Profitability*, FSA Danish, World Bank and Ecwin.

Fees paid to the deposit guarantee scheme should vary with risk taking

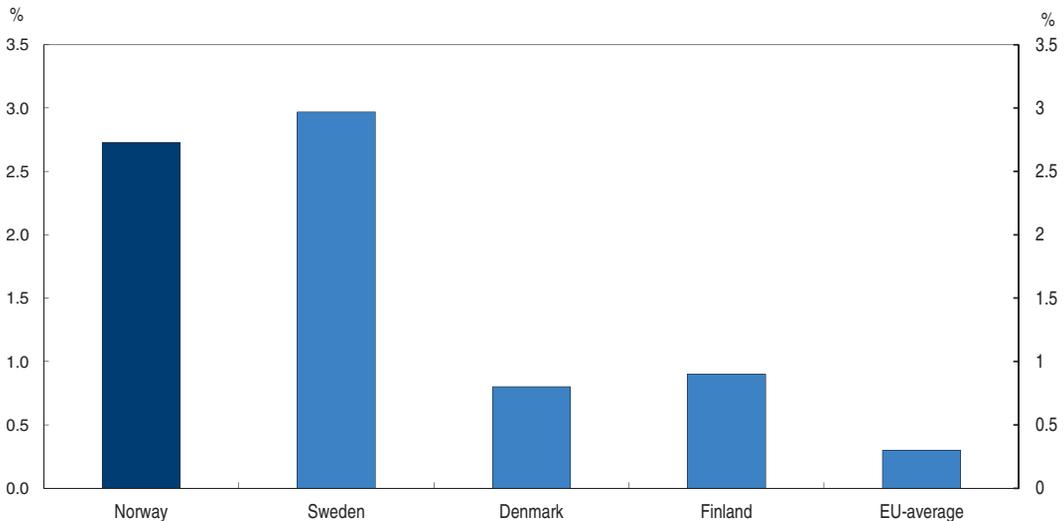
Norway has one of the most generous deposit guarantee systems, even after the EU's decision to increase it during the last crisis. A non-bank legal entity's deposits are guaranteed up to NOK 2 million (EUR 235 000), compared with EUR 100 000 in the European Union. A further assessment of the EU directive on deposit guarantee schemes is taking place, but if the harmonised guarantee level at EUR 100 000 stays unchanged, Norway will have to lower its guarantee level before the end of 2010. The Norwegian government has objected to this, arguing that the higher level is no real threat to a level playing field, but that the real threat was too low a level of guarantee in some countries in the past. In the aftermath of a crisis in which several countries with much lower *de jure* guarantees provided *de facto* 100% cover it is indeed difficult to see what the appropriate level might be. To cover the guarantee in Norway, banks pay a fee to the Banks' Guarantee Fund (BGF) which corresponds to 0.1% of total guaranteed deposits plus 0.05% of the size of the measurement base for capital adequacy requirement when the fund is below a certain threshold. Banks with core capital below legal requirement pay a premium proportional to the difference, while those that are above get a discount. If a bank fails, the law requires that deposits are compensated as soon as possible, not later than after three months, in line with the EU's deposit guarantee directive. The Guarantee Fund may decide to inject capital, issue guarantees or take other measures for banks in difficulties if the Fund's board estimates that to be less costly than letting the bank fail and paying out the guarantee.

A generous deposit guarantee scheme could invite moral hazard. But it certainly reduces the risk of runs on banks in critical times (OECD, 2009c). Unlike in many other countries with less favourable deposit guarantee schemes (like Germany, Ireland, Australia, Austria and partly Denmark), the authorities in Norway did not find it necessary to guarantee all deposits during the recent crisis (IMF, 2009). In addition, the authorities did not find necessary to provide other types of guarantees for the banks, *e.g.* for other liabilities or for assets (OECD, 2009d).

It is not only the guarantee level that varies between countries, but also how and to what extent the guarantee is prefunded by a fund. In countries like United Kingdom,⁷ Netherlands and Austria there are no funds backing up the guarantee and members of the guarantee

scheme are called on to make payments if depositors have to be compensated. The Norwegian guarantee fund's coverage is relatively high compared with that in other countries (Figure 1.23), except for Sweden, but is nevertheless too small to handle a major bank failure. The BGF may also borrow money if the fund at a certain stage is not large enough cover its obligations. In fact at the time of the 1988-93 banking crisis in Norway, deposit guarantees were unlimited; the current limit of NOK 2 million per customer per bank was enacted in 1996.

Figure 1.23. **A relatively well-funded guarantee deposit system**
Size of Deposit Guarantee Fund relative to guaranteed deposits, 2005



Source: EU Commission.

StatLink  <http://dx.doi.org/10.1787/808305281154>

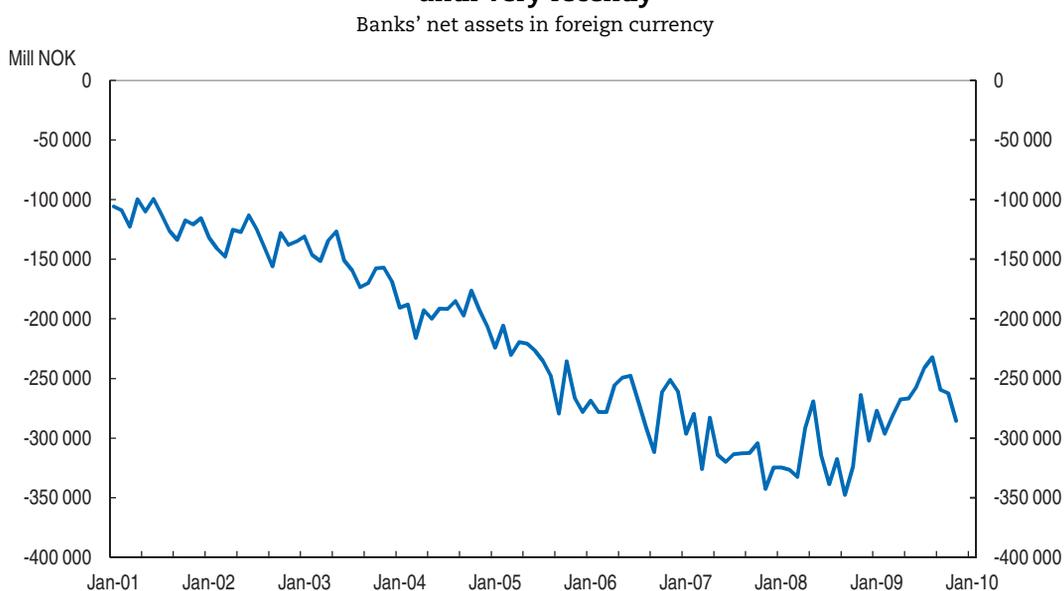
It is mandatory for all banks, including subsidiaries of foreign banks, to be a member of the BGF. In accordance with the EU/EEA regulations, it is also optional for branches of foreign banks to top up the deposit guarantee from their home country with a membership in the Norwegian scheme if the home country's guarantee is lower, which is the case in all other EU/EEA countries. The cost of joining the BGF has in recent years been low as no annual fees are levied on members when the Fund has a size equal the sum of 1.5% of aggregate guaranteed deposits plus 0.5% of the sum of the measurement bases for the capital adequacy requirements for member institutions.⁸ When fees are levied, branches only pay the part of the fee related to the deposits.

The deposit guarantee scheme may have reduced the risk of bank runs, but the negligible cost of joining the Fund – because it was “full” – also allowed branches of banks with higher risk, such as the Icelandic Kaupthing, to pay no fees, or only minimal fees, when it expanded its operation in Norway, making it less costly for such branches to conduct overly-aggressive lending and deposit-collecting policies. Kaupthing paid nothing for topping up on the EUR 20 000 Iceland deposit guarantee covering its deposits, which were almost entirely used to finance lending outside Norway. It would make more sense for the fee structure to vary more as a function of the risk characteristics of banks' portfolio than they do now and for fees to be levied regardless of the size of the Guarantee Fund.

The interbank market needed support

Malfunctioning money markets abroad had serious implications for the Norwegian banking sector as it is heavily reliant on foreign funding, even to fund its lending in Norwegian krone (NOK). In this case, the foreign currency funding is swapped⁹ to NOK. The main part of the Norwegian interbank market is based on swaps between NOK and foreign currencies (originally US dollars but now also euro) for agreed periods. The Norwegian interbank offer rate (NIBOR) is a swap rate. Hence the Norwegian interbank market froze for several days after Lehman Brothers' failure in September 2008. The spreads in the interbank market increased as in most other money markets worldwide (see Figure 1.4).

Figure 1.24. **Banks increased their debt position in foreign currency until very recently**



Source: Norges Bank.

StatLink  <http://dx.doi.org/10.1787/808313666040>

Both the impact of the financial crisis and also the structurally high interbank market spread itself call into question the efficiency of the swap-based interbank market, although equally high spreads can be seen in countries with money markets based on national currencies. Arguably, a pure NOK interbank market could be both more efficient and more sheltered from disturbances in the international financial markets. There is indeed an interbank market for deposits in NOK, but turnover is small and the indicative interest rate NIDR (Norwegian interbank deposit rate) is usually higher than the NIBOR rate. The NIDR based market was formalised in 1993, in the aftermath of the Norwegian banking crisis, with the aim of decreasing the dependency on foreign liquidity (see Langbraaten, 1998). The NIDR-market never overtook the swap-based NIBOR market, because the underlying funding cost was much lower in the swap market. Recently the spread between NIDR and NIBOR fell almost to zero, reflecting a reduced use of interbank borrowing as a result of the liquidity measures implemented by the authorities.¹⁰

Since the domestic market seems not to have worked in the past, it may make sense to continue to take advantage of the cheaper foreign currency alternative. Part of the reason why the swap market has dominated may be linked to the regime for payment of

petroleum taxes. Corporate petroleum taxes are paid in NOK (while the government can take its petroleum property income, which is the same order of magnitude as tax payments, in foreign currency) so the oil companies buy large amounts of domestic currency around the time payment is due (Box 1.11). The petroleum tax payments (and other tax payments) cause fluctuations in banks' liquidity which Norges Bank tries to offset. The government has increased the frequency at which petroleum tax payments are

Box 1.11. The oil tax payment system

Petroleum companies' earnings are in foreign currencies while their tax liabilities are in NOK. Taxes are due for payment at certain dates during the year and the amounts to be paid at each term are based on estimates of the oil companies' earnings and production that year. Before the payment dates, oil companies gradually sell foreign currencies and purchase NOK forward with settlement at the days when the oil tax payments are due. As banks are not able to hedge all forward purchases of foreign exchange by selling foreign exchange forward, they hedge a net forward asset position in foreign currencies by increasing their net debt in foreign currencies. Banks then acquire foreign exchange that Norges Bank may buy spot to transfer to the Pension Fund. The oil companies' forward selling of foreign currencies and Norges Bank's spot purchase of foreign currencies does not necessarily take place at the same time. The Bank's purchases are purely commercial and the daily purchases are pre-announced on a monthly basis. Over time almost all these transactions cancel each other out, except for the part of the petroleum taxes that is used to finance the government's non-oil deficit. As oil revenues have increased in the last years, oil companies' tax obligations have also went up and so did their need to buy NOK forward.

This causes fluctuations in banks' liquidity situation, which Norges Bank partly neutralises through fixed rates loans (Fidjestøl, 2007). It also increases banks' dependency on foreign currency funding (see Figure 1.24), making them more vulnerable to excessive exchange rate movements and consequent disruptive capital movements. Since a relatively large fraction of this revenue has been destined for the GPF (this fraction fluctuates with the domestic use of petroleum revenues and prices but has averaged 75% since 2001, the equivalent of 15% of mainland GDP), which is held in foreign currency, the corresponding foreign exchange transactions have essentially been unnecessary, profitable only to the banks carrying them out.

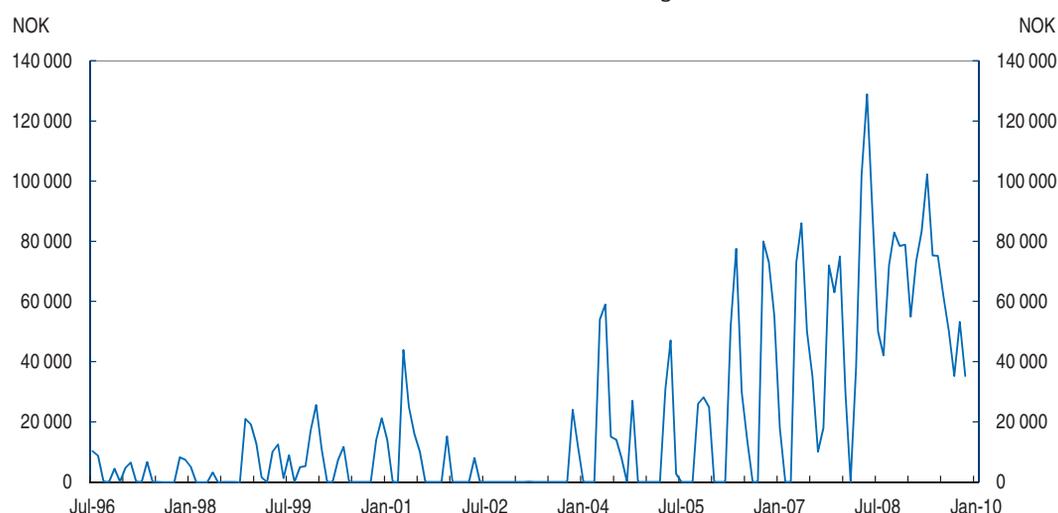
A partial response by the government was to increase the frequency of oil tax payments, bi-monthly since August 2008 (previously being twice a year). The new regime has dampened the fluctuations in banks' liquidity but it has not eliminated them all together (Figure 1.25) and done nothing about the underlying paradox of having to deal with liquidity volatility problems created by a set of unnecessary transactions. For the moment this seems to be of only historical interest, since the overall budget surplus has declined so much that most if not all of the petroleum tax revenue will be required to finance the mainland budget over the next two or three years. However if the mainland deficit returns to the 4% path by 2013, as announced by the government, approximately 2.5% of mainland trend GDP on average would be transferred to the GPF over the following ten years (this excludes offshore property income). According to the tax law, however, Norwegian taxes have to be paid in NOK and so this would need to change in order to levy taxes in foreign currency in the future.

* Technically, the oil companies purchase NOK spot, but instead of accumulating large NOK deposits, they swap the NOK against a foreign currency, with the swap expiring on the day of tax payment. The net effect is that they sell foreign currency forward for NOK, but market technicalities make it more profitable for them to do it via multiple transactions instead of one outright forward selling of the foreign currencies.

due, reducing the magnitude of liquidity fluctuations (Figure 1.25), but it would seem more rational to keep that part of petroleum revenue which is not needed for the mainland budget in foreign currency, for example in the government's accounts with the central bank, where Norges Bank would invest surplus liquidity in money market instruments on behalf of the government, and sell such instruments and/or issue treasury securities when the government needs more liquidity. A system with a low and stable balance on the government's accounts with the central bank is operated in countries such as Sweden, United Kingdom and some of the euro area members (Williams, 2004), though countries which do not have to manage large government revenues from natural resources may be advantaged in this respect. In the immediate future, levying the petroleum tax in foreign currency would have little impact since the mainland budget is absorbing all of the petroleum tax revenue, but once the budget returns to the 4% path and the economy recovers, the amount involved is again likely to be significant.

Figure 1.25. **The oil tax payment system affects banks' liquidity**

Credit institutions' loans from Norges Bank



Source: Norges Bank.

StatLink  <http://dx.doi.org/10.1787/808366742877>

Liquidity measures were effective in restoring financial stability

The main challenge for the financial sector during autumn 2008 was the funding situation. Even if *ex post* it can be seen that banks were sound, and that some may be too big to fail, the interbank market froze as elsewhere, though this may be partly because it is based in foreign currency and the transactions are effectively made abroad (see above). A number of measures were taken by Norges Bank to provide short-term and long-term funding to banks. The central bank supplied more and longer term F-loans (fixed interest loans with a specified maturity) in NOK and in US dollars, and it eased collateral requirements.

In addition to these measures under which the central bank took any collateral risk, the government introduced the covered bond swap arrangement (Box 1.12). By issuing Treasury bills in exchange for covered bonds issued by financial institutions, the government took on the limited risk of those bonds for the duration of the swap. The government phased out the scheme by December 2009.

Box 1.12. The covered bonds swap arrangement

The arrangement is supposed to extend over five years, but as the Treasury bills have a maturity of less than one year, the banks taking part in the swap arrangement have to constantly renew the transaction. From the start of the arrangement (fall 2008) to the summer 2009, the minimum interest rate in the auction was set below the NIBOR rate and the auctions were always cleared at the minimum rate, despite periods with high bid/cover ratios. During the autumn 2009, the minimum interest was raised with a view to gradually phase out the scheme. The final auction was set to be held in December 2009 but was cancelled because there were no bids.

The purpose of the swap arrangement was to supply banks with risk free assets that can easily be sold or used as collateral to obtain medium and longer term funding. In practice banks can use the treasury bills as collateral when borrowing from Norges Bank (although the covered bonds themselves are already eligible as collateral for such borrowing), or sell the bills to other banks or other domestic non-bank investors. The treasury bills can be also be sold to foreign investors, or retain them as reserves, which could improve their creditworthiness in the interbank market, and in the domestic and international securities markets. Overall, the swap arrangement can thus redistribute liquidity in NOK and in foreign currency between banks but also temporarily strengthen banks' capital position. In September 2009 30% of the emitted Treasury Bills were held by domestic non-banks, 30% by foreign investors and the remaining 40% was held by banks as reserve.

When the scheme was introduced, the covered bonds market was still in its infancy and thus was barely functioning, but a few banks had transferred loans to mortgage institutions and were about to issue covered bonds. Hence, at the first swap auctions only very few banks participated. As the pricing of the swaps was favorable, the incentives for banks to exchange residential mortgages for covered bonds were however significant, which induced more banks to establish new mortgage companies, or reorganize existing ones, to transfer mortgages in exchange for covered bonds. The number of banks participating in swap auctions increased during the spring 2009. In all, NOK 230 bn (EUR 27 bn) of covered bonds/treasury bills were swapped.

The swap against treasury bills simply ensured that the Finance Ministry temporarily took the risk of default on the underlying securities rather than the central bank, which normally does not issue securities. The risk is small anyway, since at the end of the swap arrangement, banks will have to buy back covered bonds at the price initially paid to the government. A loss to the government only occurs if the institutions issuing covered bonds fail for bankruptcy before the expiration of the swap and if the debt in the coverage pool is not paid and the collateral has depreciated. If however no-one defaults, the government will make a profit.

Liquidity measures were generally effective, as the short-term and medium-term credit markets have progressively returned to normal, as shown by the significant reduction of the money market spread and long-term cost of funding. This is also shown by Norges Bank's liquidity survey, where banks reported that funding became less expensive and more accessible over the course of 2009.

In addition to liquidity measures, the government also took action to supply capital, through the State Finance Fund and the State Bond Fund. Announced in February, the Finance Fund provides Tier 1 capital, while the Bond Fund purchases industrial bonds. The aim of The Finance Fund is not to rescue banks, but to inject capital in banks the FSA

assessed as sound but which had difficulties in obtaining capital because of the general turbulence of the markets, with the objective of boosting their lending capacity. Prices for the Finance Fund are set to be attractive (as compared to market rates) when markets are not functioning well and unattractive otherwise. Similarly, the Bond Fund is supposed to invest only in bonds that are attractive to the private sector. Each fund is worth NOK 50 billion (3% of mainland GDP). By the end of June 2009, only 10% of the Bond Fund was utilised. These small and medium sized banks represent about 15% of the banking sectors' total assets. As the conditions in the capital market improved during the first half 2009, some banks initially indicating interest in applying for Tier 1 capital from the Finance Fund instead chose to issue equity in the market, including the publicly-controlled DnBNOR. Overall these two schemes have reduced the uncertainty on the credit and capital markets, thus contributing to the relatively quick recovery of the financial sector.

Shared responsibility for financial stability and for macroprudential regulation

Financial stability supervision is the shared responsibility of three authorities (Box 1.13): the Ministry of Finance, which is responsible for overall financial stability and the regulatory framework; the Norges Bank, which is charged with monetary policy and produces a stability report twice a year; the Financial Supervisory Authority (FSA), which is

Box 1.13. A three-pillar system for ensuring financial stability

The FSA is an agency of the Ministry of Finance. It is responsible for monitoring all segments of the financial market, including insurance, the securities market, as well as estate agents and debt collectors. The FSA's main responsibility is to follow up individual institutions to ensure that they comply with all relevant regulations. After the Norwegian banking crisis in 1988-93, the FSA also established a macro surveillance unit to improve surveillance of system risks by combining macro indicators with the FSA's knowledge about individual institutions. Each year the FSA publishes a risk outlook report, with the aim of assessing overall situation of individual institutions in the light of economic and market developments. The report has also a special focus on areas/institutions which are particularly at risk and discusses regulatory issues. The FSA has an advisory role to the Ministry of Finance on financial regulation.

As a lender of last resort and central bank, Norges Bank has the role of "promoting financial stability and contributing to efficient financial infrastructure and payment systems".* The main responsibility for these tasks is given to the bank's Financial Stability department, which publishes a Financial Stability report twice a year. The first reports took a more macro oriented approach than FSA's risk report, but models have recently been developed to combine macro simulations with the Norges Bank SEBRA database, containing accounting data for most Norwegian companies. Norges Bank regularly publishes stress tests of the banking sector using this and other datasets. The FSA also uses Norges Bank's SEBRA database when conducting stress tests and analysing the credit institutions risk exposure.

The Ministry of Finance is responsible for overall financial stability and the regulatory framework. It also oversees Norges Bank and FSA's supervisory activities, prepares legislation and regulation (but can delegate the latter to FSA). Finally it ensures tripartite co-ordination, regularly calling meetings between the three pillars of the system.

* Listed as a core responsibility on Norges Bank's website.

responsible for supervision of individual institutions and market place. The three institutions meet regularly (usually twice or three times a year in normal times) and co-operate on a systematic basis.

The co-ordination of the three pillars worked well during the recent crisis (the three institutions met eight times), and the current organisation of supervisory activities seems complete and effective. In practice there was little intervention to prevent the crisis, perhaps justifiably since Norwegian financial institutions were generally sound and the main risks came from abroad. Both Norges Bank and the FSA repeatedly warned against increasing household indebtedness and relaxing of credit standards but no corrective action was taken. When implementation of Basle II rules was prepared in 2006, the FSA proposed, as part of a comprehensive set of secondary legislation, a lower maximum loan-to-value rate (75 instead of 80%) for a mortgage to qualify for the lowest risk weight.¹¹ This part of the proposal was opposed by Norges Bank and the banking associations, since it would only apply to Norwegian banks using the standard approach to calculate capital adequacy. Thus, the Ministry of Finance decided not to implement it. Competition issues are quite central to the macroprudential discussion, and here the Ministry's concern was not to give an advantage to the many foreign banks operating in Norway, whose home regulators (largely in other Nordic countries) had not strengthened capital requirements, and to Norwegian banks using internal models to calculate capital adequacy.

In the future the three institutions responsible for macroprudential policy should continue to co-operate closely and to monitor systemic risks created by excessive credit growth, asset price increases or indebtedness. While tri-partite meetings usually bring agreement on the understanding of the situation and on the actions to take, conflicting views may arise in principle. In this case it would be helpful to have an explicit routine which rules out uncertainties with respect to the decisions to take.

Improving the supervisory architecture

The financial crisis has deeply questioned the solidity of financial regulation across the world. Solutions to strengthen the capacity of financial systems to react to systemic risks, and to act pre-emptively as to avoid a new global crisis, are being discussed in a number of international fora. Some key weaknesses of the financial systems worldwide are: banks' liquidity management; banks' capital position; pro-cyclicality of regulation of capital requirements; insufficient regulation of housing mortgages.

The surge of liquidity risk in the wake of the Lehman and Brothers collapse revealed that banks did not have a sound management of liquidity (this is less true in Norway though Norwegian banks too suffered from reduced and expensive access to short-term and long-term funding as discussed above). The Basle Committee on Banking Supervision is therefore now considering the introduction of minimum quantitative requirements for liquidity and funding stability. Since Norwegian bank assets are at the moment quite illiquid (being essentially loans), it would be quite challenging to adjust to these new requirements. However since Norwegian banks rely on deposits to a large extent, it would be easier for them to meet the funding stability requirements.

Against inadequate capital positions, two regulatory changes are being considered. One possibility is to strengthen the capital base through stricter Tier I eligibility requirements (*e.g.* fewer hybrid instruments) or through a minimum ratio of equity to total assets. The first solution may not be very demanding for Norway since its eligibility criteria

for Tier I capital are already stricter than average. A minimum ratio of equity for assets will limit banks' leverage but also the return on equity. To the extent that returns have been particularly high for Norwegian financial institutions during the last decade, this solution too may be easier for Norwegian banks than those of other OECD countries. It should not be particularly challenging to meet higher capital requirements, but Norwegian banks need to increase their capital cushion so as to avoid further deleveraging in case of severe loan losses, as both Norges Bank and the FSA have argued. Banks which are highly exposed to shipping, commercial property and investment in the Baltics particularly need to strengthen their capital position.

One aspect of stricter capital requirements will be to decide whether banks of systemic importance have to be regulated more strictly than the others (as for instance recently decided in Switzerland). So far all Norwegian banks have been subject to the same regulation, but large banks are more leveraged than others. This is the result of lower borrowing costs amid higher credit ratings, which reflects the implicit "insurance" from being too big to fail. On the other hand, large banks have more diversified portfolios, which may warrant lower capital. All in all, however systemic risk considerations should imply higher capital adequacy ratios for large banks (*Norges Bank's Financial Stability Report*, 2009). Thus stricter capital requirements should be imposed on DnBNOR.

Another innovation which the Basle committee is considering is to reduce the pro-cyclical nature of capital requirements. Under a reformed regulation banks should accumulate capital buffers beyond the minimum capital requirements in order to absorb the shocks in critical times and avoid credit crunch. One possibility is following the Spanish example, where banks use dynamic loss provisions.

Finally an area where Norway should usefully strengthen its regulation is residential mortgages. At the moment, very little equity is required to cover residential mortgage loans, as banks use internal model-based risk weights as low as 9% and generally no higher than 17%. Such lending has indeed been extremely low-risk in the past, but with recent rapid growth in mortgage lending and a change in its nature as it is increasingly used for equity extraction, it would be appropriate to reconsider the risk-weightings on mortgage loans. The FSA notes that the standardised (not internal model-based) Basle II approach requires a weight of 35%. Another option, imposing maximum loan-to-value ratios, would enhance the security of the collateral while also protecting low-income borrowers from excessive risk. Imposing limits on loan-to-value ratios through financial regulations might face the difficulty of foreign bank branches not being covered; this could perhaps be dealt with either through agreements with the foreign supervisory authorities or specific legislation, which could be based on consumer protection.

These regulatory changes need to be co-ordinated internationally. The Norwegian authorities support the work done so far at G20 level, in the EU and BIS on new regulations, and actively participate in ongoing initiatives. For a small open economy like Norway there could be a trade-off between implementing special restrictions on national credit institutions, that could improve the resilience of the financial system to future crises, but at the same time impair competition with respect to banks operating in the rest of Europe. Close co-operation with Nordic countries would be critical in this respect.

Box 1.14. Summary of macroeconomic policies recommendations

Fiscal policy

- In order to avoid the re-emergence of inflationary pressures and thus lighten the burden for monetary policy, but also with the objective of reinforcing the credibility of the fiscal framework, fiscal tightening needs to be started soon, provided the economy recovers as projected and paying due attention to the still important downside risks. The structural non-oil deficit could be reduced to meet the 4% path by 2013 or even earlier, e.g. through a reduction of 1% per year.
- A fiscal consolidation package should include a reversal of the remaining anti-crisis measures, many of which have been terminated but some converted into new spending. In addition, transfer schemes such as sick leave and disability should be reformed and spending cuts may be envisaged in those areas of public spending where there is evidence that resources are used inefficiently. The already high level of taxation should not be increased.
- To reinforce the credibility of the fiscal guidelines, the authorities should take the opportunity to undershoot the 4% target after 2013 if the economy grows above trend. Credibility would also be strengthened by developing a multi-annual approach to budgetary planning, which would specify the fiscal measures envisaged by the government in the coming years; this would prove especially useful in the context of the need for a period of fiscal consolidation.
- Norway could also follow the example of some OECD countries and create a fiscal council, which would periodically evaluate budgetary developments, including the implementation of the fiscal guidelines, thus providing further transparency and enhanced credibility.

Monetary policy

- Monetary policy tightening should continue progressively but firmly as to keep inflation expectations well anchored. The pace of tightening ought to be conditional on the speed of fiscal consolidation as to reduce the risk of excessively sharp exchange-rate appreciation.
- To ensure credibility and effectiveness of monetary policy, the central bank should communicate policy interest decisions within a transparent framework which is consistent from one report to the next.
- While continuing to improve its inflation forecasting procedures, the central bank should be explicit about the way it takes asset prices, including the exchange rate and house prices, into account in its reaction function. It may wish to act for systemic or precautionary reasons, even though asset prices are not a target in themselves. Important macroeconomic variables that the central bank should monitor include credit growth, household savings, and the current account and property markets.

Macroprudential policy

- The three institutions responsible for macroprudential policy, the Ministry of Finance, Norges Bank and the Financial Supervisory Authority, should continue to co-operate closely and to monitor systemic risks created by excessive credit growth, asset price increases or indebtedness.
- Norway should strengthen further the macro-prudential framework in line with the decisions adopted at the European and worldwide levels. In addition to the reform of the European and International financial supervisory system, these initiatives are likely to include a set of automatic stabilisers, such as counter-cyclical capital requirements and dynamic provisioning for banks as their leverage grows.
- In addition, Norway should examine areas where it would be feasible to adopt its own reforms, if doing so would address possible areas of weakness. For example, risks linked to high household indebtedness could be reduced by introducing a limit on loan-to-value ratios, which would also give mortgage borrowers additional protection against overly-aggressive lending practices. The supervisor should continue to encourage banks to build additional capital cushions against future risks, such as potentially bad loans for commercial property and shipping, and in the Baltic States. Finally fees for the Deposit Guarantee Fund could vary more as a function of banks' risk exposure than they do now and should be levied regardless of the size of the Guarantee Fund.

Notes

1. Deviations from the target could result from inflation forecasting errors (Nymoén, 2009) or from having paid insufficient attention to the nature of shocks. When the nature of the shock is not well taken into account, interest rates decisions may be procyclical and rise/fall too little and too late. This is because there is no conflict between the objective of stabilising output and inflation in case of demand shocks, implying that demand shocks should be counteracted as aggressively as possible, but there is a strong trade-off in case of supply shocks, entailing various optimal policy horizons as a function of inflationary persistence. Another plausible explanation for missing the inflation target is that monetary policy appears to have at times been reactive, rather than preventive. This happened in 2003, for instance, when the interest rate was cut after inflation had already started to fall, or in early 2006 when inflation started picking up but interest rate was only raised very softly.
2. Glitnir operated through a subsidiary in Norway, which received assistance from the deposit guarantee scheme and then was sold. Kaupthing operated through a branch, which was taken under administration in Norway following the closure of the branch while Kaupthing in Iceland remained open. Kaupthing was a topping up member of the Norwegian deposit guarantee scheme. The Norwegian government issued a guarantee for the deposits to be covered by the Icelandic guarantee scheme. This guarantee became effective, and was paid out together with the payout from the Norwegian deposit guarantee scheme. Both guarantees were covered by assets seized under the special administration regime.
3. The main provisions included a suspension of the requirements on credit rating and listing on the stock exchange for bonds issued by private Norwegian enterprises. Covered bonds were made eligible as collateral for loans. Units in Norwegian money markets fund are eligible as collateral.
4. See speech by the Governor in October 2009: www.norges-bank.no/templates/article___75641.aspx.
5. Write-downs and loan losses reduced banks' earnings in 2008, but these remained positive. Earnings went up again as from the start of 2009, partly because of reduced loan losses and partly because of higher earnings before losses and write-downs. Loan losses in the second quarter of 2009 were only 1/3 of the losses in the last quarter of 2008 and the banks net result on securities and foreign exchange market activities progressively improved over 2009. There was also a small increase in the interest margin paid by customers, as lending rates rose significantly while deposit rates fell. However, total net interest earned fell in 2009 because of higher funding costs of sources other than customer deposits.
6. The Financial Stability Report indicates that until mid 2009 losses on loans to the shipping sector were only 0.02% of the lending to that industry, as compared with average (i.e. across all the industry) value of 0.27%.
7. In the United Kingdom, there is a small residual fund, inherited from a period when the deposit guarantee system was not a so called *ex post* system as it is today.
8. Because new members increased the Fund's obligations and the Fund's capital losses in 2008, ordinary membership fee was again levied in 2009, after 1/3 of normal fees in 2008. There were no fee payments to BGF in 2005-07.
9. A bank may obtain NOK liquidity by borrowing foreign currency and exchange it to NOK. The debt in the foreign currency is at the same time hedged as the bank buys the foreign currency back again forward. NIBOR, the Norwegian interbank offer rate, is a function of rate on the foreign debt plus the difference between the forward and spot exchange rate. The forward contracts are off balance sheet commitments.
10. Limits on what banks may have of exposure to each other also are an obstacle for the development of an interbank deposit market in the small Norwegian financial market. By using swaps, larger amounts in NOK may be lent from one bank to another because the bank lending NOK receives US dollar (or euro) back as collateral until the swap expires. This reduces the counterparty exposure compared to when banks provide unsecured lending or deposits in NOK.
11. The standard model under the Basle II system for allocating risk weight to residential property for capital requirement purposes is as follows: the low 35% risk weight for residential mortgages is only obtained when the mortgage is within 80% of the reasonable value of the property. If the mortgage exceeds 80% of the reasonable value of the property, the risk weight of the mortgage is, for capital purposes, increased to 100%.

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ANNEX 1.A1

Is there a housing market bubble?

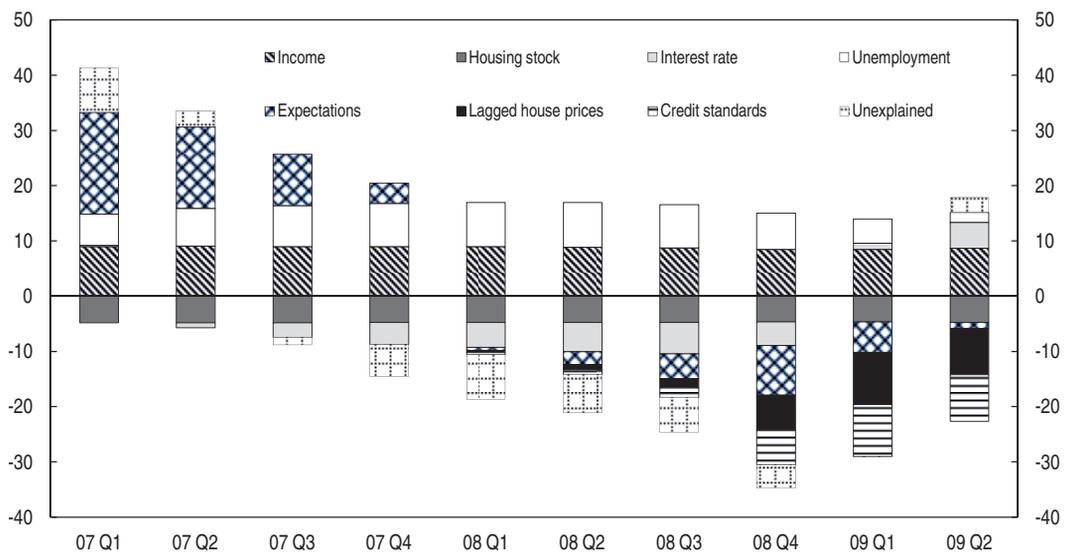
There is a large literature on housing prices determinants (for summaries see Girouard *et al.* (2006) and Muellbauer and Murphy (2008)). Drivers of house prices include income, the housing stock, demography, credit availability, interest rates, expectations on the fundamentals of the economy and expected price increases themselves (so-called “bubble-builder”). Demand would depend positively on disposable income and negatively on ownership costs (given by the real cost associated with a housing loan minus the opportunity cost of investing in housing rather than in another asset). Supply of housing is fixed in the short term, while on a longer term it is affected by regulatory and land policies, building costs and expectation of house prices. Either implicitly in ownership costs or separately, expectations about future real house prices can be a key driver. Because current and past house price increases are likely to influence expectations, deviations of house prices from their underlying fundamentals can be self-perpetuating or amplified. This phenomenon, known as bubble-builder (Abraham and Hendershott, 1996) arises when for instance one or more positive shocks to the fundamentals (*e.g.* a change in the monetary stance, or change in the credit policy of banks) causes a – rational – rise in house prices, but since no-one knows the appropriate “fundamental” level of prices, expectations of further appreciation can lead to overshooting; this can often be seen clearly only when the phenomenon goes into reverse, as in the US sub-prime episode.

Since the fundamentals are hard to observe, proxies such as the ratio of house prices to income or to rents can be used to check. Over the last six years, growth in Norwegian real house prices was one of the strongest in the OECD, with an average annual increase of 5.4%, compared with 1.5% for the OECD area. Nominal house prices have almost doubled in the last ten years, growing as twice as much as average nominal prices in the OECD area. A good part of this spectacular increase is certainly due to the strong fundamentals of the Norwegian economy – the price-income ratio is quite low by OECD standards, and fell during the boom (see Figure 1.13), as average wage growth was over 6% from 2006-08. More recently, however, the price-income ratio has started increasing again, due to the rebound in prices and the rise of unemployment. The price-rent ratio does not seem particularly high either, though the rent index is not always a reliable measure when rental markets are strongly regulated and not very competitive. Jacobsen (2006) argues that this is particularly true in the case of the Norwegian rental market.

Some econometric evidence suggests that the Norwegian housing market is not significantly overvalued. Figure 1.A1.1 illustrates contributions to house price inflation using an error correction equilibrium model estimated by Norges Bank. The model (based

on Jacobsen and Bjorn, 2005) comprises disposable income, the housing stock, a lending rate, unemployment and an expectation variable calculated as the residual of a model of consumer confidence about the Norwegian economy with the interest rate as the explanatory variable. House prices started to adjust downwards from mid-2007, and fell sizeably through 2008. The model cannot explain the downturn unless one accounts for the tightening of credit standards during the financial crisis. As Figure 1.A1.1 shows, the explanatory contribution from the expectation variable has been fairly moderate, and by including a variable for credit standards, the analysis suggests that house prices have largely been following “fundamentals”. Research by Miles and Pillonca (2008), also shows find that a substantial share of changes in house prices in Norway is explained by fundamentals (especially by real incomes, followed by interest rates and demographics).

Figure 1.A1.1. **Structural determinants of house prices**¹



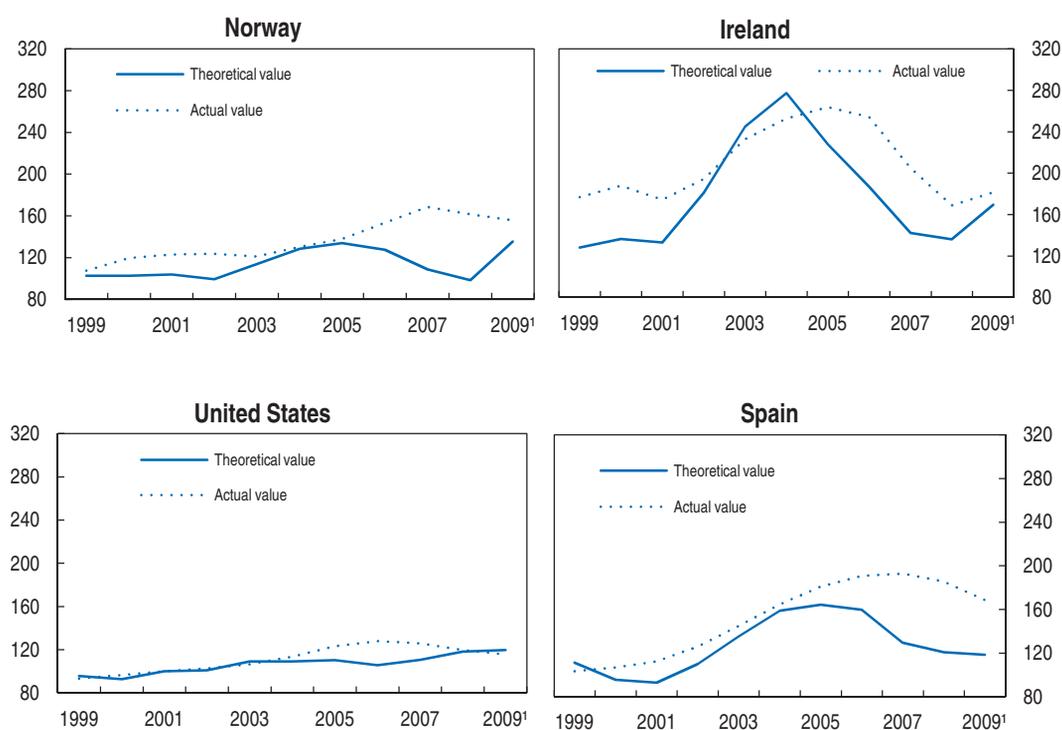
1. Contributions in percentage points to 4-quarter growth

Source: Norges Bank calculations.

StatLink  <http://dx.doi.org/10.1787/808383518318>

A slightly different conclusion would follow from the analysis of the short-term deviation of price-to-rent ratio from its long-term value. Following Girouard *et al.* (2006), the equilibrium value of price-to-rent ratio should correspond to the (inverse of the) user cost of housing. The latter can theoretically be derived from the after-tax nominal mortgage interest rate, property taxes, depreciation, the risk premium on residential property and expected capital gains. From this perspective, the Norwegian housing market may have been over valued after 2005 (Figure 1.A1.2). Towards the end of 2008, the actual and the long-term price-to-rent ratios have started to converging again, reflecting both a drop of house prices and the strong reduction of interest rates. Compared with OECD countries which have gone through housing market bubbles, the deviation does not look dramatic for Norway, and the data on both rents and user cost are far from perfect (see Girouard *et al.*, 2006, and Ortalo-Magne and Rady, 2005, for other sources of inaccuracy). Authorities should however continue to monitor them together with other indices of sustainability of house prices.

Figure 1.A1.2. **Actual price-to-rent ratios are higher than theoretical equilibrium values**



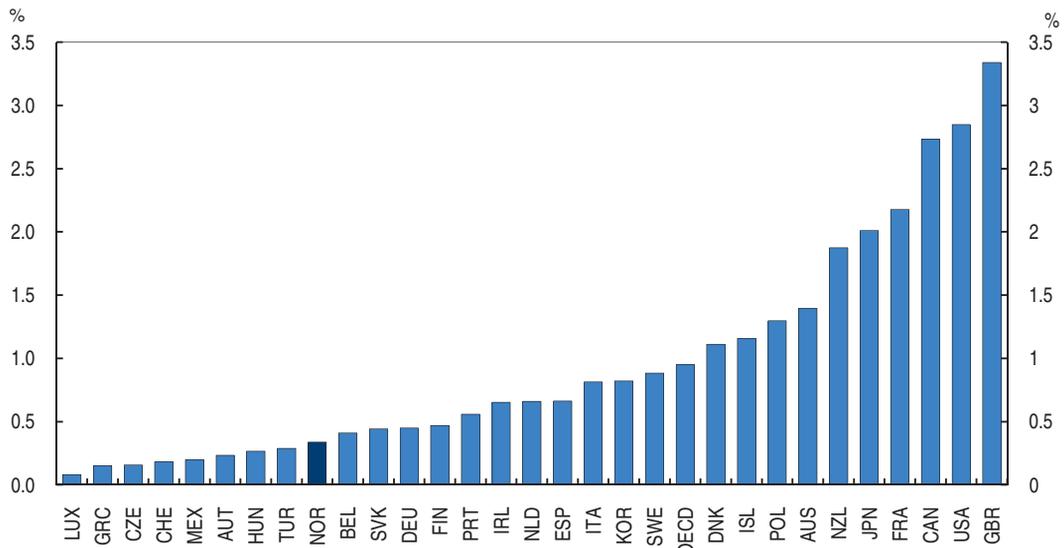
1. 2009 refers to first quarter.

Source: OECD calculations.

StatLink  <http://dx.doi.org/10.1787/808477282314>

Three additional factors, which are not accounted by any of the above models, certainly played a role in explaining the extraordinary performance of Norwegian housing market. The first is immigration, which has been very strong in recent years and must have added to the demand for housing. The second factor is financial innovation and the mortgage policies of banks. Girouard et al. (2006) argue that financial deregulation in the mortgage markets has strongly eased borrowing constraints on households. Many countries have introduced interest-only loans and flexible payment mortgages (USA, Norway, United Kingdom, Australia, Denmark and Netherlands); other have lengthening mortgages terms (Norway, Iceland and France). As observed above, the Norwegian banking sector has proved to be very innovative and has responded quickly to the increased opportunity offered by the run-up of house prices. The third factor is housing taxation.

Housing taxation is low in Norway, as compared to the OECD area (Figure 1.A1.3). Property taxes on households are set and levied by municipalities within the range of 2 and 7 per mille, with an average tax rate of 5.9 per mille in 2008 (but is zero in around one third of them). In principle the tax-assessed value of the property should reflect the market value, but municipalities are free to use simplified formula and even give “discounts” on standard rates. Furthermore, while the wealth tax applies to housing as well as to financial wealth, houses are valued well below their market price and in addition the rate applied to housing wealth is much lower than that for financial wealth (see Figure 2.8). The valuation gap is illustrated by the fact that the government has just proposed to set the value for tax purposes at 25% of the estimated sale price, which is above most tax-purpose valuations so that a “safety valve” system will be continued, so that taxpayers can appeal and have the

Figure 1.A1.3. **Recurrent taxes on immovable property, 2006**¹

1. 2005 for Austria, Belgium, Greece, Iceland, Japan, Mexico, Poland and Portugal.

Source: OECD (2007), *Revenue Statistics 2007*.

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tax-assessed value reduced to 30% of the documented “fair market value”. In addition, while there is full tax deductibility for interest payments, the tax on imputed rent was abolished in 2005, implying extremely low after-tax interest rates. Finally, tax rules for second homes are the same as for owner-occupied. That may explain why the demand for second or even third homes among Norwegian households has increased enormously, certainly contributing to the rise in house prices.

Van der Noord (2003) shows that tax incentives for housing can exacerbate volatility in house prices. A tax system with generous incentives for house ownership not only results in a higher steady-state of house prices but also in higher volatility due to a combination of price-inelastic supply of newly built dwellings and preferential tax-treatment for owner-occupied housing (Poterba, 1984 and 1991).

ANNEX 1.A2

Taking stock of structural reforms

This table reviews recent action taken on recommendations from previous *Surveys*. Recommendations that are new in this *Survey* are listed in the relevant chapter.

Recommendations	Action taken since the previous <i>Survey</i> (August 2008)
A. SOCIAL PROTECTION	
Minimise work disincentives in the unemployment insurance system	As an anti-crisis measure, maximum unemployment benefit period for temporary laid-off workers was increased to 52 weeks from 1 February 2009. To be re-evaluated in the Revised Budget for 2010.
Reduce sick leave	No action.
Tighten disability schemes	No action. A report, due in 2009, suggesting legislative action is now expected in 2010.
B. LABOUR MARKETS	
Increase flexibility in wage setting	Backwards action: The use of a mandatory extension of wage contracts with the object of combating social dumping is introduced in the maritime construction industry, effective date 1 December 2008. Joint and several liability related to minimum wages is introduced in sectors with mandatory extended wage contracts, effective date 1 January 2010.
Modernise employment protection legislation	No action.
Enhance efficiency of job placement services and ALMP	No action. The July 2006 merger of the Public Employment Services and the National Insurance Services expected to be complete in 2010.
C. EDUCATION	
Reduce the number of schools; improve accountability by publishing value-added assessment of school performance on standardised national tests of pupils.	No action to encourage reduction in school numbers, though some small schools are closing. Municipalities are required to make reports on their performance according to national indicators.
Introduce stricter selection and graduation criteria for initial teacher training; encourage formal training for developing competencies of practising teachers.	The required level of upper secondary school attainment for candidates for teacher training has been increased.
Develop more structured career paths with recognition for demonstrated competencies.	No action.
Include school performance as a determinant of school principals' rewards; consider school level merit-based salary awards to teachers.	No national action. Oslo education authorities have operated along these lines for several years.

Recommendations	Action taken since the previous <i>Survey</i> (August 2008)
D. FINANCIAL MARKETS	
Ensure competition in the banking sector	<p>After informal investigation the Competition Authority in February 2009 opened formal cases against Visa and Mastercard concerning debit and credits cards. The cases are pending before the Authority.</p> <p>To increase the competitiveness of savings banks compared with commercial banks, the government has proposed new regulations to allow savings banks to compete more effectively for equity and to allow easier structural changes – including mergers; regulations entered into force in July 2009</p> <p>See also Chapter 1.</p>
E. QUALITY OF PUBLIC FINANCE	
Raise the efficiency of public spending	A White Paper (2009) on public sector efficiency recognises the need to improve, but no action taken yet.
Tackle ageing issues	<p>The reform of the private social security pension scheme is largely in place, transition to the notional defined contribution scheme begins in 2010, with specific transitional measures for some age groups.</p> <p>Reform of the arrangements for public sector workers stalled in 2009. A bias towards “early” (as from age 62) retirement remains, although a longevity adjustment and a revised post-retirement indexation system have been introduced.</p> <p>The means testing of pensions against income is abolished for pensioners aged 68 from 1 January 2009, and for those aged 69 as from 1 January 2010.</p>
Reform the tax system	<p>The 2009 and 2010 budgets made several changes to the net wealth tax. The basic allowance was increased substantially. The reduction in the rate applied shares was removed. The effective valuation of commercial property for tax purposes was increased in 2009.</p> <p>As from 2010, the effective taxation of residential property is also to be increased, though the tax base for primary residences will increase only to 25% of its estimated market value.</p> <p>See also Chapter 1 of this Survey.</p> <p>The 2009 budget reduced inheritance tax rates, increased allowances and widened the inheritance tax base.</p> <p>The CO₂ tax will be extended to gas for home heating in 2010 The biofuel exemption to the diesel tax is to be phased out.</p> <p>Incentives for buying cars with low CO₂-emissions have been strengthened.</p>
F. ENVIRONMENTAL POLICIES	
Limit CO ₂ emissions	See above, and Chapter 2.
Develop renewable energy resources	Increased resources have been allocated to the Energy Fund, whose aim is to strengthen efforts in renewable electricity production, use of renewable energy and increased energy efficiency.
G. AGRICULTURE AND FISHERY	
Enhance competition in the agriculture market	Target prices removed in the beef sector from 1 July 2009 due to “amber box” constraints in the WTO-agreement.
Reduce tariffs and increase import quotas in the agriculture market	Subsidies to agriculture have been increasing
Reduce restrictions on transfers of fishing quotas	No further action. See Chapter 2.

Recommendations	Action taken since the previous <i>Survey</i> (August 2008)
H. SUPPORT COMPETITION AND REDUCE STATE AID	
Increase regulatory power of competition authorities	<p>Backward action: The procedure for political decisions of overturning rulings in merger cases that involves questions of principle or major significance to society has been simplified. The government can now reverse an NCA decision before the appeal procedure in the Ministry of Government Administration and Reform has been finished. The amendment might weaken the opportunity and right to have an appeal scrutinized on the grounds of competition.</p> <p>Cases taken up by the NCA have notably concerned transparency in electricity supply, competition in transport and food wholesaling.</p>
Increase competition and reduce barriers to entry	From 1 January 2010 all advertisers get legal access to Internet real estate advertisement services. The providers have formerly restricted access to licensed real estate brokers.
Reduce state aid, public subsidies and tax distortions	<p>Budgetary support for industry has increased slightly. The increase concerns support to industrial R&D, renewable and clean energy, agriculture, and a refund scheme for paid taxes for Norwegian employees in shipping companies. Further increase of refunds abated through cap per employee established from July 2008.</p> <p>Backward action: Fishermen's tax allowances (tax exemption, not included in budgetary support) increased in 2008 and further in 2009.</p>
Reduce state ownership in corporate Norway	<p>Petrochemicals subsidiary of Norsk Hydro (43.8% state-owned) sold to UK petrochemicals company Ineos. Remaining 50% state interest in a fibre-optic network company sold.</p> <p>Backward actions: The government purchased shares after merger of Norsk Hydro petroleum activities and Statoil, increasing stake from 62.5 to 67%. The government took a 30% share, with veto rights, in Aker Holding AS (the holding company that controls 40% of Aker Kvaerner, a supplier of products and services to the energy sector).</p> <p>New or reverted hydro power plants will only be granted state or municipal companies (requiring 2/3 state or municipal ownership, but leasing to private interests allowed)</p>
Improve state-owned activities governance	No action
Improve monitoring of cost-effectiveness of support for innovation and R&D	No further action on monitoring. The ceiling on R&D expenditures per company eligible for the tax credit was raised in 2009.
I. PRODUCT MARKET COMPETITION	
Promote competition in the postal services	No action.
Reduce barriers to entry in the retail sector	<p>Backward actions: an exemption to the Competition Act, allowing booksellers to set fixed prices for higher educational books, has been extended (again) to the end of 2010.</p> <p>Restrictions on establishing shopping centres outside urban areas were tightened – with the intention of limiting the adverse environmental impact of shopping.</p>
Enhance efficiency in transport services	No action.

Chapter 2

Addressing the long-term challenges of fiscal policy

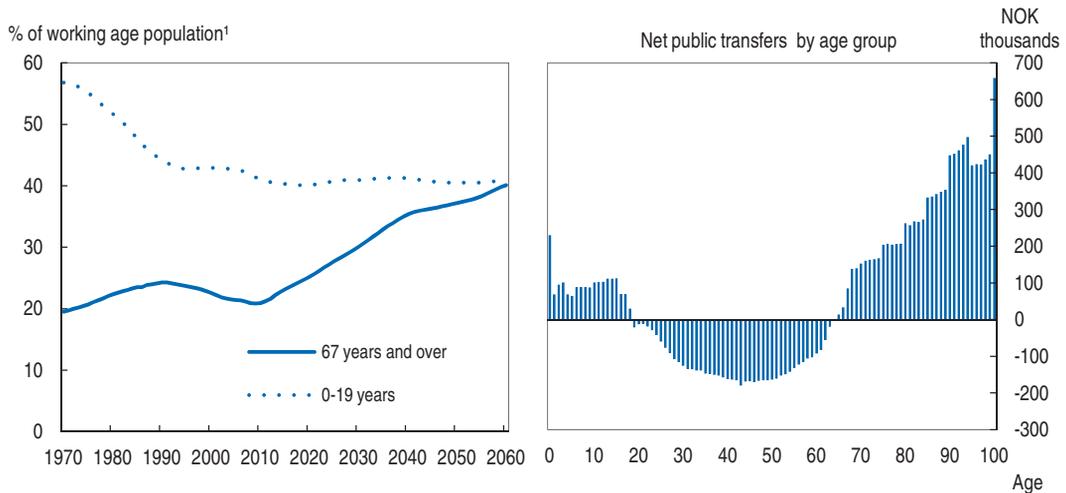
Despite substantial income from petroleum wealth, Norway is nevertheless confronted with fiscal challenges in the long term. The number of older persons (aged 67 and above) is projected to almost double by 2060, making this age group as large as 40% of the working-age population. Because the bulk of net public transfers goes to older people, government expenditures will increase sharply in the absence of reform. On this basis, the Norwegian authorities currently estimate a long-term fiscal gap, defined as the difference between the structural non-oil deficit and the expected return on the Government Pension Fund Global, of about 6% of mainland GDP in 2060. In other words, by 2060, fiscal measures to increase revenues or reduce expenditures in the amount of 6% of GDP are needed to secure the sustainability of public finances. These estimates are surrounded with uncertainty and rely on a number of stylized assumptions, but taken at face value they imply that major policy changes are required, so as to avoid an undesirable increase in the tax pressure. Completing the pension reform and reforming the disability and sickness leave schemes, which are both crucial for achieving strong labour participation in the future, would make important contributions. In addition, this chapter argues that there is a large unexploited potential for providing effective public services at lower costs, notably in the areas of municipal services, such as education, health but also in tax expenditures.

Norwegian policymakers are confronted with the difficult challenge of keeping fiscal trends on a sustainable path in the long term as ageing puts public finances under strain. Although income from the petroleum wealth is substantial, this source of revenue will stop making growing contributions to the budget around 2025, while age-related spending will continue to rise well after Norway has extracted most of its petroleum reserves. Although there are currently large overall budget surpluses and financial pressure will not be felt for several decades, it would be a mistake to delay the day of reckoning, as this should just worsen the problem faced by future generations. As this chapter argues, it is necessary to complete a number of reforms in the social protection sector but also to improve public sector efficiency to meet these long term fiscal policy challenges. The Norwegian public sector is large and there is scope for delivering public services at lower costs. Potential savings in the sectors of education and health, where services are essentially provided by municipalities, are sizeable as well as the leeway for improving outcomes. This chapter also discusses several features of the tax system, which could be made more neutral, particularly through the reform of tax expenditures.

Long-term fiscal challenges require policy changes

The current fiscal framework was conceived with the idea of smoothing the spending of oil resources across generations. The fiscal rule has the merit of being robust in the face of uncertainties, as it does not depend on unknown parameters, such as future oil prices, asset prices and undiscovered natural resources. The fiscal rule is however not designed to ensure long-term sustainable public finances. Incomes drawn from the accumulation of savings in the GPFG will not be sufficient to finance increasing pension and long-term care expenditure when the Norwegian population will be getting older. Between 2010 and 2060 the number of people aged 67 and above will almost double, representing at the end of the period 40% of the working age population (Figure 2.1, first panel). As the bulk of net public transfers goes to this age group (Figure 2.1, second panel), government expenditures (including the effect of ongoing reforms) are estimated to increase by 12% points of mainland GDP by 2060, as compared to an already substantial increase of 5% of GDP in the EU15.

The Norwegian Ministry of Finance estimates a medium term fiscal gap, defined as the difference between the structural non-oil deficit and the expected return on the GPFG, of 6% of mainland GDP by 2060. These estimates are surrounded with uncertainties and rely on a number of stylised assumptions, such as unchanged participation rates and working time, stable productivity growth and unchanged standards and coverage of publicly financed services. Taken at face value, however, they imply that some major policy changes are required to meet the long term fiscal gap. Figure 2.2 shows that higher employment rates, as possibly implied by the completion of the ongoing pension reform (see Box 2.1), would almost suffice to close the fiscal gap. The gap would however drastically increase in case of lower average working hours (*i.e.* if hours worked were reduced by 16%, which corresponds to the trend reduction in average hours worked in line

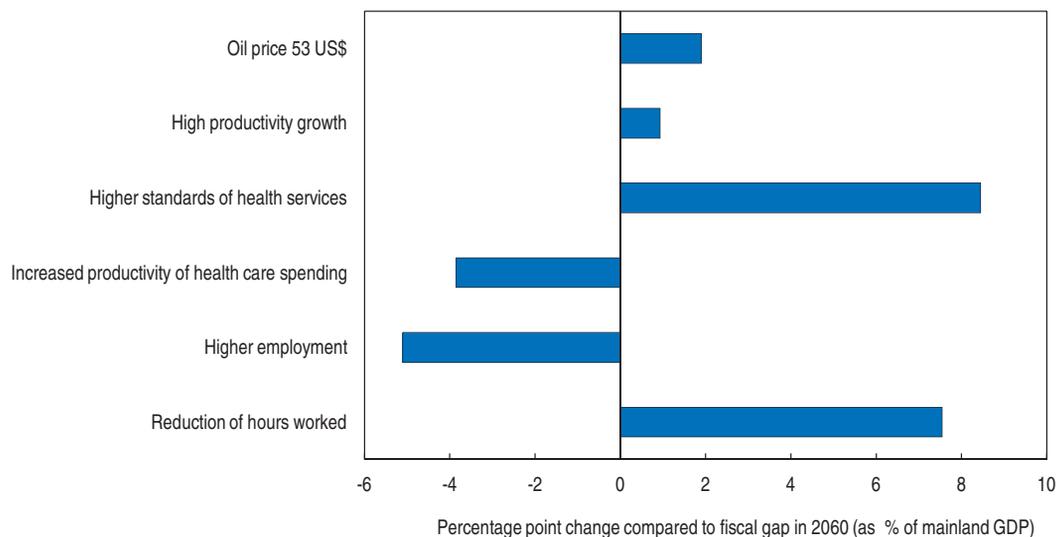
Figure 2.1. **Population ageing will impose an increasing burden on public finances**

1. People 67 years and over and under 19 years as a percentage of the working population.

Source: Ministry of Finance.

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with the yearly average rate between 1990 and 2007). Assumptions on the effectiveness of health care spending and standards of services are also important to determine to what extent future revenues will fall short of expenditures, although other factors than policy may induce healthier ageing.

Figure 2.2. **The long term fiscal gap strongly depends on assumptions¹ about labour-force participation**

1. The chart shows the impact of various budget assumptions on the fiscal gap (which is given by the estimated structural non-oil deficit plus the expected return on the Government Pension Fund Global) in 2060. The baseline estimate of the fiscal gap is 6% of mainland GDP, as based on the National Budget 2010, assuming an oil price of 70 US dollars in 2009 declining somewhat in future years. The baseline calculation assumes no policy changes.

Source: Ministry of Finance.

StatLink <http://dx.doi.org/10.1787/808584080602>

These illustrative simulations suggest that increasing labour-market participation will be extremely important to ensure the long-term sustainability of public finances. This requires a number of actions in many domains, including completion of pension reforms, rationalisation of the social protection system and reform of the sickness leave and disability systems. These issues are examined in turn.

The pension reform must be completed soon

The recent reform of old-age pensions in the National Insurance Scheme was a major step to encourage later withdrawals from the labour market (Box 2.1). After years of preparation, the pension reform was finally adopted in May 2009 and transition to the new system will begin in 2010. The enactment of flexible retirement age provisions has however been postponed to 2011. To complete the reform of the pension system there remain however some open issues, notably the early-retirement scheme and the occupational pensions in the public sector and the National Insurance disability pension.

Box 2.1. The Pension Reform

With the aim of making the National Insurance Scheme (NIS) financially sustainable and raising the actual retirement age, the pension reform is based on a notional (unfunded) defined contribution system. The retirement age is flexible from 62 years old onwards, based on actuarial neutrality at the margin. Pension benefits are to be based on lifetime earnings (indexed on average earnings) with a contribution rate of 18.1% up to a ceiling of NOK 517 455, and calculated on the basis of life expectancy at the time of retirement. The accrual rate has been calculated as to correspond to a replacement rate from 67 years of 1.35% per year in employment, assuming life expectancy in 2010, giving a replacement rate of 54% for constant income during 40 years. Before retirement pension entitlements are indexed on wages, and after retirement on wage indexation less $\frac{3}{4}$ per cent. Pensioners will also be given the option to continue working full time or part time with no reduction in benefits. The phase in of the new system is gradual, 10% for 1954-cohort and 90% for 1962-cohort. As a result of the reform, pension expenditures are estimated to be reduced from about 14% of mainland GDP in 2050 to about 11%.

The new AFP-scheme in the private sector, currently examined by the Parliament, covers people who are employed in AFP-companies at the age of retirement (about half of the total). The current AFP-benefit is transformed into a lifelong supplement to the new old age pension in the NIS, based on the same principles as the new NIS scheme, i.e. adjusted for life-expectancy, actuarially neutral at the margin, indexed on wage until retirement and on wage minus 0.75% after retirement. The phase-in of AFP benefits is also gradual. The AFP reform will cost a cumulative NOK 95 billion (almost 6% of current annual mainland GDP) over the years 2011-50 and for all cohorts 1944-62.

The private sector early retirement scheme (AFP) used to provide a very strong incentive to retire early. Under an agreement in the 2008 wage round it was transformed into an income supplement for most people over 62, actuarially adjusted for the actual age at take-up and indexed on wages until retirement. The government agreed to finance one third of the scheme, employers financing the rest. Though reform of the AFP scheme is supposed to restore marginal incentives to work, the income effect is still likely to reduce participation among people above 62 years old. In addition, the government awarded two

relatively costly concessions during the 2008 wage round, to smooth the transition for the oldest cohorts.

Reform of the remaining retirement pension schemes, essentially in the public sector, should be pursued. The absence of reform entails strong incentives to retire between 62 and 65 years old in the public sector. It is disappointing that, during the 2009 wage negotiations, neither the occupational pension scheme nor the early retirement scheme have been reformed along the lines of private sector reforms (with the exception of longevity adjustment and the introduction of a somewhat weaker indexation of benefits after retirement). This clearly shows that wage negotiations work asymmetrically over the cycle in terms of concessions made to the labour force (as noticed in the 2008 *Survey*, concessions to older cohorts were granted in a period of extremely tense labour market). No progress has been made on reform of the social security disability pension. A special commission issued a report in 2007, and a proposal to the Parliament is expected in 2010. The reform of the old-age pension scheme for former disability benefits recipients should incorporate the same principles as the National Insurance pension reform, such as longevity adjustment and indexation of benefits. Reforming the old-age pension scheme for disability benefits recipients should also go hand in hand with a more general reform of the disability schemes, as only actions on the latter could provide a consistent long-term solution to the trend increase in the number of disability recipients. However, little progress has been made on the reform of disability schemes, as discussed later. Finally, occupational pensions in the private sector are also under scrutiny, with the Banking Law Commission being due to present a report in spring 2010.

By OECD standards, net replacement rates for old-age pensioners remain relatively high for low income workers while they are less generous than the OECD average for average and high incomes (Table 2.1). However, as a result of the pension reform, net replacement rates have declined less in Norway than elsewhere, even for higher income workers. That, as well as the fact that the GDP per capita is rising fast, may still entail a high income effect and thus lower labour supply, as people replace work with leisure. Though the ultimate effect on social welfare is mixed, a reduced number of working hours will certainly add pressure to long-term finances because although the pension system itself is actuarially neutral at the margin, reduced average hours affect other tax revenues. It is thus urgent to reform the schemes that still imply strong disincentive to continue working after 62 without any further delay.

Administrative reorganization should lead to scale economies in the welfare system

Social protection has been a rapidly growing part of public spending, rising to 40% of general government spending. In July 2006, the new Employment and Welfare Administration (NAV) was created by merging the public employment service, the national insurance service and municipal welfare administration. The system of income support payments is being rationalised, in that the unemployed, sick and disabled and those in need of income support will in the future have just the one office to attend. Implementation of the reform at the central level – i.e. merging the two sectors – began in 2006, but implementation at the local level is taking place more gradually than initially expected. All NAV offices should be in place in 2010, which makes it premature to judge the overall effects. The strategic aim of the reform is to get more people into the workforce and off different types of benefits, with the secondary aim of increasing efficiency, which is to come from a rationalised structure. A major argument has been that economy-of-scale

Table 2.1. **The Norwegian pension system before and after the NIS reform**

Individual earnings :	Gross replacement rate						Net replacement rate					
	Pre-reform			Post-reform			Pre-reform			Post-reform		
	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5
Australia	46.2	23.1	15.4	67	41.6	33.1	55.3	30.4	21.8	80.2	53.1	41.8
Austria	90	90	85.9	80.1	80.1	76.4	98.4	99.2	95.1	90.5	90.3	86.3
Belgium	54.8	40.4	31.4	58.1	42	32.5	74.2	62.1	50.6	78.7	63.7	51.7
Czech Republic	72.1	45	32.9	79.2	49.7	36.4	86.7	58.1	44.6	95.3	64.1	49.4
Finland	69.9	66.2	65.2	66.5	56.2	56.2	75.9	71.4	72.4	73.2	62.4	63.8
France	64.7	64.7	58.4	61.7	53.3	48.5	79.7	78.2	70.8	76.2	65.7	60.2
Germany	47.9	47.9	46.5	43	43	42.6	56.4	66.6	66.4	59.2	61.3	60.3
Hungary	69.9	57.7	53.6	76.9	76.9	76.9	85.9	83.2	79.1	94.3	105.5	99.2
Italy	90	90	90	67.9	67.9	67.9	99.1	99.1	99.2	74.8	74.8	77.1
Japan	56.5	40.6	35.3	47.1	33.9	29.4	55.8	41	37	51.4	38.7	33.9
Korea	100	69.3	56	64.1	42.1	33.6	105.9	74.9	61.6	68.8	46.6	38.7
Mexico	72.5	72.5	72.5	55.3	36.1	34.5	73.4	76.5	83.2	56	38	39.6
Norway	68.5	56.7	45.4	64.1	53.5	42	85.1	65.7	55.3	81.8	62.5	51.7
New Zealand	77.5	38.7	25.8	79.3	41.1	29	77.5	38.7	25.8	79.3	41.1	29
Poland	81.2	62.9	56.8	61.2	61.2	61.2	97.1	76.9	69.7	74.4	74.9	75
Portugal	91.3	89.9	88.5	63.0	53.9	53.1	106.1	112	110.8	73.2	69.6	72
Slovak Republic	65	58.9	39.3	56.4	56.4	56.4	76.4	75.9	52.2	66.3	72.7	74.9
Sweden	82.5	78.6	76.5	76.6	61.5	75.6	84.5	80.3	81.9	79.3	64.1	81.2
Turkey	107.6	107.6	107.6	86.9	86.9	86.9	150	154.4	157.9	121.2	124.7	127.1
United Kingdom	41.1	29.7	20.6	51	30.8	21.3	51.9	39.8	28.3	63.8	40.9	29.2
OECD	72.5	61.5	55.2	65.3	53.4	49.7	83.8	74.2	68.2	76.9	65.7	62.1

Note: Replacement rate is expressed as the ratio of pension to final earnings (just) before retirement. Under the baseline assumptions, workers earn the same percentage of economy-wide average earnings throughout their career. The gross replacement rate is defined as gross pension entitlement divided by gross pre-retirement earnings. It is shown here at 0.5, 1 and 1.5 times average earnings levels underlying the newly defined OECD "average worker" concept. The net replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking into account personal income taxes and social security contributions paid by workers and pensioners. The table shows the impact of recent pension reforms in OECD countries, by comparing gross (net) replacement rates of a worker entering the labour market before the reform with those of a worker entering after the reform. For Norway the post-reform replacement rates include both the reform of the National Insurance Scheme and the fact that private pensions were made mandatory. OECD average refers to the arithmetic average of the 30 countries (not population weighted).

Source: OECD, *Pensions at a Glance* (2009). Norwegian figures were provided by the national authorities to take into account a reform approved after the publication of PAG (2009).

effects could be achieved by merging sectoral organizations and developing local partnerships. However, two other factors have run counter to this: firstly, that the merger has made the new organization very complex, and secondly, that strong pressures from the trade unions have ensured that all employees will keep their jobs after the reform.

A double dividend could come from reforming the disability benefit system

Reforming disability benefits would give a double windfall gain to long-term public finances, by on the one hand allowing sizeable expenditure savings and, on the other, increasing participation and hours worked, thereby boosting tax revenue. Norway spends a relatively high proportion of its resources on disability programmes: at just under 3.2% of mainland GDP, spending on disability benefits is higher than in any other OECD country and about 10% of the working-age population is registered as disabled, the second highest proportion in the OECD area. This has probably to do with generous replacement rates and loose eligibility criteria (OECD, 2009a).

Recent OECD work finds that, in Norway, the share of disability benefit recipients has increased by more than 2 percentage points in the last two decades, further widening the

gap with respect to the OECD average (in Norway more than 10% of the working-age population receives a disability benefit versus less than 6% in the OECD area). Policy strongly influences the share of disability recipients: more generous disability and sickness benefits are associated with higher numbers of beneficiaries (OECD 2009a). Employment and rehabilitation programmes tend on the other hand to reduce the number of recipients.¹ Norway has made good progress in both directions since the beginning of the 1990s, by reducing replacement rates and by improving labor market integration opportunities for the disabled. But only around 1% of the disabled leave the benefit scheme each year due to successful rehabilitation or resumption of work, suggesting that more effort is needed to keep disabled people into the labor force. Other well-known problems are the almost sole responsibility given to family doctors to vet the qualification process, which is one of key factors making for exceptionally high benefit-award rates, since doctors find it difficult to act as gate-keepers where they are too “close” to patients, and a very low benefit rejection rate, while appeals by rejected applicants are more frequently successful than in other countries.

Another weakness of the system is that the entry gate to disability schemes is long-term sickness leave. Eligibility criteria for long-term sickness leave are relatively generous. In addition, there are few incentives for employers to discourage the longer-term increase in sickness benefits, since they only contribute for the first 16 days.

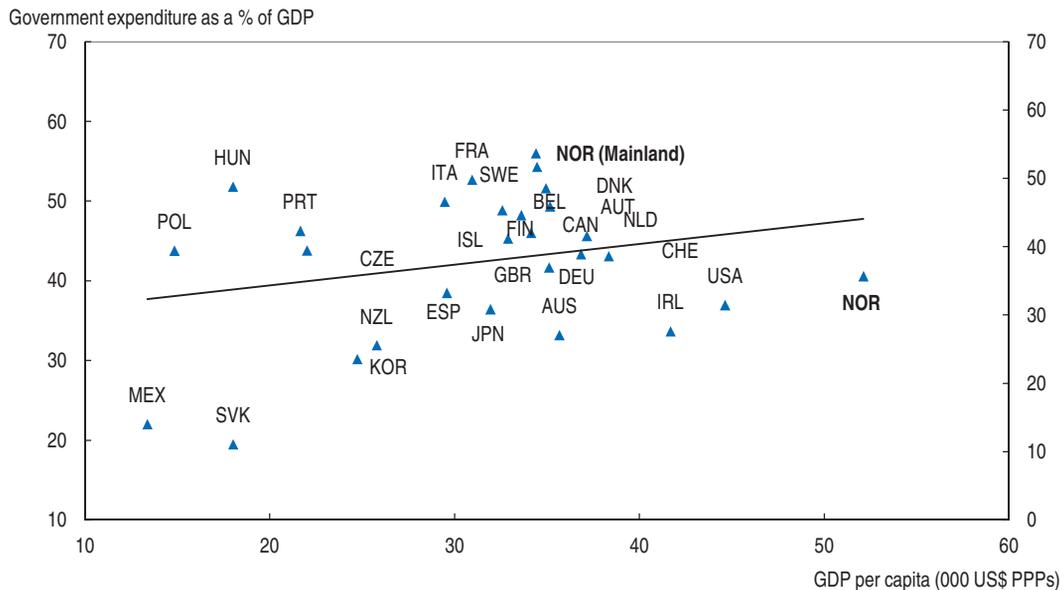
As recommended by the previous *Survey* and by the *OECD Sickness, Disability and Work Review* (2006), it is necessary to tighten the access to sickness and disability receivers, notably by introducing frequent checks of general practitioners’ initial assessments and repeat assessments; these checks should be carried out by doctors accountable to the social security system; employers should co-finance sickness and disability benefits; in addition, a reduction in the rate of long-term sickness benefit should be considered.

Reducing the replacement rate of disability pensions is likely to have an impact on the number of recipients. However, that would most likely also lead to an increase of poverty among the disability pensioners and possibly their migration towards other welfare schemes. In the medium to long run, two types of additional actions are required. First, it is necessary to put in place pre-emptive policies which would lower the probability that individuals become dependent on dependent disability benefits. Since the disabled have lower skills than the average, education policies (both compulsory education and adult training) would be best placed in this respect. Second, medical and vocational rehabilitation benefits and the temporary disability benefit will be merged into a new benefit as from March 2010. That may facilitate resumption of work.

Improving the efficiency of public spending.

A labour resource-intensive government sector with scope for productivity increases

At around 40% of total GDP, Norway’s public spending is internationally around average; it is however higher than average when measured with respect to mainland GDP, a better indicator of current Norwegian living standards (Figure 2.3). Relative to the general OECD pattern, the composition of general government spending in Norway reveals an above-average emphasis on social protection, health and education spending. Government service production (roughly equal to total government spending excluding debt interest, investment and transfers) is equivalent to 27.5% of mainland GDP compared with an average of around 20% for the OECD area.

Figure 2.3. **Norway spends a large share of mainland GDP on public expenditure, 2008**

Source: OECD Economic Outlook.

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Public services can be provided: i) directly, via government employees; ii) by contracting out services to private sector intermediaries; or iii) reimbursing private agents for expenditures incurred in obtaining such services. The last category includes, for example, refunds of expenses paid to private doctors or pharmacies, and is largely accounted for by health, housing, transport and education outlays. Efficiency is often improved where private provision is involved, reflecting a different incentive structure. However, Norway is relatively undeveloped in that respect: only two-fifths of public services are provided by the private sector, compared with around 50%, on average, in the OECD area (Table 2.2).

Table 2.2. **Government sector production and employment**

	Norway		OECD average		
	% GDP		% total	% GDP	% total
	Total	Mainland			
Government production of which:	20.9	27.6		19.9	
Compensation	12.4	16.4	59.4	10.6	52.6
Contracting out	6.4	8.5	30.7	6.3	31.1
Provided by the private sector	2.1	2.7	9.9	3.3	16.3
DI, inv. and transfers	21.3	28.1		42.7	
Total government expenditure	42.2	55.7		42.7	
Employment in government (% total labour force)	29.0			15.0	
Compensation costs per employee (ratio of public to private)	1.0			0.9 to 1.3	

Source: Pilichowski and Turkisch (2008).

It is difficult to put a cost-saving figure on the efficiency gains which might be made if Norway were to raise the proportion of private provision to the international average. It

would appear that compensation costs per employee in the Norwegian government service are relatively low, at 95% of private compensation rates compared with ratios of up to 130% in some OECD countries (Pilichowski and Turkisch 2008). Countries with high levels of government employment tend to have relatively similar or lower compensation costs per employee compared with those in the private sector, as in Norway and Sweden. This may reflect a more qualified and skilled government workforce in countries with smaller government sectors and *vice versa*, though Norwegian data on relative qualification of the work force do not exist to corroborate this. While government services employ nearly 30% of the Norwegian labor force, whereas in the OECD area the median (and average) proportion is near to 15%, the government wage bill, at 16½ per cent of mainland GDP, is “only” 5% points or so higher than the OECD average (OECD, 2009). Moreover, this situation seems to be entrenched: since 1995, the proportion of the labor force working for the government has been rather stable (as it has been in many OECD countries), with the exception of 2007, government employment continuing to take up slightly under a third of total employment growth. No direct inference can be made about the relative efficiency of the Norwegian government sector from employment and national accounts value-added data (which in the case of the government sector measures mainly inputs); however, evidence on government outputs, where they can be measured, suggest that a low share in value added could be a function of low marginal government-sector manpower productivity, as well as low relative wage costs *per se*.

An important contributory explanation of the large government size in Norway is the requirement to provide standardised services in the whole country, including in sparsely-populated regions. To attract and retain households in more remote areas, the central government imposes a relatively demanding set of regulations and standards on municipalities for the provision of core public services. No comprehensive estimate of the costs of regional policies is available, but they are likely to be substantial. Public administration accounts for almost half of total employment in the northern part of Norway, compared with 32% overall.

There is however, evidence of organisational inefficiencies across a wide range of government activities which cannot just be ascribed to geography. Among central government spending functions, recognition of the clear potential for productivity improvement – both with respect to international best-practice and to evidence of marked domestic variations in efficiency – has led to significant reform, often aimed at exploiting economies of scale, in the area of police (2005), labour inspection (2006), justice (2008), defence (2008) and tax administration (2009). The relative performance of road toll companies provides an example of how efficiency can still vary within Norway because of unexploited scale economies (Odeck, 2008). Efficiency is greatest among larger road companies, as well as those who introduce new technologies the fastest, suggesting that mergers could allow scale economies to be exploited.

A better assessment of productivity in the public sector would require the collection of performance indicators. The government has initiated work on this in a number of areas: central government administration; universities and colleges; specialist health services; national child welfare; customs and excise tax; police and prosecution; transport and communication and the correctional service (Box 2.2).

Box 2.2. Implementing best practice in the public sector

Reform of the public administration: Increasing accountability

Agencies have been a major organisational form in the Norwegian central government. Agencies outside the ministries represent the largest share of the civil service. In 2003, only a small number of civil servants were employed by ministries (about 3 900). In comparison, about 120 000 civil servants (including those at the regional and local levels) were employed by directorates/central agencies, other ordinary public administration bodies, agencies with extended authority, and government administrative enterprises.

Over the past 15 years, a process of structural devolution has been going on in Norwegian central government, and the independent agency model has become more differentiated (Christensen and Lægreid, 2009). This development was partly inspired by New Public Management ideas and solutions, but was also a part of Norway's adaptation to the EU and the internal market. The model combines greater agency independence, including control of human resource management, with increased inter-organisational specialisation, whereby the distribution of roles and tasks among agencies is more differentiated and non-overlapping.

The increase in the range of management tools, such as performance management, auditing and quality-measuring instruments, can be seen as a response to political demands for greater accountability of public service providers, as a product of increased concern with the efficiency and quality of public sector services, and as a sign of political determination to meet fiscal constraints. Norway is particularly advanced in the use of performance reporting (annual reports, budget documents, operational plans, and strategic plans) and management-by-objective-and-results (MBOR). The MBOR concept was put into practice through three reform measures from 1990 onwards: activity planning, budget reforms, and pay reforms, all of which are now integrated parts of the governmental financial regulatory system (Laegrid *et al.*, 2006). In the process, Norway has developed a government-wide performance budgeting system. Performance targets are integrated into the budget process and are used when developing the executive's budget. Each ministry and each agency receives one lump sum appropriation for both wages and operating expenditures and carry-overs are limited to a maximum of 5%.

Monitoring performance

Norway is also relatively advanced in respect of customer contact and transparency. The Ministry of Government Administration and Reform has initiated a new national Citizens Survey, to provide systematic and regular feedback on the level of satisfaction with public services. The aim is to enhance the quality and efficiency of public services. At the same time, StatRes has been established as a system for the development and dissemination of statistics, with the aim of showing the level of resources the state uses and what inputs provide in terms of activities and services. The final outcome is shown by means of performance indicators. The relationship between outputs and inputs illustrates productivity. Statistics and indicators on local government are similarly available in KOSTRA. The Ministry of Administration and Reform will use StatRes data to initiate an assessment of public sector efficiency across the various sectors where measurement is considered possible: central government administration; universities and colleges; specialist health services; national child welfare; Norwegian customs and Excise; police and prosecution; transport and communication and the correctional service.

Regulatory impact analyses

The 2005 and 2008 OECD *Surveys of Indicators of Systems of Regulatory Management* identified the most important governance practices to improve the quality of regulation in OECD countries as the use of regulatory impact analysis (RIA) to assess the cost and benefits of new regulation and the institutional oversight of the quality of regulations, together with the design of programs to reduce the costs of administrative activities on business and citizens. The Norwegian government's Instructions for Official Studies and Reports require that each matter shall include a consequence assessment. However, ministries do not always follow these requirements. The OECD has previously pointed out the potential for improvement in this area (OECD 2003) and the findings of this OECD report have since been followed up in Norway. A working group submitted recommendations in 2004 and the measures taken include the establishment in 2005 of a panel supporting the ministries' work on impact analyses. The effectiveness of the panel was evaluated in 2007 and it was subsequently made permanent, meeting first in August 2009.

Management practices are improving

The Norwegian government has increasingly provided incentives for increased efficiency, in line with international best practice (OECD 2009), (Box 2.2). Human resource management is largely delegated to line departments and line managers, there is open recruitment and a high use of performance-related pay compared with the OECD average (OECD 2009b). The introduction of performance management has attracted attention to results and generally appears to have improved efficiency and performance. Norway has also taken steps to increase public scrutiny of government activities and to lighten the impact of regulation on the private sector. An assessment of the impact of new regulations on the budget, small businesses, regions, the public sector and gender is required for all new regulations, though this assessment is not always required to be quantitative.

It is necessary to rethink central-local relations

Local government covers much of education and health care, employment has grown rapidly

Government employment in Norway is decentralized, with almost two-thirds of general government staff employed at the local government level (counties and municipalities). At the same time, the central government plays a larger role in the determination of tax revenues than in most other OECD countries: almost 90% of total revenues come from taxes which are fixed at the central government level – though all non-oil taxes are in practice collected by municipalities. The system of local government financing seeks to offset differences in income and cost levels across jurisdictions, combined with specific grants for remote areas. At the same time setting taxes at central level has the advantage of taking into account the macroeconomic situation and labour market incentives. However, the separation of spending and revenue responsibilities gives rise to well-known principal-agent problems, which can impact negatively on allocational efficiency and on overall budget control, where local governments thwart central priorities by spending grants on their own programmes and the central government then has to reassert its initial commitments by increasing funding. Between 1986 and 2000, there was a general trend towards earmarking, so as to better ensure the implementation of central priorities without leakages towards other services (Borge 2009 and Box 2.3). The new schemes have reduced some of the political tension between central and government levels, perhaps at the cost, in some cases, of less local innovation and initiative (Borge 2009). However, judging by the strong expansion of employment in municipal activities since 2006, it is easier to ratchet up local spending than to reduce it.

To facilitate the merger of municipalities (which remains however done on a voluntary basis, not an explicit government policy), the government pays 50% of the preparatory work and refunds 40 to 60% of the administrative costs related to the merger process. Merged municipalities retain their former level of grants for ten years, thus reducing the disincentive to merge embodied in a grant system that involves a large fixed component independent of the size of the municipality. There have been, however, very few mergers during the past decade, despite that the fact that many municipalities are too small and many of them are losing population. To reap scale economies, municipalities frequently co-operate in some sectors such as waste disposal, water supply and auditing, and in the energy sector (through the joint ownership of power plants). However, in core spending domains, co-operation is limited, partly reflecting the absence of appropriate

Box 2.3. Reasserting control over municipal spending

Political economy factors make control of local government budgeting difficult

Much of the political economy literature points to the importance of governance institutions to deficit and expenditure outcomes; in particular, systems that produce fragmented or minority governments are more prone to deficit and/or expenditure bias. For instance, cross-section evidence relates Norwegian municipal deficits to party fragmentation at the local level (Borge, 2004).^{*} Time series and cross-section evidence suggests that political strength, measured as stable government and low party fragmentation of parliament, slows public sector growth, insofar as it – for example – holds down teacher employment, while teachers' wages and employment depends on which party is in power (Falch and Rattsø, 1998). Educational efficiency at the lower secondary school sector has been found to be conditioned by party fragmentation and local government political affiliation (Borge and Naper, 2005). Cost efficiency in the provision of long-term care is also found to be negatively related to political fragmentation (Kalseth, 2003).

The grant system has resulted in central-local tensions...

Norway has been through phases of decentralization and partial recentralization in order to improve the allocation and control of local spending. The introduction of the block grant system in 1986 was meant to establish a more fair distribution of resources across local governments, and to strengthen local democracy and improve efficiency. Until 1994, the central government used sectoral block grants to signal their strategic priorities (like education, health care, etc.), while leaving local governments free to spend the grant as they liked. Signals about how the money should be spent could be ignored by local governments and their ability to thwart the priorities set by central government led to a gradual increase earmarked block grants (Borge 2009). However, where the local government has two revenue sources, local taxes and block grants, earmarked grants can still to some extent leak out to other services, as local governments substitute grant money for their own funds and spend those funds on other programmers.

... creating the need for more efficient ways of translating central priorities into local policy implementation

Efficient earmarking should affect relative prices, i.e. they should be of the matching type. Open-ended matching grants are more stimulative of centrally prioritized services than a block grant, because local authorities have a price incentive to comply with central wishes. However, matching grants still do not ensure a consonance of central and local priorities. From the late 1990s the matching grant for child care was increased to improve coverage and lower user charges, but the actual impact on both these was modest, while the extra spending on child care was much lower than the grant increase.

In the search for more efficient ways of translating central priorities into policy implementation, in recent years the central government has used so-called action plans to increase provision of particular services. In this case matching grants are of the temporary kind and affect only *additional* spending. Action plans are used in care for the elderly, schools, and child care among others. Even these schemes have their problems, however, as they discriminate against those municipalities who have already expanded the relevant service and may encourage municipalities to put off spending in anticipation of such schemes (Borge, 2009).

^{*} Statistical analysis of a large panel data set for Norwegian local governments shows that party fragmentation has a very robust effect on budget deficits. Survey data on politicians' spending preferences indicates that party fragmentation favours underlying "common-pool" problems of spending bias. Borge and Tovmo (2007) also find that a high degree of party fragmentations is associated with less forward looking behaviour on the part of local governments. Using a measure of aggregate output based on indicators of production for several service sectors developed by the Norwegian Advisory Commission on Local Government Finances (*Det tekniske beregningsutvalg for kommunal og fylkeskommunal økonomi, TBU*), Borge et al. (2007) find that a Herfindahl-index measuring political strength by party fragmentation has the most consistent impact, and indicates that a strong political leadership contributes to higher efficiency. High democratic participation contributes to high efficiency, consistent with international findings in the literature.

compensation schemes between jurisdictions and partly reflecting the importance attached to distance and commuting time. Primary and lower-secondary education provides an example. Each municipality has the obligation to deliver education to every resident child in the school nearest to his home but has no incentive to accept non-resident pupils since it is not entitled to a corresponding compensation from the central government grant system. Municipalities can enter into bilateral agreements but these have been rare. Absence of effective financial incentives hampers an efficient use of existing capacities.

Reforms to raise human capital must be continued

Value for money can be increased in primary and secondary education

The last Survey focused on the performance of Norwegian primary and secondary education and analyzed the possible causes of relatively low value for money in this sector (OECD, 2008b; Boarini, 2009). The Norwegian public sector is almost the sole provider of education services and the government spends 6¼ per cent of GDP on primary and secondary education, compared with around 5% in the OECD at large (a figure which rises to just under 6% when private education is included). Expenditure per student at the primary and secondary levels is about 40% higher than in the OECD area. However, international assessment surveys have found that Norwegian pupils perform rather modestly in various core subjects: in particular, education outcomes as measured by the Programme for International Student Assessment (PISA) scores are around the OECD average. Poor performance also translates into a higher proportion of low achievers. Norway also has a problem with drop-outs beyond the age of 16: the rate is twice that in other Nordic countries and at nearly 21%, exceeds the OECD average of near to 18% (OECD 2008a).

The combination of relatively high spending and only moderate achievement could indicate either an excess of resources devoted to education or the possibility of improving the efficiency with which they are used. Sutherland *et al.* (2007) estimate that potential savings in compulsory education amount to over 1% of GDP, reflecting the fact that Norway transforms input in outputs in the least efficient way in the OECD area and devotes a sizeable share of GDP devoted to education.

Clearly, these are illustrative estimates. PISA provides only a snapshot of educational achievement at a certain point in time and from a selected academic viewpoint. Other international surveys show more mixed results on achievements of Norwegian students, though they generally point to a relatively poor performance (OECD, 2008b). Thus, there is a genuine concern that ample resources may not be translating effectively into educational performance and this has motivated a series of policy actions, including a new curriculum that clearly defined competence goals (the Knowledge Promotion reform launched in 2006), steps towards increasing performance assessment and local accountability (White Paper on Quality in Education, June 2008) and measures to improve the average competencies of Norwegian teachers (White Paper on Teacher Education, February 2009).

The emphasis is put on improving outcomes, rather than reducing spending, reflecting the traditional priority in Norway to maintain a comprehensive and inclusive education system. The view that more resources produce higher outcomes is still dominant, although this is now strongly questioned by empirical research (see Hanushek, 2007, for a review). Thus, Norway retains the lowest pupil-teacher ratios among OECD

economies. In addition, on current policies spending could increase further, reflecting the goal to have additional teaching resources for following up unsatisfactory learning outcomes in reading and mathematics but also for longer teaching hours.

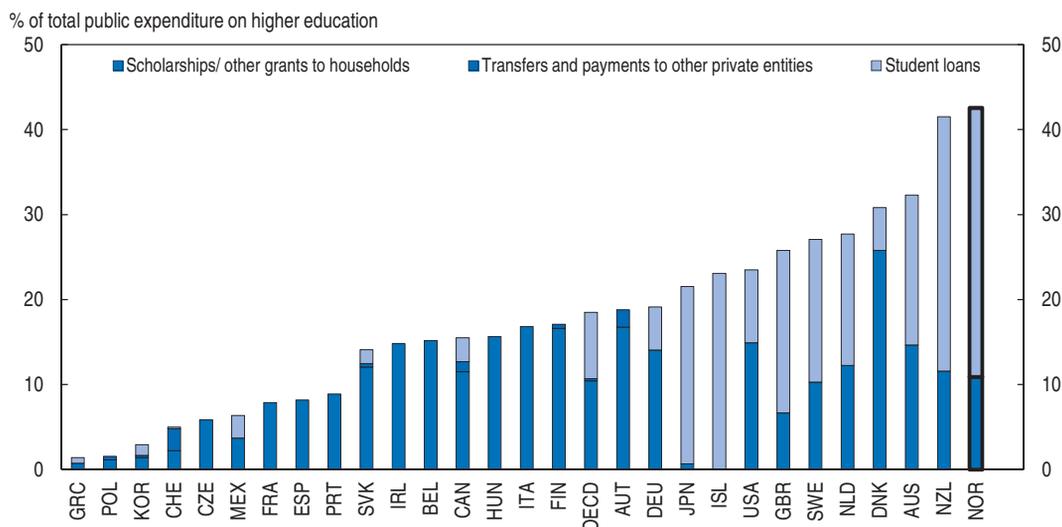
Norway has preferred to sustain employment in the education sector rather than carefully attract and select its teachers (see previous *Economic Survey* OECD, 2008b). This is a costly choice in terms of efficiency that needs to be reconsidered (see Boarini and Lüdemann, 2009). The previous *Survey* argued that it would be better to introduce merit-based policies for managing the existing workforce, rather than adjusting the wage bill across the board. Merit-based policies have both advantages and pitfalls, but they are increasingly seen as effectively improving the performance of education system. In addition, it should be possible to further improve the quality of existing teachers by reallocate resources towards formal-accreditation training and away from informal training as well as replacing generic programs directed to mediocre schools with programmes conditional on outcomes and on effective school restructuring. The government has taken some steps to raise standards among new teachers, by increasing entry requirements for teacher training.

Small school size emerges as one of the principal factors explaining relative educational inefficiency within and among OECD economies (Sutherland and Price, 2007). In the Norwegian case, Bonesronning *et al.* (2008) conclude that increasing the average school size from the current level of 200 to 400 would reduce costs by 5-6%. There are a number of impediments to greater educational concentration, most of which are geographical. The school structure is the responsibility of local governments in Norway, which have the right to decide what structure is best in their municipality or region, and the government has stated that it wishes to uphold a decentralized school structure, a commitment which gives priority to avoiding the need for children to make long journeys to school. Hence, the recommendation made in the previous *Survey*, that the number of schools should be reduced to free resources for quality enhancement has not been pursued. Nevertheless, there are potential efficiency gains from enhanced co-operation. While the central government cannot force class or school merging on local governments, funding considerations should and increasingly do impinge on school density. Statistics indicate that the number of small schools is declining in Norway. This may demonstrate that local governments themselves find ways to minimize costs by changing their school structure, but it is a trend that should be further encouraged via suitable funding incentives. Since bilateral agreements between municipalities on compensatory transfers to municipalities which accept children from outside their catchment area have been rare up to now, it might be necessary that these transfers are financed at central level. In order for this not to increase the overall amount of spending, block grants to municipalities should be adjusted to take into account these compensatory transfers. Compensatory transfers should be carefully defined as to reflect the actual cost incurred by the municipalities to educate children coming from another catchment area.

Tertiary education performance could be improved

Norway's tertiary education system is relatively large in terms of resources absorbed. There is a heavy reliance (96%) on public funding, the budget resources devoted to it amounting to 2.1% of GDP compared with an OECD average of 1.3%.² The difference is largely due to free tuition and the support to students given through grants and loans, which is double the proportion in OECD countries as a whole (Figure 2.4). This has to be

Figure 2.4. **Grants and student loans in higher education are large by OECD standards, 2007**



Source: OECD, *Education at a Glance 2008*.

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seen in connection with a relatively high degree of wage compression, which reduces the incentives that individuals have to invest in education. However, one third of the population receiving the public subsidy can afford to pay, so that the outcome in terms of equity is questionable. By contrast, early childhood education is not free. This is the reverse of what would be implied by the public externalities usually associated with the two different types of education. A suitably constructed tertiary fee system would have the simultaneous benefits of increasing equity, reducing excess demand for higher education, freeing up resources for uses with higher social returns and providing incentives for higher education institutions to develop programmes better suited to the economic needs of the country. The right to free tuition is, however, currently enshrined in legislation.

From the point of view of student throughput, the system has attracted some criticism as one reason for poor value for money. The tertiary student-teacher ratio is relatively low (11.9 compared to an OECD average of 14.9), and expenditure per student on educational institutions is almost a third higher than the OECD average. Small size implies a need to recruit and retain staff to teach specialised subjects which would, in a larger multi-faculty university, be provided by staff from other faculties. As with schools, some of this apparent inefficiency relates to Norway's dispersed geographical structure. It is not clear whether graduates from smaller, geographically dispersed institutions, achieve lower results, though there is some evidence that this is the case in some institutes, like teaching colleges. The case for closing small, cost-ineffective universities is even stronger than for primary and secondary institutions, since tertiary education is not a basic right and students' mobility across the country should be encouraged with the objective of maximizing labor market performance in the long-term.

As for the output, Norway does relatively well in terms of graduation ratios but it does less well in terms of completion rates and average duration of studies. Steps have been taken to improve incentives for both students and institutions to reduce non-completion rates and the total length of study time. The share of grants in total student assistance (to

a maximum of 40% grants, 60% loans) depends on the student's progression and is awarded once the studies are completed. However, the opportunity costs of remaining in higher education are still quite low, especially when the labor market is weak.

Measuring the efficiency of higher education spending also involves weighting teaching and research outputs, which is rendered difficult by the absence of agreed international benchmarks for teaching outputs, as well as the problems of matching funds to outputs. Traditionally, a large part of the funding allocation has been made according to student throughput, universities receiving a block grant from the central government based, up to 2002, upon historical costs, admission capacity and standard unit costs per discipline. This funding system discriminated against science-based studies, which may explain part of the declining enrolment in these studies. Following the report of the Mjøse Commission in 2000, Norway introduced a new performance-based funding model for higher education in 2002, aimed both at improving education outcomes as measured by the credits and student exchanges with foreign institutions and by research as measured by research publications.³ The impact of the new system has been recently evaluated with satisfactory results.⁴ Publication of evaluation reports and the institutional responses to them should be beneficial to system improvement, but has been criticized for a lack of reliable data addressing the issues concerning the learning outcomes – for the system to be fully effective, institutions should be required to publish (and not simply report to the Ministry) a range of performance indicators on a common basis, including course completion rates and the average time for completion. All in all, however, the increased accountability of the university system implied by the performance-based funding model seems to have increased the quality of higher education (*Econ Pöyry Report*). One additional, unintended, consequence of this funding model may be an increasing concentration of funds on larger institutions, which would seem likely to enhance efficiency.⁵

The key challenge in the future is to improve the system's responsiveness to the needs of society and the economy (OECD, 2006a and b); this clearly implies increasing the number of graduates in scientific subjects, where Norway lags behind other OECD countries. Improving the management and leadership of institutions, including through increasing their legal autonomy and making their management structures clearer, should be central to this. There is also a need, in the interests of both improving the efficiency of the system and increasing its responsiveness to students and society, to improve the performance indicators and outcome measures by which it can be judged. This should be accompanied by a more transparent basis for the allocation of public funds to institutions. Most of these directions for the future are consistent with existing government thinking. As for free tuition in tertiary education, any reform would go against a long, and strong, tradition in Norway. However, the distribution of costs and benefits needs to be the subject of more rigorous public analysis and public debate. The system for supporting students in their studies through loans and grants could be improved through the introduction of an income-contingent system for the repayment of loans.

Health and long-term care spending is under pressure

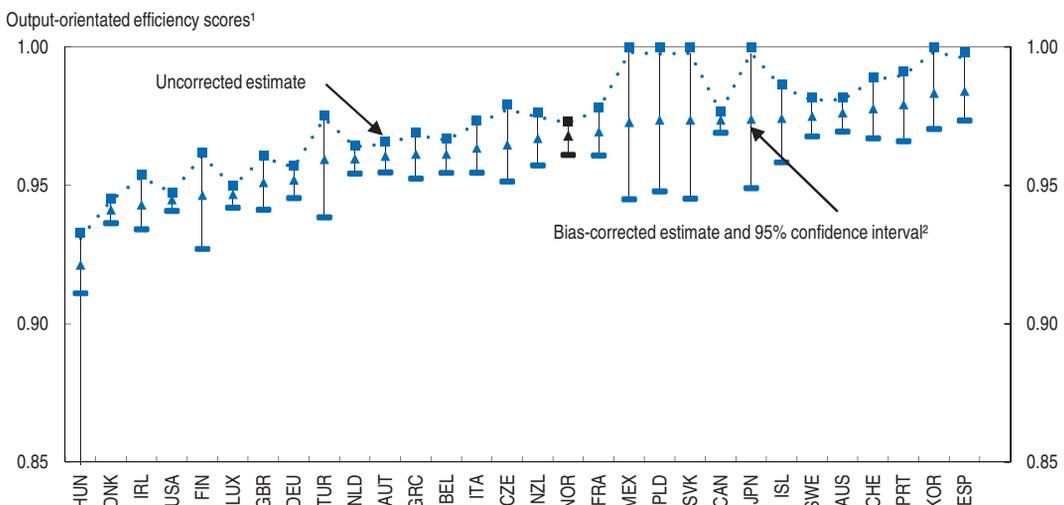
The health sector should seek to achieve efficiency gains

In terms of the share of overall GDP spent on health and long-term care, Norway is near to the average of EU countries, and the pace at which that share has been rising – and will rise due to population ageing over the next half century – is not out of line with trends

elsewhere. But, as already discussed in the Survey of 2005, Norway stands out in terms of health spending per capita – it is among the highest spenders of all OECD nations. While this may be partly explained by Norway’s high living standards, this elevated level of health spending has not achieved a correspondingly high level of health outcomes. Life expectancy at birth is higher than the OECD average, but this is ‘over-explained’ by favorable socio-economic factors, leaving a considerable gap which may be ascribed to relative inefficiency in translating inputs into health outputs.⁶ Norway also stands out for the large amounts of resources spent on care for the elderly and has the highest share of people working in the health and social sectors (*Health at a Glance*, 2009). Finally, a number of empirical papers have indicated that health inequalities seem to be at least as high as in other European economies, even though Norway’s income structure is more egalitarian (which should lead to more evenly distributed health outcomes).

Data Envelopment Analysis (DEA), which compares the relationship of health outcomes to physical and costs inputs relative to the production frontier’ of the most efficient economies, suggests that Norway has considerable potential to improve health performance without needing to increase inputs (Figure 2.5). Similar analysis using cross-sectional data on Finnish and Norwegian public hospitals with respect to output data on admissions grouped according to diagnosis related groups (DRGs), outpatient visits, day care and inpatient days revealed marked differences in cost efficiency, both within and between the two countries. A recent analysis of hospital performance in selected OECD countries, based on the system of DRGs suggests that savings in some areas could be around one-third on average. This is less than in some countries covered by the study but much higher than, for instance, in Finland and Denmark (Erlandsen, 2008; Table 2.3). An important factor on the cost side is the significantly above-average number of doctors and nurses relative to Norway’s population, which makes for low apparent productivity.⁷ The

Figure 2.5. **Efficiency in the health care sector could be improved, 2003**



1. Data envelopment analysis (DEA) performed with three inputs (health care spending per capita PPPs, Economic and Social Status (ESCS), consumption of fruits and vegetables) and one output (life expectancy at birth).
2. DEA results are sensitive to measurement errors and statistical noise and affected by a bias towards smaller inefficiency estimates. Bootstrapping (i.e. taking repeated samples that have the same size as the existing data set) can help address these problems by making a correction for the small sample bias and producing confidence intervals.

Source: Joumard et al. (2008).

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sparseness of the rural population is partly responsible for the generosity of inputs, but there is evidence of inferior performance for the resources used.

Table 2.3. **Potential for hospital cost reductions based on standardised DRGs¹**

Per cent, 2006	
Australia	42
Denmark	5
Finland	13
France	44
Germany	32
Iceland	38
Norway	34
Sweden	42
United Kingdom	12
United States	48

1. Based on cross-country comparisons of hospital unit costs for seven DRGs, with lowest unit costs used as a benchmark.

Source: Erlandsen (2008).

Reforms have increased technical efficiency

Policies have responded to health-sector inefficiency problems by instituting a succession of reforms (Box 2.4). The block-grant financing system for general hospitals was replaced by an activity-based financing system in 1997 (with reimbursement linked initially to 30% of costs, a share that has varied over time) to a Diagnosis Related Group (DRG) reference system relating to the number of patients treated. As a result of the reform, the majority of county councils introduced activity-based contracts with their hospitals. This was followed, in 2002, by the transfer of responsibility for the provision of hospital services from the counties to quasi-autonomous regional health enterprises, with

Box 2.4. Reforms bearing on health-service efficiency

Since the late 1990s, Norway has implemented an impressive amount of reforms aimed at greater efficiency of delivery of medical services, in part by allowing a greater role for market focus, while maintaining and where possible strengthening, quality and equity. They include the following:

Introduction of a DRG system of funding in July 1997, substituted part of the block-grant financing system for general hospitals with a case-mix financing system. Reimbursement to general hospitals for inpatient care is based on a block grant and an activity-based component, the latter being calculated on the basis of the number of patients treated and of the Diagnosis Related Group (DRG) reference system. The reimbursement is based on a national standardised cost per treatment, related to average costs. The activity-based component was originally 30%, gradually increased to 60%; it was then reduced in 2004 and then again in 2006 to 40%, since when it has remained unchanged. No out-of-pocket payments are imposed for inpatient treatment. For hospital outpatient care, activity-based financing will be included in the case-mix financing system as from 2010. Psychiatric inpatient care and drug abuse rehabilitation continue to be financed through block grants. Ambulatory outpatient treatment is reimbursed by the National Insurance Scheme.

Box 2.4. Reforms bearing on health-service efficiency (cont.)

Patient choice. In 1999, the Act on Patient Rights introduced free choice of public hospitals for patients. This right has been progressively extended to include the choice of private hospitals contracted with a Regional Health Enterprise (see below) through a GP referral. Patients also have the right to receive specialist medical assessments within thirty days after GP referral, and if the time limit is exceeded, then the NIS is given the responsibility to provide treatment either through the private sector or abroad with costs financed by the regional health enterprise.

Hospital recentralization. The 2002 Health Enterprise Act transferred hospital ownership from the counties to the central government, establishing five (reduced to four in 2007) geographically-based “Regional Health Enterprises” (RHE) each reporting to the Ministry of Health and responsible for delivering health services in their regions. The RHEs own the local “health trusts” and are responsible for monitoring their costs and quality of services. The central government still defines their main health policy objectives as well as their financial means. Hospitals continued to be publicly financed by general taxes, and, although the hospital organizations gained a semi-independent status by being organized as public enterprises with appointed boards, the Minister of Health was still the ultimate guarantee for solvency. At the same time, there was an element of decentralization, since both the health regions and hospitals were organised as health enterprises. These bodies are independent legal subjects with their own responsibilities for personnel and capital. In this respect, the Norwegian hospital reform is similar to reforms in England and Wales, Sweden, Spain and Portugal that have focused on transforming hospitals into more autonomous actors.

Prescriptions for a healthier Norway. In January the White Paper *Prescriptions for a healthier Norway – a broad policy for public health* was presented, putting forward four general principles for public health: 1) Make it easier for people to take responsibility for their own health; 2) Build alliances to promote public health; 3) Encourage more prevention and less cure in the health service; 4) Build up new knowledge.

The Coordination reform, announced in 2009, aims to encourage the municipalities to assess whether positive impacts on health can be achieved by using resources differently, for example through more appropriate use of the hospitals. The most important financial instruments are intended to be municipal co-financing of the specialist health care services and municipal financial responsibility for patients ready for discharge. Municipal co-financing of the specialist health care services will entail changing the financial parameters for the specialist health care services. Activity-based financing should continue to be an important element of financing, but the rate will be reduced from 40 to 30%, given the heavier emphasis on prevention and early intervention efforts.

independent boards and CEOs, answerable to the central government. This recentralisation process came after a period of increasing central government intervention at the county level regarding specialist care (such as the introduction of a waiting time guarantee and the introduction of free choice of hospital, by which the central authorities become partly responsible for the outcomes that were produced in the health care sector, but through which blame for not meeting targets became a matter of central-local dispute). Centralisation was meant to generate greater hospital efficiency with more equal medical outcomes across municipalities, via economies of scope (more specialised hospital production) and a more even distribution of specialist medical expertise. A further

ingredient in the reform process was the enhancement of competition, through public choice (free choice of hospitals, including private hospitals) and increased use of the private sector inputs such as laboratory and radiology services (Hagen and Iversen, 2007).

There is some evidence that recentralisation has been associated with improvements in technical efficiency. The number of in-patient stays has continuously increased, while bed-days have declined and bed-days per stay have fallen from 6 in 2000 to 4.8 in 2008; waiting times have been reduced. However, the observed increases in technical efficiency may have resulted mostly from the increasing role of activity-based funding (ABF) methods used in the allocation of health care resources (Magnussen *et al.*, 2007). Both technical efficiency and patient satisfaction increased as a direct effect of the reimbursement reform, the latter being an effect of lower waiting time, which in its turn is an effect of the introduction of activity-based financing (Hagen *et al.*, 2006). ABF itself has, nevertheless, been much less effective in enhancing cost-efficiency than technical efficiency (Biorn *et al.*, 2006). Expenditure on the specialist health service has risen more than expected from budget plans, for both activity-based funding and the reimbursement of outpatient services and the deviations have tended to increase (DHSA, 2007). This has led to an increase in the proportion of total costs being met by supplementary funding (Magnussen *et al.*, 2007). Hospitals have run large deficits and the state has always underwritten them via a soft *ex ante* budget constraint and financing assumption of hospital deficits when they emerged (Trond and Hagen, 2009). Deficits in 2009 are expected to be limited as compared with the past years.

Cost containment remains a goal to pursue

The focus of Norwegian health reform on obtaining better results from the existing ample resources applied to the health sector does not seem to have helped contain overall costs. The advantage of DRGs is that they can improve efficiency, by encouraging transparency and reducing patient stay. But there is evidence that setting the rate of reimbursement too high (relative to actual marginal costs) can lead to excessive increases in activity (DHSA 2007), hence the progressive reduction of the original reimbursement rates. ABF also provides incentives to maximise hospital income, via faster patient turnover – and even “upcoding” in order to receive higher reimbursement – which do not help the systemic containment of costs. To reduce the incentives for “upcoding” and improve budgetary control, an estimated “upcoding” is taken into account in the ABF-reimbursement to the RHEs at the national level. Hospitals have nonetheless had an incentive to discharge patients “quicker and sicker”, which makes for multiple admissions, as well as leading to a focus of resources on acuity of illness and at the expense of disease prevention and health promotion.

In a system which is partly or fully activity based, the state bears part of the cost when activity over-expands, and the hospital ownership reform probably accentuated this budget bias, particularly insofar as managers came to rank boosting income as their most important goal (DHSA 2007). Moreover, the regional health enterprises become separate legal subjects and their accounts moved off the government budget (implying a softening of the *ex ante* budget constraint), although ownership is public and public debt guarantees obviously apply (implying an implicit on-budget liability when deficits actually emerged). Moreover, the hospital enterprises have lacked the political legitimacy (implicitly attributed to them in the 2002 reform) to make structural decisions about cost-saving rationalisation of the hospital structure (Trond and Hagen, 2009). For instance, decisions to

shut down local hospitals, or delivery rooms and emergency rooms in hospitals, have been turned down by the Minister of Health. At the same time, economies of scope have proved difficult to engineer: structural decisions made by the boards have had low political legitimacy and decisions to shut down local hospitals, delivery rooms or emergency rooms in local hospitals have been difficult to implement because of political pressures.

User choice and co-payments should be used more

At the same time, between 1999 and 2005, a number of radical legislative moves expanded patient choice in Norway; in addition, complementary measures to expand capacity such as allowing patient choice also to include contracted private hospitals and foreign hospitals have been developed in 2002-04. User choice can reduce costs only if the signalling power and capacity at the primary care level are good enough, elements which have not characterized the Norwegian reform (Ringard et al., 2006) and would thus be important to introduce in the future.

User choice may also need to be accompanied by increased price signalling via co-payments. Co-payments in Norway are not particularly low, but a wide range of health services are offered with no or a low co-payment: physiotherapy or elderly care, for example. Co-payments should be introduced or increased where there is evidence of excessive consumption relative to assessed care need and when the demand is price sensitive. The use of cost-sharing is still highly controversial as its use across the board can create problems of access for low-income people and high administration costs. However, it can work in cases such as to re-direct demand towards less expensive drugs, encourage healthy behaviour and reduce excessive expenditure driven by over-supply.

Care of the elderly is a particular case in point for possible use of co-payments. DEA analysis reveals substantial variation in efficiency across municipalities, with the potential to improve efficiency by around 10% (Borge and Haraldsvik, 2009). Importantly, in addition to the political economy factors such as local council fragmentation, low efficiency among municipalities is associated with a low degree of user charging. Furthermore, co-payments for nursing homes are based on income rather than wealth and it is paradoxical that the public sector should finance costly services for its wealthier citizens.

Co-ordination between municipalities must be reinforced

The municipalities, which provide a substantial proportion of public services, have been important players in the administrative reform process (see Box 2.4), and this has also affected the municipal health sector. The majority of the larger councils organise their care services on the lines of purchaser-provider principles and many local authorities have reorganised themselves and become two-tier systems in which individual undertakings (such as day nurseries or nursing homes) are turned into financially devolved units, are given a great deal of administrative freedom and subject to control by an administrative director. Hence, they are run more in line with private enterprises, becoming service delivery suppliers similar to those in the private sector. This could allow public services to be subject to market forces, if money effectively “followed the user”; in practice, however, the majority of care services is financed through block grants transferred to municipalities, without any direct user-related financing. In addition, municipal health budgets have remained under strain and spending has continued to rise, driven in part by a strong and continuous rise in the number of practicing physicians reaching a coverage of 3.9 per 1 000 inhabitants (as compared to 3.1 for the OECD average) – an increase which has

largely been supply driven, but also related to growing areas of medical need, such as old-age and disability care, mental illness and rehabilitation.

In circumstances where municipal health commitments have already been growing rapidly, municipalities have had incentives to postpone the reintegration of hospital patients into the health care services they finance (in particular outpatient and elderly care). They have also resisted hospital rationalisation. The problem of many small hospitals derives not just from geographical remoteness, but applies also to populated areas where the social reasons for preventing rationalisation are not as strong as for schools; indeed, the merging of welfare services would often potentially increase the quality of treatment. Co-operation between municipalities has also been lacking. A person can in principle benefit from the services offered by another municipality and the providing municipality can receive some financial compensation from the municipality of origin if they have reached a bilateral agreement. But since, in most cases, this compensation does not cover the actual costs of providing the service, co-operation agreements across municipalities remain rare and scale economies largely unexploited.

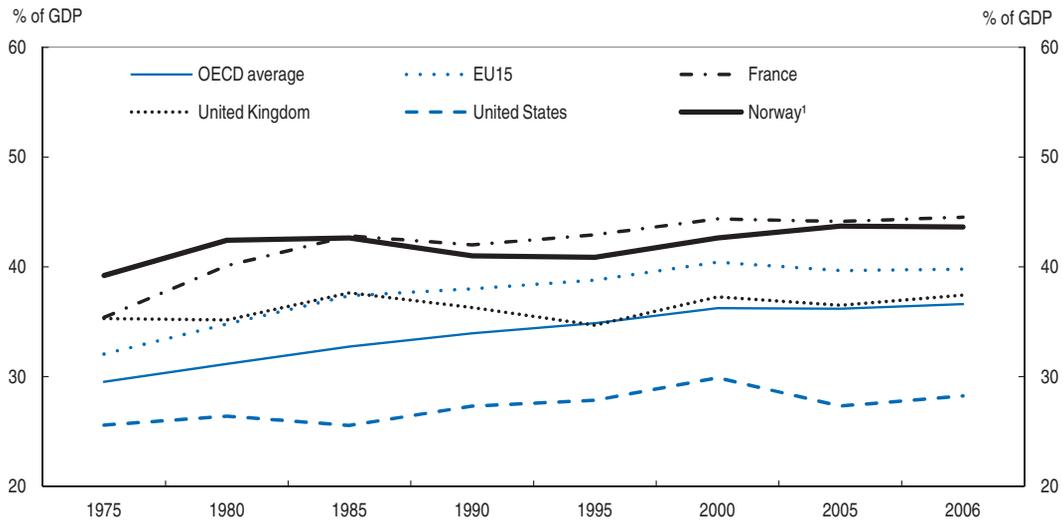
Clearly, while health outcomes are improving and satisfaction with the health system is high, there is some considerable way to go before trends in health spending can be deemed sustainable. Four problems stand out as needing action:

- Economies of scale could be realised by centralising complicated surgery and closing down the smaller units, while at the same time reducing costs. Political economy problems need to be addressed. Dissemination of more information on hospital performance could inform public opinion, helping to reduce resistance to necessary changes.
- The percentage reimbursed under activity-based financing is to be reduced further, but there remains some ambiguity and grounds for misunderstanding as to the objectives and ambitions of the scheme.
- Patient choice remains ineffective without better signaling at general practitioner level and better information dissemination. It may also require an enhancement of co-payments.
- Financial incentives need to be established for municipalities to accommodate patients who are ready to be transferred from hospital to less costly follow-up treatment in their local communities. A recent *White Paper* proposes to change the incentives of municipalities to pass costs on to hospitals by charging them for inpatient care, while allocating greater resources to prevention and primary care, on the basis that there are higher marginal returns to additional resources in primary care than in hospitals.

There is some scope to improve tax neutrality

Though increasing taxes is not a solution that Norway should envisage for the moment, there is certainly room to redesign parts of the current system, so as to minimise the distortions and the impact on short and medium term growth. As noted in the *Survey of 2000*, Norway has a relatively high tax burden, though not out of line with the revealed preference of OECD economies for growth per capita to be more reflected in public than private spending (Figure 2.6). The tax mix shows a relatively even distribution of tax revenues between income taxes, corporation tax, taxes on goods and services and payroll taxes, but a much below average dependence on property taxes (Figure 2.7). This section examines the efficiency of the tax system from the point of view of the coverage of the

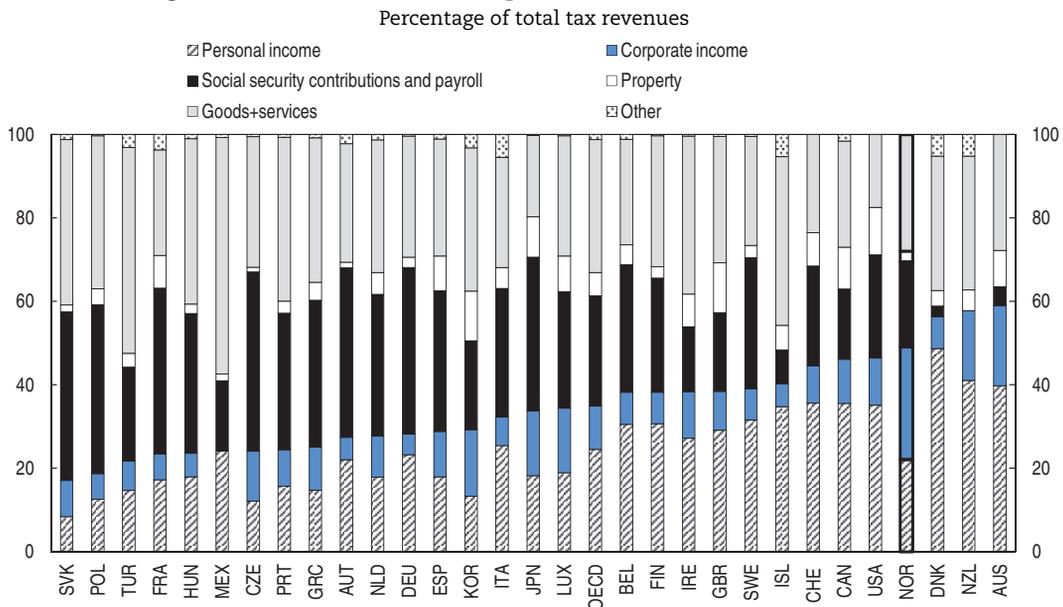
Figure 2.6. The tax burden is high in Norway



1. Data for Norway include petroleum revenues in the numerator and total GDP in the denominator.

Source: OECD, Tax Revenue Statistics Database.

StatLink  <http://dx.doi.org/10.1787/808675133238>

Figure 2.7. Tax revenue composition in the OECD area, 2006¹

1. Countries are ordered according to the combined share of personal and corporate incomes in GDP. For Mexico, personal income tax revenues include all taxes on income including corporate income. Taxes on goods and services include tariff revenues and excise duties in addition to value-added and general sales taxes.

Source: OECD, Tax Revenue Statistics Database.

StatLink  <http://dx.doi.org/10.1787/808732030527>

various tax bases (or conversely the extent to which tax allowances and exemptions add to and substitute for direct spending) and of the neutrality of the tax system with respect to capital and labour income, which is a major determinant of the growth-friendliness of the tax system.

The incidence of tax expenditure should be reduced

Tax expenditures are often regarded as distortionary and costly elements of the tax system. Though some deviations from neutrality can make the tax system more efficient, the presumption is that the use of tax expenditures makes the budget susceptible to political pressure (rent seeking) and is distortionary by pushing up tax rates. In Norway tax expenditures are reported in the National Budget (all existing tax expenditures are included in the report, but the cost is not calculated for all of them), but there is no systematic evaluation of the effectiveness of tax expenditures and there is a lack of yearly evaluation and assessment as to whether the public support given through tax expenditures is increasing or decreasing, and how well the targets of the tax expenditures are achieved. Tax expenditures usually have no limits in yearly budgeting, as direct expenditures often do, and they tend to be or become permanent. Under the structural non-oil central government budget deficit framework, the government has a choice between tax expenditures and direct transfers, but it often seems like tax expenditures are regarded as easier to implement than direct expenditures and also are felt to be less costly. While a full integration of tax expenditures into the budget process is hardly feasible because of lack of data, computational methods, benchmark choice and other methodological issues, transparency would seem to require a more formal treatment than currently applied.

Comparing tax expenditures between countries and over time is not straightforward. Nevertheless, Norway has fewer tax expenditures (60)⁸ than its Nordic neighbours – there being 115 in Sweden; France has around 400. However, the general trend is that the reported tax expenditures are growing.⁹ A substantial part of this growth can be attributed to rising tax bases, but some tax policy changes have also contributed to this development. This particularly applies to tax expenditures in capital income tax. The taxation of imputed income of owner-occupied housing was removed in 2005. This policy change led to a considerable increase of the tax expenditure related to income taxation on own housing and vacation property. The tax expenditure related to the wealth tax on housing and vacation property also has grown significantly. Much of this is due to exceptional growth in market values on properties, without an equal growth in assessment values. In sum, the most important tax expenditures relate to lack of taxation of imputed income from, and low assessment values of, housing.

There has also been considerable growth in the tax expenditure linked to the tax relief on employee premiums and contributions to occupational pension schemes. Increasing employment is the cause of a substantial part of this growth, but the introduction of compulsory occupational pensions in 2006 has also been of importance. As well, the tax rules for shipping companies were changed in 2008, with effect from 2007. Shipping companies are now exempted from ordinary capital income tax, whereas they earlier had a tax deferral arrangement. The tax expenditure in personal income has been more stable, although some tax expenditures have grown and some have been reduced. Also, some tax expenditures have been abolished and new ones have been introduced.

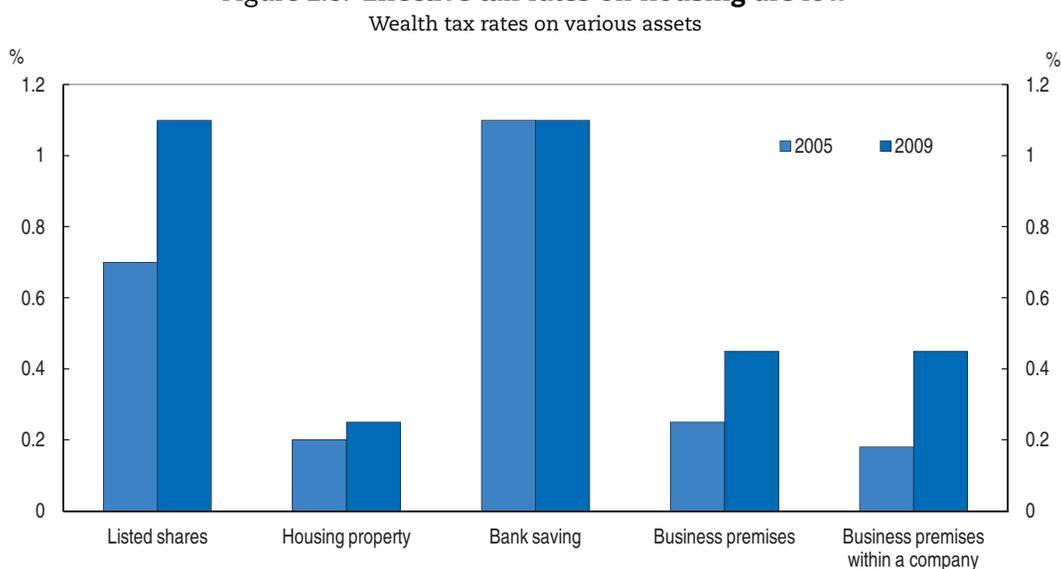
The Norwegian VAT reform from July 2001 broadened the VAT base substantially by including services in the VAT base on a general basis. Several sectors have been included in the VAT base since 2002, *e.g.* accommodation, travel agencies, broadcasting and cinemas. The main tax expenditures in the VAT arise because some sectors are outside the VAT system or inside the system with a lower or zero-rate. The sectors implicated here are the

reduced rate on food and zero rating of newspapers, books and periodicals. This preferential treatment leaves the revenue-raising effectiveness of the Norwegian VAT system at near to the OECD average. Tax expenditures from excise duties are mainly linked to environmental and health related items. The main sources are the excise tax on energy consumption, taxes on alcohol and tobacco, and a lower tax rate on diesel fuel than petrol. The variable-rate CO₂ tax is applied mainly to energy related activities, while none of the potential public revenue from sale of permits in the emissions trading scheme is yet being exploited (see Chapter 3).

Achieving capital income tax neutrality

The general corporate and capital income tax law in Norway is fairly neutral, though the progressive tax on incomes has caused problems with respect to the large gap in marginal rates on labour and capital income. The 1992 tax reform established a dual income tax system in Norway, motivated by the need to keep the capital income tax low in a small open economy faced with international capital mobility, the possibility of aligning the personal capital income tax rate with the corporate tax rate to reduce investment distortions and limit the scope for arbitrage and the political economy observation that it is easier to preserve a broad and fairly neutral capital income tax base when the capital income tax rate is not too high (Sorensen, 2005). However, tax treatment of small enterprises became a problem. Between 1992 and 2002, the wedge between the top effective marginal rate of tax on labour income and the tax rate on capital income rose from 28% to nearly 37%, increasing the incentive to transform labour income into capital income for tax purposes. By 2000, 80% of active shareholders subject to income splitting had negative calculated personal income. The tax reform of 2006 aimed to correct this, abolishing the existing rules for “active owners” and replacing them with a tax on above-risk-free return on the share income of personal shareholders and partnerships. At the same time, the top marginal tax rate on labour income was reduced to 54.3% and the tax on dividends rose to 48.2%. This remains high by OECD standards, however. Reducing

Figure 2.8. Effective tax rates on housing are low



Source: Ministry of Finance.

StatLink  <http://dx.doi.org/10.1787/808738563518>

further marginal tax rates at high income levels could diminish the incentive to misreport labour income as more favourably treated capital income and at the same time increase the private returns to tertiary education (Boarini and Strauss, 2007), which are relatively low.

The main deviation from neutrality which emerges from the system described above is the virtual tax exemption given to income from housing property, through personal income tax deductibility of mortgage interest payments without any associated tax on imputed income from ownership, and the bias in favour of house ownership implicit in the wealth tax (Figure 2.8; see also Annex 1.A1). The taxable value of wealth varies strongly between its different components. Wealth held in housing has, up to now, benefited both from a much reduced rate applied to it, and from the absence of any systematic revaluation of houses themselves, though the 2010 budget does provide for a programme of revaluations. As well as distorting investment and savings incentives, this tax treatment of housing can also contribute to volatility in house prices and increase the likelihood of bubble behaviour, as discussed in Annex 1.A1.

Box 2.5. Summary of longer-term fiscal policy recommendations

- To ensure fiscal sustainability in the long run, the pension reform should be completed soon. This includes aligning the disability pensions schemes with the principles of the old-age social security pension reform. The disability and sickness leave schemes need to be improved more in general, by strengthening eligibility criteria and follow-up of recipients. In addition, employers should co-finance sickness and disability benefits and a reduction in the rate of long-term sickness benefit should be considered.
- To increase the efficiency of public spending, the use of existing tools, such as regulatory impact analysis and cost-benefit analysis should be used systematically and given more weight in policymaking. Wide dissemination of information on performance of public services can also be useful in securing support for expenditure rationalisation.
- Manpower increases in the public sector, especially at local level, need to be better planned and co-ordinated. Further encouragement needs to be given to merging and rationalising municipal jurisdictions by strengthening financial and political incentives to rationalisation. Strategic correspondence between overall central government priorities and local preferences should be encouraged through appropriate financial incentives.
- To reduce expenditure growth in primary and secondary education, the trend towards reducing the number of schools should be encouraged by financing incentives that reward efficiency so that cost-ineffective schools are merged or closed. To increase the effectiveness of public spending in primary and secondary education, the current policy effort towards increasing the average competencies of Norwegian teachers must continue. Similarly, teachers and schools have to be made accountable for their results, using appropriate performance incentives.
- In tertiary education, a more transparent basis for the allocation of public funds to institutions is needed. The distribution of costs and benefits attached to free higher education needs to be the subject of more rigorous public analysis and public debate with a view to reform. Students should pay at least part of the cost of their studies, and the incentives in the student loan system could be improved by reducing the grant element while introducing an income-contingent repayment scheme.

Box 2.5. Summary of longer-term fiscal policy recommendations (cont.)

- Budget constraints on health care institutions must be made more stringent, and give incentives for the hospital structure to be rationalised. Major cost savings could be realised by centralising complicated surgery and closing down of the smaller units. Dissemination of more information on hospital performance could help convince public opinion of the reasons for some unpopular decisions.
- Activity-based financing needs to be adjusted so as to eliminate distortions and prevent over-supply of health services. The share of resources provided through such finance is to be reduced further, but the objectives and ambitions of the approach need to be set out clearly, and better communicated.
- Patient choice needs to be made more effective. This entails better signalling at GP level and better information dissemination. It may also involve an enhancement of co-payments. Greater use of co-payments should be considered, in particular in the elderly care sector, to enhance efficiency and equity.
- Co-ordination between municipalities and hospitals needs to be improved. Financial incentives need to be established for municipalities to accommodate patients who are ready to be transferred from hospital to less costly follow-up treatment in their local communities.
- Tax allowances and reliefs should be reviewed more systematically and integrated more closely into the budget process.
- Housing taxation should be reformed with the objective of re-establishing neutrality with respect to other types of investment. Reform of housing taxation should include measures to phase out the asymmetries resulting from the deductibility of interest payments on owner-occupied dwellings without taxing imputed rent, and from the remaining substantial discount applied to housing for the wealth tax. Higher fiscal revenues from reformed housing taxation could be used to finance a reduction of marginal tax rates at high income levels, thereby reducing the incentive to misreport labour income as more favorably treated capital income and also increasing the private returns to tertiary education.

Notes

1. This work also finds that some groups of the population face a higher probability to enter a disability benefit scheme or a lower probability to stay in employment after experiencing a health problem. There is however some variability across countries across patterns of disability receivers (in some countries for instance women and young individuals are more likely to stay in disability schemes, but not in others). In other countries people working with temporary contracts or in manual occupations tend also to remain less in employment after health problems.
2. The Norwegian funding system for higher education institutions (HE) includes both public and private institutions. The public HE institutions have a high share of public funding than the private institutions. The most common private income sources for the private HE institutions are tuition fees and other sources (e.g. external consulting, gifts, donations and R&D-activities).
3. Explicit links between the funding system and national higher education policies have been established as a result of the “Quality Reform” process, involving the establishment of a new agency for quality assurance, the Research Council of Norway, which allocates funds on a competitive basis, designating Centres of Excellence so as to give other institutions a benchmark for comparing their own achievements. Performance assessment is based on student assessments of courses, annual departmental or faculty self evaluations of academic performance and administrative efficiency, as well as on periodic external reviews of academic units.

4. The funding system was evaluated in 2009 by the Ministry of Education and Research based on input from the institutions and an external consultancy review (Econ Pöyry). The results from the evaluation were presented to the Parliament in the state budget for 2010. The main conclusion from the evaluation was that the impact of the funding model has been satisfactory (credits have increased as well as grades; research activity has also improved). Some minor adjustments to the funding system will be implemented in 2010.
5. A currently trend is for students to move to the big cities, a trend which may be accentuated by the fact that regional higher education institutions may be disadvantaged by the new funding system. When the number of students and “credit production” are the most important components of the financing system, this favours institutions with many students in each programme, making it difficult for institutions with a small number of students to maintain a sound financial position.
6. Life expectancy at birth is 1.5 years higher than the average, but high spending, high levels of education, low tobacco and alcohol consumption and a high standard of living can more than account for this difference, according to cross-section regression analysis reported in Joumard *et al.* (2008). Allowing for all these factors, life expectancy should be 1½ years higher than it actually is – a residual which is unexplained but which may be ascribed to inefficiencies.
7. While general practitioner density is not unusual, that of specialists is high. There does not seem to be a significant relationship between physician density and health outcomes (OECD, 2007b).
8. There are 60 official tax expenditures, plus 9 additional tax expenditures which are mentioned in the National Budget but not calculated.
9. Some examples of such allowances are the childcare expense deduction and the tax allowance for commuters’ daily work travel and visits to main residence, which were not regarded as tax expenditures until 1999. The same applies to the tax expenditure related to the geographically differentiated employer’s social security contribution. These tax expenditures are now some of the most significant tax expenditures in Norway.

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Chapter 3

Sustainable development: Climate change and fisheries policies

Sustainable development is a key theme in policy making in Norway. Although it owes a considerable part of its wealth to the carbon-based economy, Norway gives priority to the objectives embodied in the OECD Green Growth Strategy and sees itself as a pioneer in some areas. The sustainable development strategy, an integral part of the documentation for the 2008 budget, spelt out the key principles that were intended to guide policymaking and a set of quantitative indicators that are intended to give an indication of progress. Its focus on preserving natural capital and the precautionary principle can indeed be seen to be reflected in Norway's policy aims on climate change and on fisheries, two otherwise rather different problems. Another principle is the use of cost-efficient means to achieve these policy objectives. In many ways Norway has pioneered the use of such measures, introducing a CO₂ tax early on and adopting individual quotas in fisheries. But in other ways policy prevents them from playing their full role, exempting significant sectors from the CO₂ tax and now from the emission trading system, and restricting the tradability of quotas in fishing. This chapter explores these issues, noting that some potential conflicts between sustainable development objectives could be given fuller recognition, and that Norway can and should follow through more strongly the logic of its pioneering use of economic incentives to further sustainability goals.

The pursuit of sustainable development is an explicit part of the government's programme; the guiding principles were set out as part of the 2008 budget. It embodies the key aims of the OECD's green growth strategy both in trying to improve the environmental sustainability of economic development in Norway and in making a contribution, through supporting the development of new energy-related technologies, to green growth elsewhere and particularly in developing countries. This chapter is not a full analysis of the consequences of this policy which, in principle, has ramifications in a wide array of economic policies. Instead, after a brief outline of some key aspects of the sustainable development framework in Norway, the chapter covers two particular issues: climate change and fisheries.

Climate change and fisheries are in a sense almost polar opposites: the emissions from Norway's small population contribute little to global warming, though of course all countries large and small will need to act in order to reduce the problem. But Norway's economy is highly dependent on the petroleum industry, whose exports are obviously heavily implicated. On the other hand, the fishing industry, important in the past, is now of only marginal importance in the Norwegian economy; but, and by contrast, Norway has one of the largest fishing fleets in the world and the eleventh largest catch by weight (the 3rd largest among individual OECD countries after the USA and Japan). As the analysis below shows, in both areas other countries indeed have something to learn from Norway, even if Norway's policies are not always designed to be as effective as they could be and sometimes cause higher economic losses than might be necessary to achieve their objectives.

Sustainable development in Norwegian economic policy

The principles set out in the 2008 budget are probably the most explicit and highly developed incorporation of sustainable development considerations into declared economic policy aims in any OECD country (Box 3.1). This is a quite unusual arrangement in OECD countries. Another facet of sustainable development policy that seems unique is that in 2007 the Norwegian authorities invited a "Peer Review" of the programme by experts from abroad (admittedly they were largely Swedish civil servants); some of whose recommendations were taken account of in the 2008 budget (Docent *et al.*, 2007).

The premise of sustainable development is that public policy should pursue the overarching goal of evaluating measures in terms of a variety of long-term impacts that cannot be easily synthesised. Since the ministry of finance is generally the most powerful ministry, giving it responsibility for overseeing the sustainable development strategy is a good way to give the strategy a high priority in policy formation. Nevertheless, sustainable development will have the priority that policy statements imply, only if the internal organisation of the ministry in turn gives it such priority. A system of output-oriented budgetary management in the ministry (indeed in all ministries) might make it easier to change priorities in this way in addition to improving efficiency generally, as noted in the

Box 3.1. Priorities and principles in the Strategy for Sustainable Development

The government has identified seven priority areas in its strategy:

- International co-operation to promote sustainable development and combat poverty.
- Climate change, the ozone layer and long-range air pollution.
- Biodiversity and cultural heritage.
- Natural resources.
- Hazardous chemicals.
- Sustainable economic and social development.
- Sami perspectives on environmental and natural resource management.

And five principles against which to judge policy action:

- Equitable distribution.
- International solidarity.
- The precautionary principle.
- The polluter pays principle.
- Joint efforts (*i.e* by the whole population).

previous chapter. The Peer Review (Docent *et al.*, 2007) suggested that it might be more effective to locate the finance ministry unit responsible for sustainable development in the budget department of the ministry rather than in the economic department, on the grounds that there is a more direct link with concrete policy measures and expenditure; however, it noted that there were arguments that justified the current choice. According to the Peer Review, unless the budgetary process “starts with the goals and ambitions formulated in [the sustainable development strategy]” these goals will not be pursued to the degree that programme implies.

Currently, the annual budgetary process does not start with a full review of sustainable development, rather a report on progress forms part of the background documentation, being prepared after all key decisions have been taken. Although regular analytical work in the ministries can still influence policy, there is a risk that such routine reports eventually focus more on “box-ticking” than developing arguments for policy change. Since priorities and problems in this area change only slowly, and also because most related policies tend to be slow-acting and need stability, an annual in-depth review would indeed be unnecessary. But to maintain the strategic priority implicit in its place in the 2008 budget it would be a good idea to follow the recommendation of the Peer Review at least periodically, with a report that explicitly sets out to match specific policies against results obtained and deriving consequent policy changes where necessary. There is an opportunity for this in 2011, when the strategy for sustainable development is to be revised (revisions are due every 4 years).

Indicators for sustainable development

Norway has been officially investigating alternative measures of sustainable national income for some time. In fact, as the Peer Review pointed out, Norway has been a driver internationally in the OECD and other bodies to develop analytically coherent and internationally accepted indicators. A commission was appointed in 2004 to decide on a

set of indicators. In its report (Ministry of Finance, 2004) the commission chose 16 indicators intended to complement standard economic data with a view to indicating whether a broad definition of national wealth (i.e. that which could be passed on to future generations) was being maintained. Public consultations were also involved and in the end a set of 18 indicators was chosen, grouped under a number of key headings (Box 3.2). The European Commission uses about 30 indicators of a similar type (the “Level 2” indicators, see EU, 2009a).¹

Box 3.2. Norwegian indicators for sustainable development

International co-operation for sustainable development and combating poverty:

- Norwegian official development assistance, in NOK and as percentage of gross national income.
- Imports from least developed countries and from all developing countries.

Climate, ozone and long distance transport of air pollution:

- Norwegian emissions of greenhouse gases compared with the Kyoto Protocol target.
- Emissions of NO_x, NH₃, SO₂ and NMVOCs.

Biodiversity and cultural heritage:

- Bird population index – population trends for breeding bird species in terrestrial ecosystems.
- Proportion of inland water bodies classified as “clearly not at risk”.
- Proportion of coastal waters classified as “clearly not at risk”.
- Trend in standards of maintenance of protected buildings.

Natural resources:

- Energy use per unit of GDP.
- Size of spawning stock of Northeast Arctic cod and Norwegian spring-spawning herring, compared with the precautionary reference points.
- Irreversible losses of biologically productive areas.

Hazardous chemicals:

- Potential exposure to hazardous substances.

Sustainable economic and social development:

- Net national income per capita by sources of income.
- Trends in income distribution.
- Generational accounts: need to tighten public sector finances as a share of GDP.
- Population by highest level of educational attainment.
- Disability pensioners and long-term unemployed persons as a percentage of the population.
- Life expectancy at birth.

Source: See Brunvoll et al. (2008).

These indicators are used in the annual report on progress on sustainable development for the budget. As a relatively new procedure, its practical impact on policy has yet to be established, and a “some indicators are better than no indicators” approach is

a reasonable way to start. The current set is a mixture of outcomes, inputs and risks, which may not always be appropriately dimensioned. No compact set of indicators can capture the subtleties (and imprecision) of the concept of sustainable development; sensible guidelines to future revisions to the set of indicators can be found in Alfsen and Moe (2008), suggesting that they should focus on total wealth, including both wealth which can be given monetary value and other forms. The existing indicators were developed in this framework but, nevertheless, there are some dangers in taking some of them too seriously as policy targets. For example:

- Development assistance expenditure is a classic case of using an input indicator because the appropriate output indicator – which would be development progress due to Norwegian assistance – is difficult to measure.
- Energy use *per se* may, on the one hand, be irrelevant once account is taken of the problems it generates (greenhouse gas and other emissions, loss of habitat) but, on the other hand, if it is relevant, why should it be per unit of GDP and not overall use?

This is not to say that input indicators have no value, but that targeting them may be pointless unless at least some information is available on results obtained.

The priority area “Sami perspectives on environmental and natural resource management” was singled out by the Peer Review as a potential source of fragmentation, since in principle these perspectives would already be relevant under all the other headings. The Peer review suggested that it be dropped as a specific priority, but it has been retained. This perhaps reflects how difficult it can be to avoid equating socially (or politically) *desirable* with socially *sustainable*. A related area where there is a clear social (or at least political) preference, and which could arguably be related to some form of sustainability, is regional policy. In fact the political importance of maintaining population in certain areas that would not be economically viable, without public intervention of some sort, has a significant influence on many policies from education and health to transport and climate change. Taking account of this in the sustainable development indicators might not improve policy making but it might make parts of it more transparent. As Alfsen and Moe (2008) note, none of the key indicators should be reduced below critical levels – implying that critical levels should be defined for each of the indicators including regional factors. Furthermore, it also follows that a fall in any individual indicator is not necessarily undesirable if it is not critical and is compensated by an improvement elsewhere, but what

Box 3.3. Recommendations on the sustainable development strategy

- While maintaining a variety of indicators for their heuristic or public consciousness role, be clear on which are outcome indicators which can be targeted and those which are input or intermediate indicators, such as development assistance expenditure or import volume, which should not be targeted *per se*.
- Establish ways in which trade-offs and conflicts between different indicators can be assessed and managed.
- If Sustainable Development, or Green Growth, is to be a genuine over-arching goal, ensure that the budgetary and policymaking process does, at least periodically, start with an assessment of Sustainable Development needs.
- Apply the tools of Regulatory Impact Analysis and Public Expenditure efficiency assessment to Sustainable Development policy.

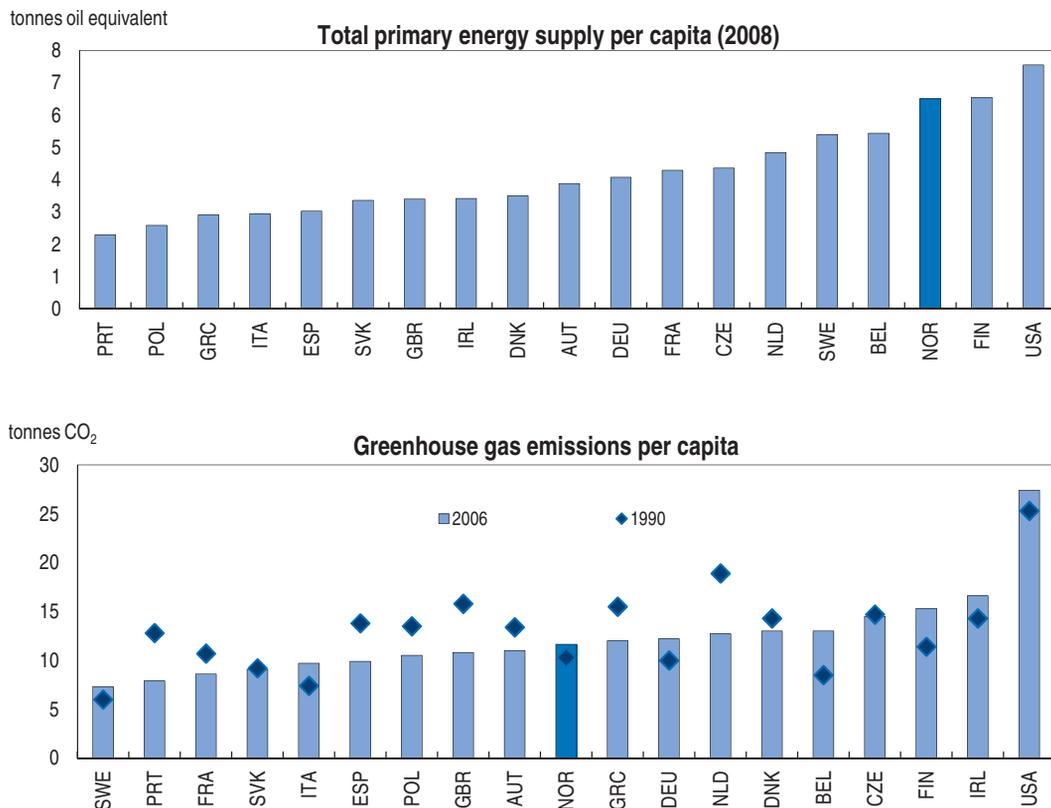
is the trade-off between different indicators? This is another area that deserves attention if the sustainable development indicators are to be taken seriously as a check on policy.

Climate change

Norway is energy-intensive with relatively high per capita greenhouse gas emissions

The case of climate change policy in Norway is interesting because, as a small country, its own carbon or greenhouse gas (GHG) “footprint”, at least if derived from the consumption activities of Norwegians, is quite small by global standards. On the other hand, its economy is highly dependent on the petroleum industry so it exports products which will inevitably generate a considerable amount of greenhouse gases. Norway is a relatively energy-intensive country. In terms of per capita greenhouse gas emissions, it stands out somewhat less but still appears by no means a “clean” country, compared with Sweden, for example or even Denmark which has no hydro power (Figure 3.1, Figure 3.2). The high energy intensity is due both to the abundance of hydroelectric energy, and to the petroleum sector. The main emissions associated with petroleum of course occur in countries to which Norway supplies energy, but the extraction and supply of oil and gas is a major emitter in Norway, and increases in these emissions are the main reason why Norway’s domestic emissions in 2008-12 will far exceed its target² under the Kyoto Protocol. “Fugitive emissions” such as flaring account for over 10% of GHG emissions from the energy sector. The importance of the petroleum sector also means that one of the main

Figure 3.1. **Total primary energy supply and GHG emissions per capita, Norway and selected countries**

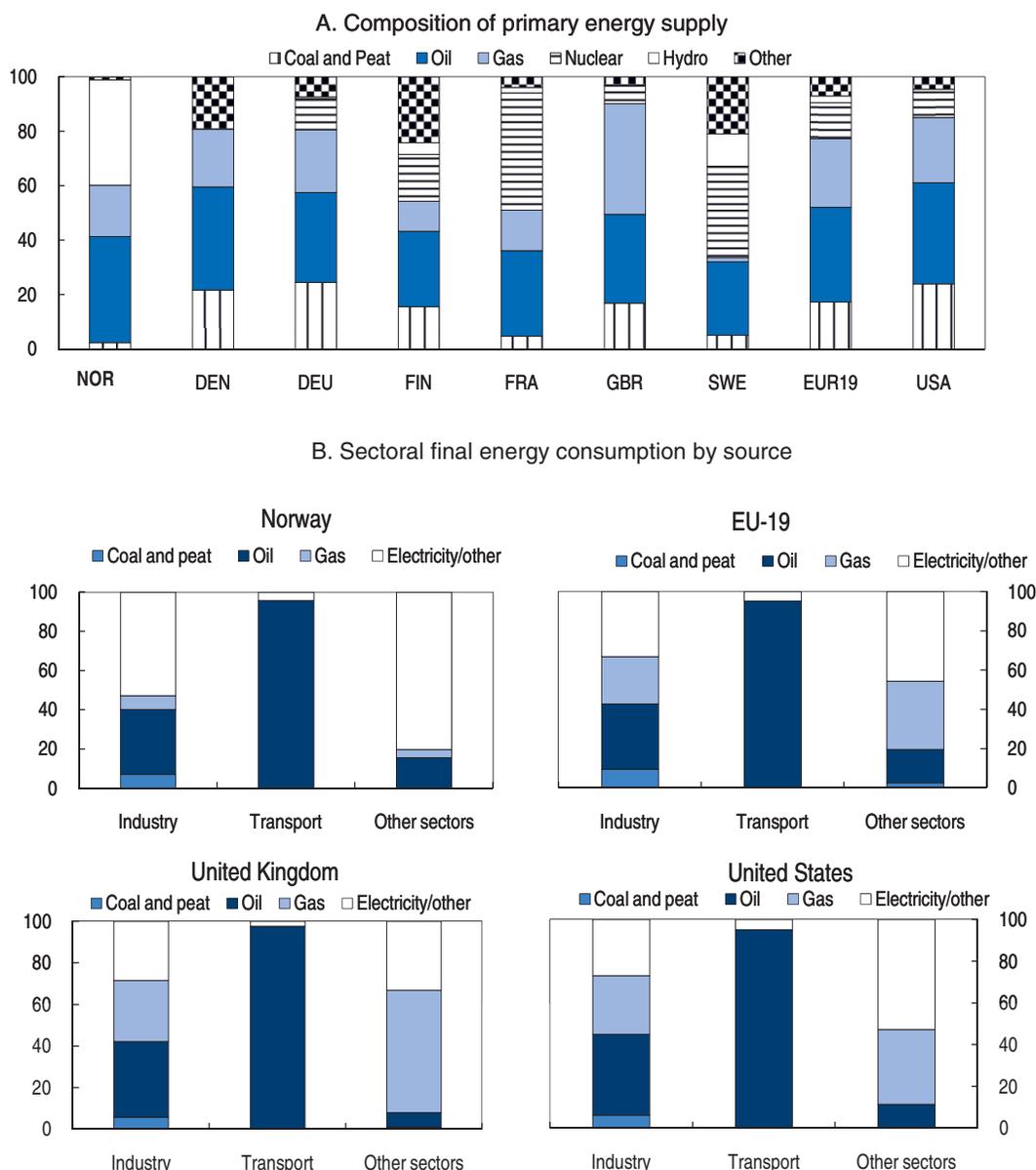


Source: IEA (2009) for (Panel A) and European Environmental Agency (Panel B).

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Figure 3.2. **Energy by source**

% of total, 2008



Source: IEA (2009).

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ways in which Norway will lose economically from a successful curb on global GHG emissions is through a terms of trade loss as the price of hydrocarbons would be significantly lower than otherwise.

Cheap hydroelectric energy has been important in developing certain specific industries, especially aluminium and metal alloys. In most cases raw materials other than energy have to be imported and production sites are remote so transport costs for the product are high. So, despite cheap energy, many plants in these industries are not particularly profitable and have been supported through labour subsidies or other regional policy tools. However, they are also significant emitters of CO₂, not because of the energy

consumed but because of emissions due to the chemical processes involved. Even though their emissions have not been subject to CO₂/GHG taxes, as discussed below, their GHG emissions have declined significantly over the past 20 years, unlike that in most other categories. Aside from those in the petroleum sector, it is emissions associated with transport that have risen particularly strongly as rising incomes lead to more travel and more emission-intensive modes of travel. Contrary to the process industries, emissions by much of the transport sector (with the notable exceptions of international air travel and shipping) have been subject to the CO₂ tax, at relatively high rates.

Norway is an enthusiastic supporter of international action on climate change

Norway has a record of activism in trying to develop international action on climate change. It was an enthusiastic supporter of the 1992 UN Framework Convention on Climate Change and was one of the first countries to introduce a CO₂ tax, in 1991. It also supported the development of the Kyoto Protocol to the convention, ratifying it in 2002 at the same time as European Union countries. Since then, its domestic emissions have risen further, but Norway has announced that through purchasing offsets that reduce emissions in other countries it aims to effectively reduce its emissions by 10% relative to the Kyoto target (Box 3.4).

Box 3.4. Key climate change policy targets

	Norway's GHG emissions (thousand tonnes CO ₂ equivalent) (as % 1990 level)	Memo: Annex 1 countries emissions (as % of 1990 level)	
1991	United Nations Framework Convention on Climate Change. Annex 1 parties agreed to work to reduce GHG emissions, recognising that "the return <i>by the end of this decade</i> to earlier levels of anthropogenic [GHG emissions] ... would contribute to modifying [long term emission trends]" (emphasis added)	47 686 (96.0)	(97.7) (excluding former CMEA: 99.8)
1997	Kyoto Protocol. Norway committed to average GHG emissions (on a net basis, <i>i.e.</i> after adjusting for use of flexible mechanisms such as emission trading and the CDM) in 2008-12 no more than 1% above the 1990 level.	52 647 (105.9)	(93.2) (excluding former CMEA: 106.6)
2008	Norway committed to over-fulfil the Kyoto commitment by limiting its net emissions (after adjusting for use of Kyoto mechanisms) to 91% of the 1990 level. Norway announces a target for 2020 of net emissions at 70% of the 1990 level and zero net emissions by 2050. The target date for "carbon neutrality" is to be brought forward from 2050 to 2030 if enough other countries adopt similar ambitious targets.	53 848 (108.4)	(97.0, 2007 data) (excluding former CMEA: 111.0)
2009	The re-elected government announces that, in the context of an ambitious agreement at the Copenhagen climate change conference, it would reduce the target for net emissions in 2020 to 60% of their 1990 level.		

Data: Statistics Norway, UNFCCC.

At the same time as declaring, in early 2008, that it would “over-fulfil” its Kyoto target, Norway announced emissions targets for dates further in the future. By 2020 it aims to have reduced net emissions by 30% compared with 2012 and that by 2050 it would reach “carbon neutrality”, i.e. that its net emissions (of all greenhouse gases, not just CO₂) would be zero. By “net” emissions is meant Norway’s contribution to global emissions, i.e. actual domestic emissions less offsetting reductions abroad achieved through mechanisms such as trading under the Kyoto Protocol or the Clean Development Mechanism. Prior to the Copenhagen conference the government announced that it would aim for a lower target, 60% of 1990 emissions, if this contributed to an ambitious global agreement. As is the case for its Kyoto period target, Norway intends to use emissions reductions abroad as credits to offset domestic emission that will still be positive in 2050. The government has not yet set any specific objective for domestic emissions, though it currently estimates that they could be reduced by some 15-17 million tonnes CO₂-equivalent in 2020 relative to a baseline which projects an increase of some 9 million tonnes over 1990 levels. With this implied level of domestic emissions, reaching the 30% target in 2020 would require 7-9 million tonnes of offsets, 14-18% of 1990 emissions. The government has a study under way, in its “Klimakur” programme, intended to calculate the marginal costs of various kinds of action with a view to using this as an input to policy formation.

Norway’s contribution to global mitigation efforts

One of the aims of Norwegian policy in announcing ambitious emissions objectives for the future is an attempt to lead by example, to encourage other countries to adopt serious programmes for emission reduction. It does this even though such objectives could be costly to meet with essentially no benefit for Norway from its own action unless other countries do indeed follow the lead. In fact, even if other countries do take sufficient action to avoid significant climate change, there may still be little benefit for Norway. This is because the costs to Norway of the direct effects of climate change are not clear (indirect repercussions, through migration for example, could be important, independently of these direct effects). It is true that the loss of the Gulf Stream would be catastrophic but estimates of the likelihood of this have diminished in recent years. Some parts of Norway are vulnerable to sea level rise also, but these are not too large, although they include important populated areas. A significant rise in average temperatures would obviously change the way of life if it reduced snow cover a lot, but this might bring benefits as well as costs. As everywhere, the risk of extreme weather events would rise too. Overall, given the significant costs of obtaining a carbon-neutral economy (even if they are not particularly large set against Norway’s current and expected future wealth, although Norway would suffer significant terms of trade losses – unlike most OECD countries), Norway’s objectives for its climate change policy have to be seen as some combination of pure altruism and a strong precautionary approach. Both of these are consistent with the policy approach embodied in Norway’s agenda for sustainable development. But they both also require an enduring political commitment since, while the overall economic costs are not large, decisions that affect particular sectors quite significantly have to be made at some point.

A small country’s influence in climate change policy developments may not be very large, although such things are obviously hard to measure. Norway’s influence is enhanced by its reputation for fairness and transparency in other areas, but also no doubt because its status as a major oil exporter raises its profile – and enhances its credibility given its material self-interest in maximising petroleum revenues. Recent OECD work suggests that

only large coalitions of countries could get sufficient return on joint emission reduction actions to make the formation of a coalition worthwhile and even then it would obviously be still subject to free rider problems without any mechanism to enforce compliance (OECD, 2009a). But Norway may be having some impact by building influence in successively larger coalitions. Firstly, the Nordic countries themselves often have a similar outlook on environmental issues and are sensitive to each others' policies.³ Secondly, three of these countries are in the European Union and can exert influence over time on the objectives adopted by the Union.

Another way Norway works to build its influence is through measures in developing countries. First by making it clear that it believes that richer countries should provide finance for "capacity building" measures and also by participating in Clean Development Mechanism (CDM) projects that both provide Norway with offsets and frequently provide the target country with technological transfer. Under the CDM, countries subject to emission ceilings under the Kyoto Protocol indirectly finance projects in countries without emissions ceilings (but which are parties to the Protocol); the finance is provided by purchasing credits that represent the amount by which the project reduces GHG emissions below what they would otherwise have been. These reductions then count, for Kyoto purposes, as if they were reductions in the purchaser's own emissions. Recently Norway has helped to launch a United Nations programme aiming to Reduce Emissions from Deforestation and land Degradation, the REDD programme, in developing countries. Such action is not eligible for consideration under the CDM. A significant part of Norway's contribution to the REDD programme involves helping to set up procedures whereby actions to reduce the emissions caused by deforestation and degradation could be verified and certified so that they could count towards global action in a similar way to CDM projects. Deforestation and land degradation in developing countries are important sources of GHG emissions and developing techniques that could give landowners and others a market incentive to avoid them would be a significant step. Norway's proposal on REDD recognises that the key issue is to overcome the major problems in monitoring, reporting and verification for such projects.

Both game theory and simple geopolitics would suggest that in practice it is difficult for Norway to pursue its agenda for global action on climate change independently of other issues. From fish to finance, Norwegian economic policy is to a greater or lesser extent constrained by developments in neighbouring countries, notably Russia and the European Union. One of the key differences between fisheries policy, discussed later in this chapter, and climate policy is that Norwegian actions on fisheries have a direct effect on specific countries, whereas this is not true for GHG emissions policy. This actually simplifies the analysis of policy for climate change: Norway can essentially influence other countries only by example or persuasion, not by any kind of potential sanctions.

One way in which Norway could use its reputation, but within its existing policy, to improve sustainability is in improving the system of verification of additionality in "offset" actions taken in countries that have not committed themselves to an emissions ceiling. Additionality is important because, if offset projects serve only to help reduce emissions that would have been eliminated anyway, or if they are replaced by emission increases elsewhere, they can severely undermine the objective of reducing global emissions. The use of the CDM by Norway and other countries is subject to its inherent weaknesses related to the difficulty of ensuring that emissions reduction associated with a particular project

really do represent cuts in overall emissions below what they would have been, as well as potential perverse incentive effects (OECD, 2009a: Section 4.3).

The manner in which the GHG-neutrality target is defined is an interesting example of leading by example. Norway's policy commits it to GHG-neutrality by the year 2050, already a potentially costly objective. In addition, if a good number of other countries also commit themselves to ambitious policies, Norway will bring forward its own target to 2030. In fact, if many significant emitters of GHG really did put themselves on a path leading to GHG-neutrality by 2050, the marginal benefit of Norway doing so, and of doing it earlier, would be diminished; furthermore, while Norway could use purchases of emission reductions abroad to achieve unilateral GHG-neutrality, this would be much more expensive if many countries are doing the same thing, as considerably lower net domestic emissions would be required. Thus, under the circumstances in which the 2030 target would be adopted, it would be both substantially more costly and less necessary. As an announcement device, provided it is credible, it is therefore quite powerful.

However, to be credible it has to be feasible. As Box 3.4 shows, Norway's declarations have increased in ambition through time, as its actual emissions have risen. This is not far out of line with the overall group of Annex 1 countries, once the former centrally planned economies (whose emissions dropped radically once their highly inefficient heavy industries were closed down) are removed from the comparison.⁴ Emissions have at least stabilised in recent years and did fall as the recession took hold. And overall emissions intensity – the quantity of emissions per unit of GDP – has fallen by over one third since 1990. Rising domestic emissions are perfectly consistent with meeting the Kyoto target (because a high-abatement cost country such as Norway would be expected to use mechanisms that allow it to promote emission reductions in other countries). But the apparent inability to cut domestic emissions significantly so far, despite good intentions, is a reminder that politically difficult choices are involved; furthermore, viewed from abroad, it may weaken the leadership effect of Norway's ambitious targets on effect on other countries. It is therefore important for Norway to adopt efficient domestic measures early, lest excessive costs lead to public resistance to the further measures necessary to meet even the current targets.

Policies to reduce emissions

Norway employs a wide range of measures to reduce emissions (Box 3.5). As far as their impact on emissions up to about 2003 is concerned, they are dominated by two very different measures: the CO₂ tax and the voluntary agreement with the aluminium industry (Table 3.1). It should be noted that the CO₂ tax is not exactly a tax on CO₂ emissions but an excise duty on certain products whose combustion emits CO₂. In addition to considerable variation in the rates applied (Table 3.2, Figure 3.3), it has never been applied to industrial processes and some energy-related emissions from some obvious emitters: refining and petrochemicals, coke ovens, iron, steel, cement and glass production, for example.

The figures in Table 3.1 are based on very different kinds of evidence for the different measures, which is worth summarising to indicate how difficult policy assessment can be. The impact of the CO₂ tax on for land-based emissions is based on a CGE model largely calibrated on 1992 data and looking at changes in emissions over the period 1990-99 (Bruvold and Larsen, 2002). The low estimated price elasticities in sectors to which it is applied and the fact that many sectors were exempted or paid lower rates explain the low impact; this is an *ex ante* estimate of the likely impact of the tax rather than an *ex post*

Box 3.5. Main policy measures to reduce GHG emissions

Taxes

- On emissions:
 - ❖ CO₂ tax.
 - ❖ Hydrofluorocarbon and Perfluorocarbon tax (tax on production, tax credit on elimination).
- Other taxes:
 - ❖ On certain chemicals.
 - ❖ On waste disposal.
 - ❖ On landfill (differentiated according to standards at disposal site).
- Other taxes with likely incidental effects on GHG:
 - ❖ On the purchase of new cars (differentiated according to expected CO₂ emissions).
 - ❖ On lubricating oil, beverage containers.
- Regulatory and other measures:
 - ❖ General permit system for emitters of pollutants.
 - ❖ Requirement to collect methane from landfill, prohibition on depositing wet organic waste.
 - ❖ Require carbon capture and storage for new gas fired electricity generation.
 - ❖ Target the development of wind power.
 - ❖ Promote use of heat production from biomass.
 - ❖ Promote energy saving through information and educational programmes.

Table 3.1. Policy measures, estimated effect on domestic emissions

Million tonnes CO₂ equivalents reduction per year

	1995	2000	2005	2007	2010	2020
Directly related to climate change:						
CO ₂ tax offshore	0.6	3.0	3.0	4.5	5.2 ¹	6.9 ¹
CO ₂ tax onshore		0.8	0.8	0.85	0.85	0.85
Requirement to collect land fill gas	0.2	0.4	0.4	0.4	0.4	0.4
Other measures in the waste sector			0.1	0.1	0.1	0.5
Tax and recycling schemes on HFC			0.3	0.5	0.5	0.5
Climate change agreement with aluminium industry ²	0-1.3	0.5-2.7	1.6-4.5	1.6-4.5	1.5-4.2	1.8-4.3
Road transport measures ³					0.4	0.7
Other regulations:						
VOC regulation offshore			0.2	0.2	0.3	0.1
Voluntary reductions:						
SF ₆ reduction, magnesium production	1	1.4	1.8	2.1	2.1	2.1
N ₂ O reduction, production of nitric acid	0.7	0.6	0.5	1.2	1.2-1.6	1.2-1.6
Use of bi-carbon in cement production			0.13	0.13	0.13	0.13
Sum of implemented policy measures		5-7.2			8.6-11.7	11.5-14.6
New policies and measures post 2008:						
Emission trading scheme					0-0.3	0-0.3
Consensus with the processing industry 2009					0.2	0.2

1. Includes combined effect of CO₂ tax and EU emission trading system.

2. The lowest number reflects direct effect of the agreement, while the highest estimate includes voluntary measures taken before adopting the agreement in 1997.

3. Biofuel requirement and CO₂-related tax on new passenger cars.

Source: Norway's fifth national communication under the UNFCCC, Table 5.5.

Table 3.2. **The evolution of the carbon tax, 1991-2009**

	Offshore petroleum	Petrol	Diesel	Mineral oil	Heating oil	Coal, coke	Fishing industry	Air transport		Sea transport	
								International	Domestic	International	Domestic
NOK per litre unless otherwise specified											
1991	0.60	0.60	0.30	0.47	0.47	–	–	–	–	–	–
1992	0.80	...	...	...	...	0.30 /kg	–	–	–	–	–
1993	...	...	...	0.40	Abolished	...	–	–	–	–	–
1999	...	0.92	...	0.46	–	...	–	0.26 (then removed)	0.26	–	0.26
2001	...	0.72	...	...	0.19	...	–	–	...	–	...
2003	...	...	...	...	...	Abolished	–	–	...	–	...
2006	...	...	...	0.46	...	–	–	–	0.46	–	0.46
2008	...	...	...	...	...	–	–	–	0.56	–	...
2009	0.54	0.84	0.57	...	0.87	–	–	–	...	–	...
memo: other taxes (2009)		4.46 ¹	3.50 ¹	VAT							

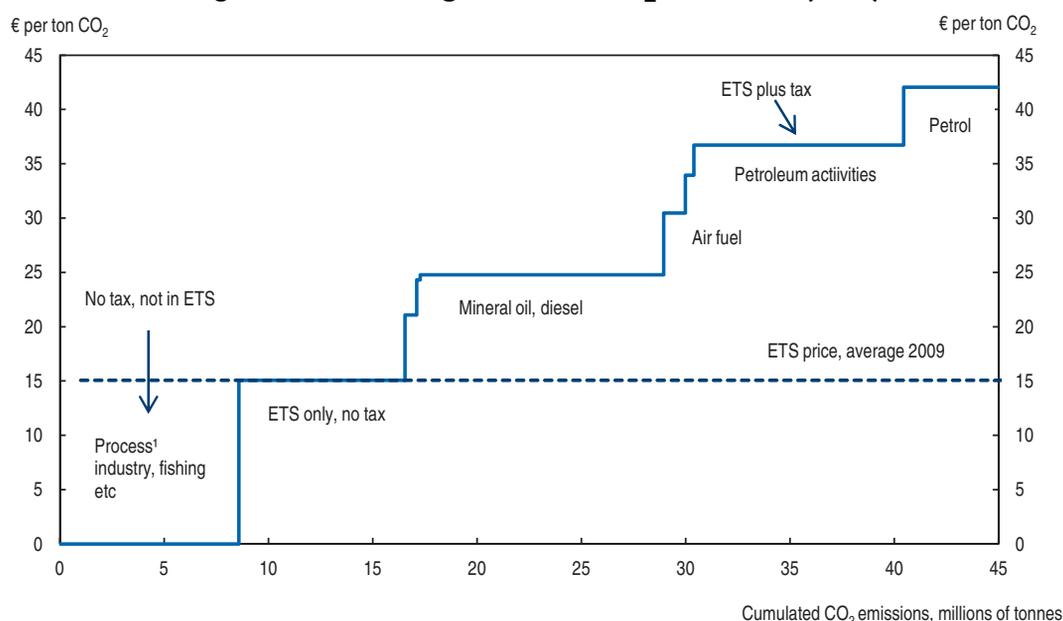
Note: CO₂ tax is not payable on natural gas as transport fuel.

– exempt.

... tax rate is indexed on inflation.

1. On sulphur-free fuel.

Source: Ministry of Finance.

Figure 3.3. **The marginal cost of CO₂ emissions (2009)**

1. Process industry concerns mainly aluminium, ferro alloys and fertilizers.

Source: Ministry of Finance.

StatLink  <http://dx.doi.org/10.1787/808800232123>

assessment. On the other hand, the significant impact of the tax on offshore emissions is because companies and the Energy Ministry report that the action that was taken to reduce flaring and to capture and reinject CO₂ was induced by the CO₂ tax. With the high degree of state involvement in the production of petroleum, it is hard to separate cause and effect here. Furthermore, gas export contracts specify that delivered gas should have a CO₂ content of no more than 2½ per cent while the gas in this field has a natural

CO₂-content of around 9%. Nevertheless, there was some clear influence of the CO₂ tax as, despite a strong official anti-flaring policy beforehand, emissions from flaring fell substantially once the tax was introduced; secondly, while the CO₂ tax did not change the incentive to *separate* CO₂ from natural gas, it was only the tax that made it rational to consider re-injecting it rather than emitting it to the atmosphere.

The impact of voluntary agreements is particularly difficult to assess since the agreements themselves can often be subject to gaming, whereby the industries concerned try to convince the authorities that abatement costs are higher than they actually are so that they can appear to be taking costly action, or that action they are taking would not have occurred without the agreement. This is a likely tendency even when companies are also genuinely interested in effective action. The government assesses that a significant part of the reduction in emissions up to 2003 in the aluminium industry was due to action that was actually taken before the voluntary agreement was finalised. These emissions (of perfluorocarbons, CF₄ and C₂F₆) fell by more than half between 1990 and 1997, the year of the agreement. The 2004 voluntary agreement included targets for process industries which were omitted from the Norwegian emissions trading scheme as introduced by legislation in 2005, the first plans for which, in a 2002 White Paper, were more comprehensive (Box 3.6).

Perfluorocarbons and hydrofluorocarbons provide an interesting example of a way to implement a tax when it is costly to measure emissions directly. Further reductions after 2003 have been encouraged by a tax on both production and imports of these chemicals, but this is offset by a tax credit when they are directly eliminated so that – provided the monitoring system is effective – only gases that are left to escape end up paying the tax. This tax was set at a CO₂-equivalent rate similar to that on diesel oil.

Other measures that seem to have had a significant effect on emissions, mainly of methane, are regulatory actions in waste disposal that combine a requirement to collect methane gas from landfills, introduced progressively as from 1998, and a tax on the final treatment of waste introduced in 1999. Also, measures have targeted particular sources of emissions, by agreement with industry. This kind of intervention may be simpler in Norway than in some countries because the emission source concerned is limited to a small number of companies or installations, sometimes only one in each industry. The impact is however difficult to assess due to asymmetric information between the parties.

Technology development: Carbon capture and storage

At a global level, the development of carbon capture and storage (CCS) technology would allow the use of fossil fuels at a much reduced environmental cost, especially for carbon intensive coal and non-conventional oil, of which there are large reserves. In Norway itself coal and non-conventional oil are largely irrelevant but CCS could nevertheless be useful in reducing emissions from oil and gas production and potentially some industrial processes and gas-fired power generation and in refineries. A small number of facilities are already operating, one of which is in Norway where excess CO₂ in natural gas from the Sleipner field has been separated and injected into a sandstone formation *in situ* since 1996, the world's first commercial CCS project; another, in Snøhvit, has been operating since 2007. Estimates of the likely costs per tonne of CO₂ captured, transported and sequestered are currently quite high, at least \$50 per tonne for various coal and gas technologies and more for non-conventional oil (IEA, 2008; Alberta, 2009). But these are estimates of what costs will be once CCS technology is developed and are of

Box 3.6. Aspects of CO₂ emissions trading in Norway

The 2005 Greenhouse Gas Emissions Trading Act introduced CO₂ trading to Norway for an initial pre-Kyoto period 2005-07, similar to the EU ETS. In fact it was always expected that it would be linked to the EU system, though this link was not initially in place.

Particularities of the system were its relatively limited coverage and the method for allocation of emission permits.

Although initial studies had suggested that 80% of total GHG emissions could be covered by a trading system (Stiansen, 1999, quoting a study by the consultancy company ECON), the system as introduced covered no more than 20% of CO₂ emissions, less than 15% of total GHG emissions. It initially excluded sectors that were subject to the CO₂ tax – but not including all sectors not covered by it – but subsequently (from 2008) the offshore petroleum sector was brought in, and is now both in the trading system and subject to the tax (at a rate reduced by an amount similar to the recent level of the CO₂ price in the EU ETS).

Stiansen (1999), discussing the mandate of the commission set up in 1999 to advise the government on the introduction of a trading system, emphasised the key problems an allocation system has to address, in particular the need not to discriminate against early movers – installations that have already invested in reducing emissions – or potential new entrants. Any form of grandfathering necessarily discriminates against new entrants and there are both political economy and efficiency arguments against simple grandfathering when a cap and trade system is first introduced.

The Norwegian system allocates allowances free to installations based on their historical emissions, which penalises early movers; this could have been avoided by allocating allowances on the basis of emissions for each installation calculated in proportion to their output rather than their emissions, as in some already existing schemes.* The authorities argue that pure grandfathering was chosen because it was important to have an allocation mechanism that was transparent and unambiguous; but alternative approaches are not very complicated in theory and their existence in other contexts suggest they are feasible in practice too.

* The Swedish NO_x tax and refund system, introduced in 1992, provides an example of how to provide both an incentive to reduce emissions and a reward to early movers. Energy producers are taxed pro rata on actual emissions while tax credits are given as a function of useful energy produced. Installations with above average emission efficiency are thus net beneficiaries of the system. The current proposal for CO₂ trading in the United States adopts a similar approach by allocating any grandfathered allowances on the basis of emissions under best-practice technology rather than actual emissions.

course highly uncertain because the different technologies required are still in their infancy; no complete combustion plant with integrated CCS has yet been built. In effect these estimates are based on the assumption that further R&D and operational experience will bring costs down substantially.

The state, together with the Norwegian oil company Statoil (of which the government owns 67%), is going to build an experimental complete carbon capture system for the Mongstad refinery. The intention is to install two different technologies for separating CO₂ from post-combustion gases and use the test facility to assess them. Intended as a public-private partnership, up to 80% of the cost (about \$700 million for the test facility) is likely to be financed directly by the government with nearly all the rest financed by the publicly-

owned Statoil; the only real private involvement is of Shell (the existing minority partner in the refinery), with a 2% share.

The precise manner of cost-sharing has yet to be settled. According to the agreement between the state and Statoil of 2006 (“Gjennomføringsavtalen”) Statoil will contribute the equivalent of what it would have paid in CO₂ tax on the emissions avoided, with the state financing the rest. Provided this included the cost of emission allowances in the trading system, since this is what is applied to the rest of the petroleum sector, this would make a sensible minimum contribution. In this way, the state pays the whole capital cost in excess of the carbon tax revenue, but it would have no direct share in any upside benefits to the company, except through its large equity share.

One of the technologies to be tested (Amine) is supplied by a Norwegian company and is relatively mature; the other (Chilled Ammonia) is supplied by a French company and is where Statoil Hydro expects more improvements from learning by doing to be available. It is intended that the intellectual property rights from improvements will be the property of the companies concerned but that they are to make the results openly available. To ensure that the results have broad relevance, the centre will test capture of two types of flue gas, making the testing relevant also for coal power plants.

Apart from its main purpose in developing and testing technologies, such a facility can play an important role in establishing the cost of this type of CCS.⁵ Although cost estimates exist, as mentioned above, it is not clear how reliable they are, since Statoil itself expects that the initial level of costs in the experimental facility will be between 150 and 200 euros per tonne of CO₂ captured. (This compares with estimates in IEA (2008) of around 100 dollars already in 2010). Larger reductions than this would depend on future technical advances. For this reason, the experience gathered with the test facility should be valuable for energy planners.⁶

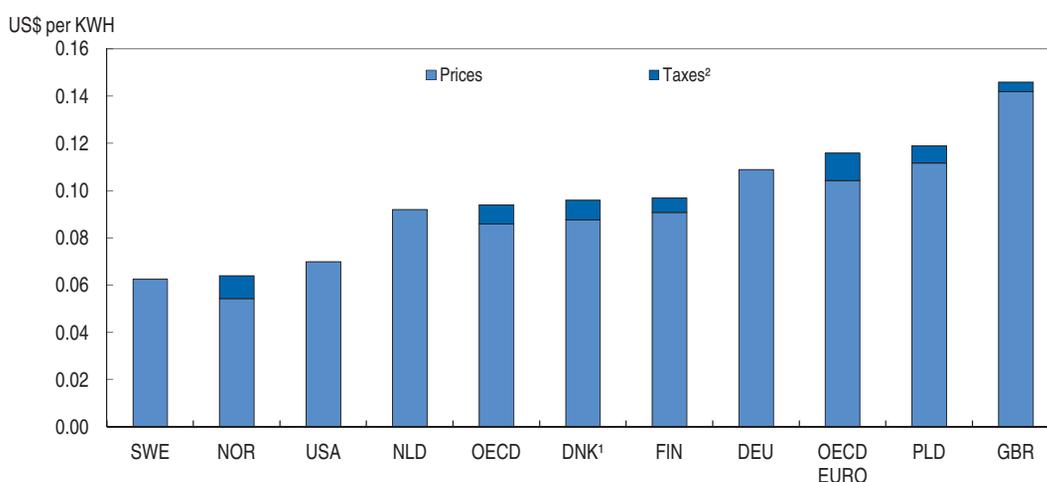
While the test facility is likely to be valuable, the longer term plan is to install a full carbon capture facility integrated in a new gas-fired combined heat and power plant at the refinery to provide power for the refinery and heat and power for the town nearby. This would be designed to capture 10 times as much CO₂ with a much larger budget. Early studies by Statoil indicate that costs may be up to € 3 billion, this is larger than the recently decided EU fund to partially finance projects in seven countries (although this would be money additional to national funding). An important question here is whether to decide to go ahead with this investment immediately or wait. In the first case, the decision as to which technology to use would have to be taken immediately, before knowing the results of the test facility (or of possible new technologies that could emerge). Since this amounts to assuming that there will be no surprises in the results of a test facility in a very new technology it doesn't make much sense and certainly seems to contradict the “value for money” rule incorporated in the sustainable development strategy. However, the government views the mere construction of a full-scale CCS facility as an additional experiment in itself. While the test facility should reveal information about the different technologies, the full scale construction will reveal information about potential problems in scaling up prototype technologies that could be equally valuable. Although the main global role of successful future developments in CCS is likely to be in coal and non-conventional oil, which will never be relevant in Norway itself, it seems appropriate that Norway could help to pioneer a technology that could nevertheless play a significant role in Norway itself and in other gas and coal producers.

Use of hydroelectric power

Carbon-free hydroelectricity supplies practically all of Norway's electricity needs at a very low resource cost. However, the opportunity cost of hydroelectric power is much higher than the resource cost. On the one hand supply is limited by installed generation capacity, but also by precipitation levels, and on the other hand demand comes not only from the Norwegian economy but also from the other countries in the Nordic electricity pool as well as a small amount from Russia and from EU countries through transmission capacity is limited. Because of the dependence of Norwegian electricity supply on precipitation, the grid connections with other countries are used to export surplus electricity and also to import electricity in periods when stored water runs low. Over the last 10 years, Norway has been a net exporter on average, with particularly substantial exports in 2007-09, of between 5 and 10% of total production.

Despite this substantial level of trade, determined by relative spot prices, average prices of electricity supplied to industry in Norway are below those in neighbouring and north-European countries (Figure 3.4). Arbitrage on the spot market is far from being enough to equalise prices because long term supply contracts are not linked to spot prices.⁷ Capacity limits on the links with other countries also prevent the markets being sufficiently integrated to equalise average prices. Finally, the national grid in Norway is also constrained in its own capacity to manage domestic demand – the main generating capacity tends to be in the north and west of the country, whereas the main centres of demand are in the south and east.

Figure 3.4. **Electricity prices for industry in Norway and neighbouring countries, 2008**



1. 2004.

2. Unavailable for certain countries.

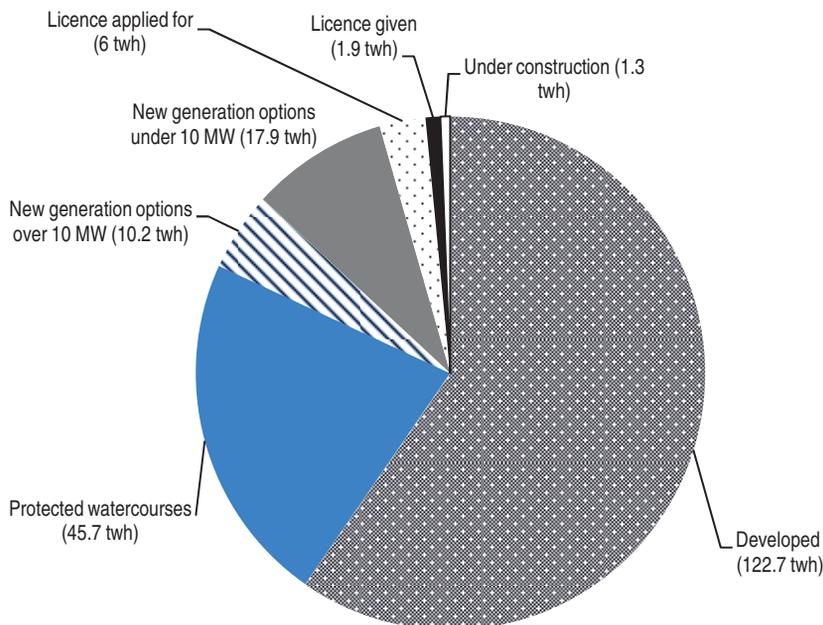
Source: IEA electricity prices except for Sweden and Netherlands which are sourced from Eurostat (Environment and Energy).

StatLink  <http://dx.doi.org/10.1787/808811010742>

Limitations on the capacity to transfer electricity to other countries may prevent Norway from exploiting a low cost form of zero-carbon energy generation – that of significantly expanding hydroelectric production for export to EU countries where much marginal generating capacity is coal-fired. It is frequently argued that Norway's hydro

capacity is almost fully utilised, with only relatively small capacity locations remaining to be developed. In fact, this is not strictly true: approximately 20% of potential generating capacity cannot be developed because the watercourses concerned are protected under the Water Resources Act (Figure 3.5). For example, of the ten highest waterfalls in Norway, seven have been developed for hydropower and the remaining are protected under the Act. To illustrate the magnitude potentially involved, utilising, say, one half of the remaining protected capacity and exporting it would, if it replaced carbon-based generation in Europe, and did not increase electricity consumption, be equivalent to about 0.15% of EU's 2010 Kyoto target. It can be argued that in practice this would have little effect on actual emissions because both Norway and potential importers of Norwegian hydroelectricity are subject to the same overall emissions ceiling. Within any given overall emission ceiling, the reductions in emissions in the electricity sectors would be offset by higher emissions in the rest of the quota system, just as they would in the case of any particular contribution to emission reductions. However, the use of such low resource-cost emission reductions would reduce somewhat the cost to European economies as a whole of meeting a given emission ceiling, potentially allowing for a more ambitious ceiling once the resources were available.

Figure 3.5. **Hydropower potential¹ as of 1 January 2009**
Expressed in terawatt hours



1. Based upon mean annual generation capacity of 205.7 TWh, for the hydrology period 1970-99. Includes only investments where construction cost/mean annual generation is less than 3 NOK/KWh.

Source: Ministry of Petroleum and Energy.

StatLink  <http://dx.doi.org/10.1787/808815870380>

This is not to say that the protected hydro sites *should* be exploited, it is quite reasonable to argue that a certain (already quite small) proportion of the river system should be protected, but it would be useful to express the cost of protection in terms of the higher electricity prices (partly – but not mainly – due to the EU-ETS quota price being reflected in these prices) in Europe. The perceived threat from greenhouse gas emissions

has grown considerably as understanding of its causes and effects has increased over the past two decades. The protection of some of these watercourses dates back some time – although for others the decision is very recent. It is worth considering explicitly what valuation is being placed on what is being protected against the foregone opportunities for carbon-free energy production elsewhere. Such a study could also help to provide guidelines for protection of nature in other contexts and against other alternative uses, and would be in line with the recommendations above for ongoing development of Norway's sustainable development indicators.

Expanding transmission links with Europe is feasible, the most recent expansion in fact came in 2008, with a 700 MW undersea connection to the Netherlands. Unless it turns out that this new link is unprofitable, it seems highly likely that it would be worthwhile further expanding the interconnection between Norway and other countries. A counterpart of greater integration of Norway's electricity supply with the European grid would be, given the implication that average electricity prices in Norway would rise, that hydroelectricity suppliers would make greater profits than they already do, and that some industrial consumers that may have depended on cheap electricity would be in difficulty. Electricity suppliers already pay a resource rent tax, this could be increased as prices rise. As a tax on economic rent it should have no impact on the delivered price of electricity but would capture some of the social benefit for the budget, just as is done with petroleum revenues.

Both industrial and residential consumers also pay a tax on electricity consumption, currently significantly higher for households than for industry, even though this is still not enough to bring Norwegian prices up to the levels in neighbouring countries (some of which have even higher taxes, in fact). The general tax rate for 2010 is NOK 0.1082 per kWh, while *inter alia* manufacturing industries and district heating pay a reduced tax rate of NOK 0.0045 per kWh. Electricity-intensive manufacturing processes are exempted from the tax on electricity consumption. Pulp and paper production is exempted where an energy efficiency program is in place.

In the longer run, therefore, the marginal cost of electricity⁸ supplied in Norway, and therefore the shadow price that should be used in cost-benefit calculations of projects involving electricity consumption, will effectively be the price that it will fetch in the main European markets. This would reveal more clearly the implicit cost of supporting marginally profitable energy-intensive industries. Projects such as using hydroelectricity to power offshore petroleum platforms (and thereby reduce GHG emissions from their on-board generating stations) would also be unlikely to pass a cost-benefit test on this basis.

Other renewables

In September 2009 Norway and Sweden signed an understanding establishing the principles for further development of a common renewable electricity certificate market to promote the use of renewable energy in electricity generation, as from 2012. Working rather like a cap and trade system, this is an efficient way to use the price mechanism to pursue a target of generating a certain proportion of electricity from renewables. If the externalities of non-renewables – and renewables themselves – are effectively dealt with through other policy measures such as taxes or emission permits, the role of support for renewables is really reduced to a general cross-subsidy. It does have the advantage that it is designed to be technology-neutral (i.e. not favouring any particular kind of renewable energy) and avoids problems that can arise when using, for example, guaranteed prices for

wind energy (which technical progress can turn into an excessive, practically risk-free rate of return, as occurred in Denmark's support for wind turbines in the 1990s). The adoption of green certificates could thus justify abandoning direct public support for particular renewables. The measure is not targeted only at new technologies, future hydroelectric projects will obtain the same subsidy from the certificates as wind-power projects.

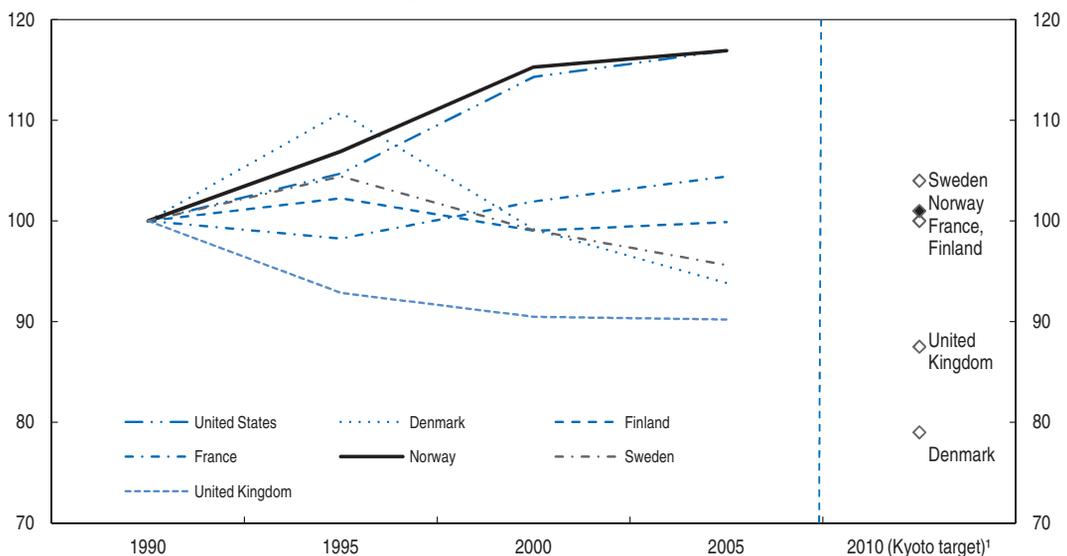
There is an argument (Bye and Hoel, 2009) that specific schemes for promoting renewables are “costly and pointless renewable fun” given the overall emissions cap given in the European emissions trading scheme (ETS), of which Norway is part. Whereas the resource cost (i.e. before taking into account loss of biodiversity and natural river courses) of increasing exports of hydroelectricity from Norway is relatively low, it is likely to be high for other renewables. The main argument for such policies is that new technologies need this kind of support to develop and bring down costs. Norway is in the forefront of the development of carbon capture and storage technology, but not for non-hydro renewable energy, so adopting ambitious targets for non-hydro renewables will be, if not entirely pointless, excessively costly.

Rising emissions despite ambitious targets

Despite Norway's ambitious announced targets and its array of policy measures, Norway's domestic GHG emissions have risen substantially and Norway will fully use Kyoto mechanisms to fulfil its unilateral target of cutting emissions by 10% relative to the Kyoto commitment and also partly to fulfil the Kyoto commitment target itself (Figure 3.6). The Kyoto commitment itself was less stringent than in many other countries – the target for most countries was typically a reduction of 8% compared with 1990, compared with Norway's 1% increase. This reflected the relatively high marginal cost of abatement in Norway – the high share of hydroelectric power means that “easy” reductions through fuel switching or increased efficiency in power generation are not available.

Figure 3.6. **Greenhouse gas emissions, 1990-2005**

Million tonnes of CO₂, equivalent using GWP-100 (index 1990 = 100)



1. Includes the effect of the EU burden-sharing scheme.

Source: IEA (2009b).

StatLink  <http://dx.doi.org/10.1787/808831474886>

One of the main reasons why emissions have risen significantly in Norway is the petroleum sector, almost all of whose output is for export. Because of the presence of the petroleum sector and the importance of zero emission hydro power it has always been logical to expect that Norway would have to satisfy part of any emission target through trading. One way of thinking of this might be to note that nearly one quarter of Norway's emissions stem from the petroleum sector (up from only around one sixth in 1990) and that, since the output is almost entirely delivered abroad, it would be reasonable to offset at least a similar quantity of emissions through trading, if the marginal cost of reductions in actual emissions in this sector is high. It would equally be reasonable to require the petroleum companies to finance this themselves. (The petroleum sector is now part of the EU trading system and will indeed finance the offsets, except to the extent that it benefits from grandfathering.) Much of it would therefore be deducted from income for the Government Pension Fund Global. Even at current levels of domestic emissions, such purchases would be more than enough to bring Norway into line with its Kyoto-plus target of a reduction to 9% below 1990 levels.⁹ At late-2009 prices of some 130 NOK per tonne, purchasing permits¹⁰ to cover the approximately 14 million tonnes of emissions from the sector would cost around 1.8 billion NOK, no more than one percent of general government petroleum revenues.

The “right” balance between domestic abatement and emission trading (including use of offsets such as through the CDM) depends on relative abatement costs. The rise in domestic emissions is therefore not inconsistent with meeting the target. However, for periods after 2008-12 the government intends that a substantial share of reductions should come from domestic emissions. This will require more stringent measures than have been used so far, even though the marginal cost of CO₂ emissions is already higher in Norway than in many countries. As can be seen above, there is no such thing as the marginal cost of emissions in Norway, but many; however, the “average” marginal cost is probably higher than in most countries, given the action of the CO₂ tax combined with the trading system.

Improving policy

This higher “average” marginal cost of emitting CO₂ in Norway than in most countries, along with the logically defensible matching of a large part of petroleum sector emissions with purchases of offsets, does indeed suggest that Norway is leading from the front, or at least is among the leaders, on climate change policy. However, the simple analysis here suggests that there should be ways to reduce the economic cost of reaching existing targets because existing policies encourage high-cost measures in some sectors but risk leaving low-cost ones in other sectors untouched.

A conceptually simple step would be to extend the emission trading scheme to all sectors where emissions can be reliably measured and moving rapidly to full auctioning of emission permits, rather than the relatively slow progression currently envisaged in the European trading system (ETS). It would also make some sense to abolish the CO₂ tax at the same time. Since Norway is part of the ETS, permit allocations would have to satisfy the constraints of that system. If all emissions were covered by the ETS, the overall allocation could be set to match the Kyoto agreement requirement of emissions in 2008-12 averaging 101% of the 1990 level; this would leave the government to enter the market directly to achieve the 10% over fulfilment by purchasing and retiring emission permits out of general government revenues. An alternative would be to cut the allocated permits by this amount so that the population implicitly finances this policy as a function of its contribution to

emissions rather than through the tax system. After 2012 it is expected that the coverage of the ETS for the EU and Norway will indeed be expanded, though full auctioning will not be phased in very quickly.

Two particular objections to the idea of relying entirely on the cap and trade system can in fact be dealt with relatively easily. One is that the current price of emission allowances in the ETS may be too low for the target to be reached. If this is the case it is likely to be due *either* to mistakes that would be equally likely under alternative mechanisms such as relying on voluntary agreements *or* to the fact that market forces and relative costs give a balance between domestic abatement and foreign abatement (through net purchases of allowances from other countries) different from what is implicitly desired. As Box 3.7 points out, these and other difficulties can be dealt with while still using the ETS to give cost-effective emission reduction.

A second strong objection is related to CO₂ “leakage”. Here there are two issues, one is whether it matters very much and another is whether it requires keeping potentially affected sectors out of the trading system (or indeed the CO₂ tax). Leakage is potentially a serious problem; it would occur if strong emissions policy in Norway caused a high-emission firm to close down but its production were moved either directly or indirectly to another country with a less strong policy (and no binding emissions ceiling). Norway would incur the adjustment cost of closing down part of an industry, and Norwegian emissions would indeed fall, but global emissions would not be reduced. Whether this would occur depends not just on the “price” of emissions but also other aspects of economic efficiency, wage and transport costs. Important in principle, its practical significance is an empirical matter. Evidence is hard to gather since energy-intensive industries have so far been very successful in defending their position in Norway, the European Union and elsewhere, persuading policy makers to make special arrangements. Nevertheless, some work already suggests that its overall impact would not be very great and that exemption is not the best strategy.¹¹

“Grandfathering” free issues of allowances to at-risk industries is one way to deal with potential leakage, though they have to be tied to continued production. Free issued allowances linked to continued production during the trading period will however reduce the companies expected costs of emissions. Such an allocation method will therefore distort the logic of the ETS. A better alternative would be to require the industry to buy the allowances like anyone else but give them an explicit subsidy; negotiations over this would probably not be so different from those that produced the recent voluntary agreement for processing industries. It would have the advantage of making clear the cost of anti-leakage policy, both in terms of the financial cost to the budget and because it would mean the protected sector explicitly bidding allowances away from alternative users such as transport.

Whatever the specific method used to deal with leakage, the transition to charging for emission allowances rather than issuing them (on whatever basis) for free should be made rapidly. The price of allowances represents an economic rent that accrues to most emitters (not just those with a surplus to sell) so that in the initial stages of a cap and trade programme with full grandfathering based on historic emissions, most emitters are likely to be better off; the argument that it is needed to ease adjustment is therefore rather weak. It makes more sense to capture this rent for public finances (and lower taxes) than to leave it with emitters.

Box 3.7. Can an emission permit price be “too low”?

The current cost of CO₂ emissions in the ETS is considerably below the level of the CO₂ tax in Norway. If the CO₂ tax were abolished it would likely mean less abatement than a high uniform CO₂ tax would achieve.

The low price in the ETS might be because the amount of emission allowances issued exceeds the actual emission target, or because actors in the market are poor predictors of abatement costs, or because they do not expect the penalty for non-compliance to be very strong.

Excessive issuance of allowances did occur in the preliminary 2005-07 period of the European ETS. However, allocation is now centralised and banking is allowed, so that unused emissions from one period can be held over for future use. With time, this should ensure that, even if there were too many allowances issued in the early period, or if participants in the market have underestimated the costs of abatement, actors should soon learn from their mistakes as prices would rise suddenly if the supply began to be unexpectedly tight. GHG abatement is a long-term policy; while countries have started later than they needed to it is still possible to allow learning by doing.

An alternative interpretation of the price being “too low” is simply that it would mean less domestic abatement in Norway than policymakers intended, with Norwegian emissions perhaps rising but being offset with sharper reductions elsewhere. In fact this is the whole point of Norway joining the ETS so should perhaps not be a surprise. Nevertheless, this could undermine Norway’s wider policy objectives if it feels that it needs to demonstrate the feasibility of reductions in domestic emissions in a high income country. In this case, if there were a specific target for domestic emissions, a parallel domestic trading system could be envisaged; emitters would not be able to use ETS allowances to comply with the domestic system, but could still sell surplus ETS allowances. If there were no specific target for emissions, just a desire to “do more”, the CO₂ tax could be retained but applied at a uniform rate to all emitters.

In the United Kingdom a recent policy change inverts this logic. Having previously tried to use a CO₂ price (for use in cost-benefit analysis) based on the estimated costs of damage from climate change, the United Kingdom has now decided to use a target-based measure, calculating the estimated shadow price of CO₂ emissions that would achieve their target. The United Kingdom has separate GHG reduction targets for sectors subject to the ETS and for “non-traded” sectors and therefore operates with two shadow prices, that for the non-traded sector being over twice that for the traded sector (which is the actual or expected price of permits in the ETS). (See DECC, 2009.)

One aspect of the *Klimakur* programme is to assess the likely costs of specific measures to reduce GHG emissions in Norway, similarly to the assessment presented in McKinsey (2009). The resulting abatement cost curve can help to assess the trade-off between domestic abatement and that achieved through emissions trading. But it can be particularly useful to assess policy options in other areas, especially non-CO₂ gases and issues such as waste-management. It can also guide public policy in areas such as infrastructure investment where, for example, increased investment in railways is often thought to be good policy because average emission intensity for certain existing rail transport can be low relative to alternatives, whereas new investment, for example in high speed trains may have wildly excessive costs, if undertaken as part of climate change policy (Nilsson and Pyddoke, 2009). But policymakers should be wary of using *Klimarkur* to

develop sectoral emission targets where market mechanisms such as the CO₂ tax and the ETS can operate without difficulty.

Another transport related tax that might be redundant is the very high purchase tax on cars, which Norway shares with some other Nordic countries and Israel. In principle, just like the high rate of CO₂ tax on motor fuel, this restricts consumer choice more than is necessary to meet the aggregate emission targets. Furthermore, as a tax on purchase rather than use of a vehicle, it addresses emissions only very indirectly, if at all.¹² This tax probably reduces average car ownership and so reduces problems such as congestion. A comparative study of taxation in Nordic countries shows that the vehicle tax strongly influences the size and composition of car ownership, reducing per-kilometer energy consumption and CO₂ emissions (TemaNord, 2008). But one aspect of policy where Norway has been a pioneer, but has perhaps under-exploited its lead, is in urban road pricing. This now operates in several major cities, but basically as a fixed access fee; it has not followed advances in technology that would allow explicit congestion charging. However, although the car tax's objectives could be met in other, theoretically more efficient, ways, one could argue that its wide social acceptance¹³ is a good measure of its actual cost and since it reduces the need for measures elsewhere, there is a good argument for retaining it.

Why low cost may not be low cost

“Economic instruments” are efficient where conditions are appropriate. However, there are plenty of reasons why other instruments are necessary, usually having their origin in information problems. One set of such difficulties arises in monitoring and measurement (where the emission of interest can neither be feasibly measured at the point of emission nor be inferred from a close proxy). Another is where it may be difficult for final consumers to get the information about what the impact of economic instruments is on their budget, notably when purchasing items (houses, consumer durables) where the associated emissions and any related taxes or fees, may occur over a long period in the future. Some measures that appear to have negative costs of abatement for individuals seem not to be implemented when they “should” be profitable without any specific regulation (the McKinsey report assesses that changes such as improved domestic appliances, lighting and insulation, and motor vehicles, would be profitable without any specific incentive). The Klimakur programme could usefully assess the hidden costs that slow action in these areas, to see whether they are due to lack of information, to actual resource costs that may be hard to measure, such as the time needed to plan and organise housing modifications, or to the different attitudes to cost that may be embodied in high individual time preference rates.

Some of these factors can be dealt with by educational programmes, while for other factors regulations such as building codes are useful. Residential patterns have a long-lasting influence on transport demand, one reason why the price elasticity of demand for motor fuel is so low. Urban planning policy should also therefore take account of the results of Klimakur. In particular, impact analyses should already be systematically evaluating the changes in GHG emissions associated with projects that affect travel patterns using a realistic estimate of the “shadow price” of CO₂. Surprisingly, this does not seem to be the case yet.

Box 3.8. Recommendations on climate change policy

- Substantially reduce the divergence of rates in the CO₂ tax and include the process industry, fishing and farming.
- Consider widening the coverage of the trading system outside sectors specified by EU directives. Potentially, abolish the CO₂ tax and incorporate all sectors in the trading system, using minimum and maximum prices to ensure some abatement while preventing excessive costs, making use of inter-temporal banking and borrowing to smooth prices.
- More generally, work to bring marginal abatement costs in line everywhere. Be sceptical of arguments on leakage, noting that CO₂ tax exempted sectors have achieved some of the largest emission reductions.
- Use the Klimakur report to help assess the required level of the marginal tax or permit price for GHG emissions to meet announced targets, but not to specify sectoral emission targets which can hinder cost-effective policies.
- Require forward-looking policy analyses (including infrastructure and urban and regional planning decisions) to use an explicit shadow price for GHG emissions in cost-benefit calculations. The shadow price should be consistent with Norway's international commitments, and is likely to be quite high for future emissions. Analysis could use high and low variants to take some account of uncertainty.
- Given the increasing urgency of action on climate change, consider undertaking a comprehensive assessment of constraints on cost-effective increases in the supply of hydropower and other renewable energy, which could for example supply European markets thereby reducing the cost of emission reduction there and earning significant returns for Norway.
- Continue Norway's pioneering role in investigating carbon capture and storage, making clear that the decision to go for the full scale installation at Mongstad is itself experimental – to gain information from the unprecedented scaling-up of the technology.
- Voluntary agreements should be pursued where their role is to improve information, encourage co-operation and diffusion of GHG-efficient technology, or for educational purposes, but not in return for exemption from the CO₂ tax or the cap and trade system.
- Progressively eliminate that part of taxation on the purchase of cars which is not linked to environmental damage per car, where other more direct tools are available. Expand the use of road charging, linking it to congestion and potentially to local pollution conditions. Ensure that urban and regional planning takes into account the future constraints it will impose on transport options.

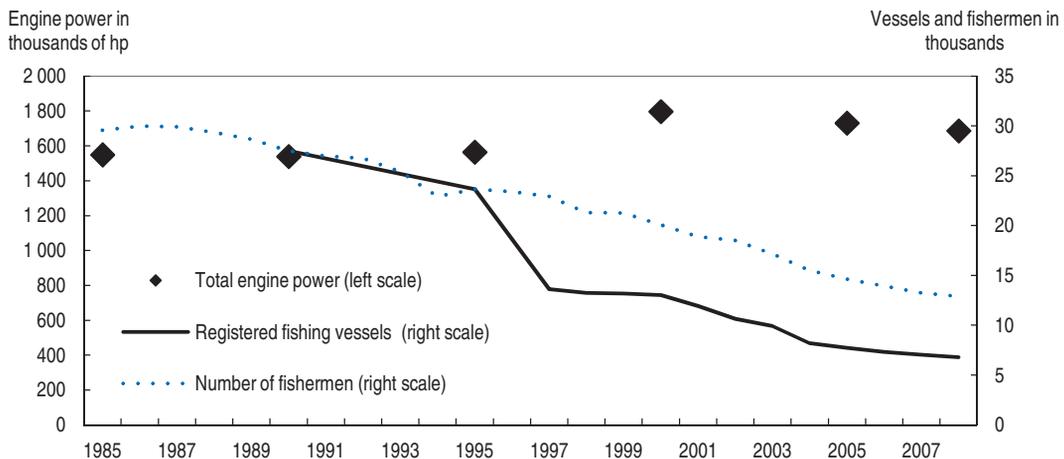
Fisheries

The fishing industry, and its contribution to the Norwegian economy, has changed a lot over the past few decades. The relative importance of catching fish in the wild (the capture fisheries) has steadily declined, while fish farming (aquaculture) has grown rapidly in importance. Contributing about 1.3% of GDP in 1970, the capture fisheries now provide under 0.5% of mainland GDP, with about the same contribution now coming from aquaculture. This chapter deals exclusively with the capture fisheries, where the issues of sustainable use of natural resources are more obvious (though highly complicated) and where Norway, despite its small size, is one of the world's major actors, taking nearly 3% of

the total world catch. Environmental issues are nevertheless important for aquaculture. For example, there are potential disease problems where Norway's stricter regulations on the allowable density of aquaculture installations may have played a role in limiting the spread of disease which has recently severely affected Chile, one of Norway's key competitors in aquaculture. Aquaculture also depends on the capture fisheries for producing feed.

Overall there has been a long term trend decline in the number of fishing vessels in the Norwegian fleet and in the number of fishermen (Figure 3.7). It is not so clear that this represents a decline in fishing capacity, however. As the average size of vessels increases, the total physical capacity can rise even as the number falls, and changes in technology mean that fewer people are needed for any given size of vessel. One measure of this is the total engine horsepower¹⁴ of the fishing fleet which has shown no systematic decline over the past two decades. But this measure probably underestimates trends in actual fishing capacity because technology has also improved the ability of vessels to find and catch fish; any given quantity can be caught in less time, so a vessel can make more frequent trips.

Figure 3.7. Capacity in the fishing industry



Source: Statistics Norway.

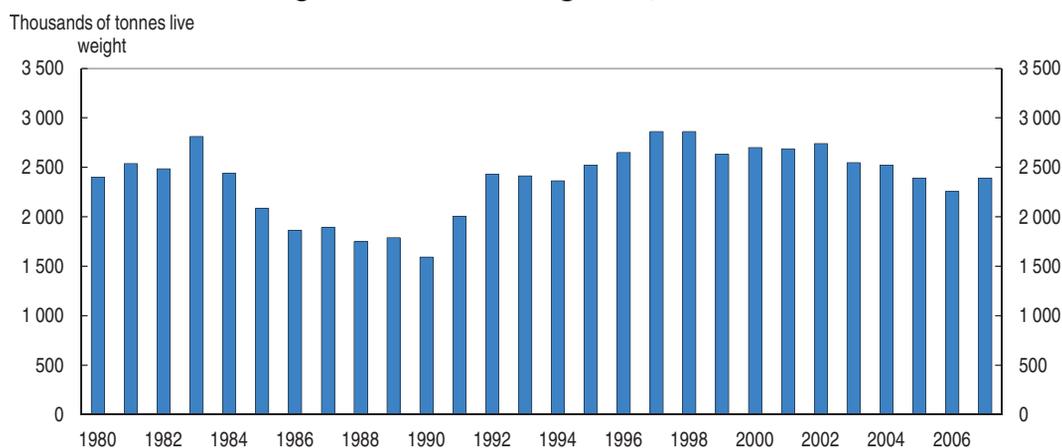
StatLink  <http://dx.doi.org/10.1787/808833346808>

Indeed, the total catch of the Norwegian fishing industry, measured by weight, has not declined over the long term. During the 1980s there was a significant decline when the capelin fishery collapsed but the overall catch soon recovered even before the herring stock, which itself had been practically wiped out in the late 1960s, was rebuilt (Figure 3.8). In recent years the total catch has been somewhat below the peaks of some years in the 1970s and late 1960s, but still at quite high levels historically.

The profitability of the fishing fleet has also improved as the number of vessels declined. In the 1990s many fleets were operating at a loss and there were significant budgetary subsidies to the industry. By 2008 subsidies have been largely phased out, with the exception of exemption from taxes on fuel, including from the CO₂ tax (Box 3.9).

Setting limits on fishing

The need for resource management in fisheries was perhaps first apparent in Norwegian waters at the end of the 1960s, when the key herring fishery collapsed almost

Figure 3.8. **Total fishing catch, 1980-2007**

Source: Statistics Norway.

StatLink  <http://dx.doi.org/10.1787/808847412487>

Box 3.9. Implicit subsidies in fisheries: Energy and CO₂ taxes

In common with many other countries – Iceland, France, Spain, the United States, to name a few – Norway exempts fishing vessels from certain taxes. In Norway both the basic tax on fuels and the CO₂ tax are fully reimbursed for vessels refueling in Norway. (By contrast, unlike most countries, Norway does tax fuel for both domestic sea and domestic air transport.) Fishers are also subject to a more favourable income tax regime. According to Album (2008) these two exemptions cost NOK 254 million in 2005, a figure which rose to 310 million in 2008. This was only some 0.15% of GDP but is frequently 10-50% (sometimes over 100%) of operating profits in certain sectors of the fishing fleet. As Album points out, as an employment supporting measure this is inefficient as the value of the exemptions per employee varies enormously; the largest benefits obviously go to the vessels whose fuel use per tonne of fish caught are largest, and these are generally those with few workers.

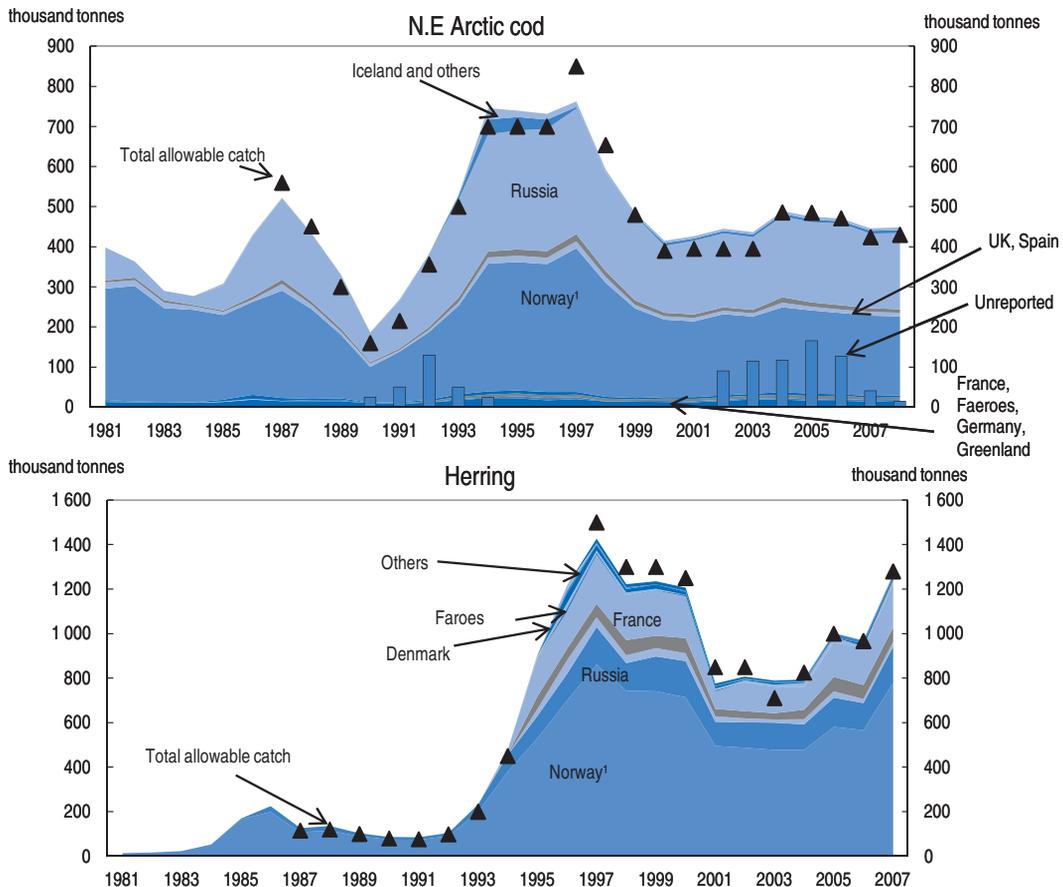
Estimated fishery subsidies in 2009 include income tax allowance for fishermen of NOK 290 million and CO₂-tax exemption of NOK 135 million. A NO_x tax exemption through voluntary agreements is worth another NOK 135 million. Other advantages are a high depreciation rate for fishing vessels and some operational grants.

entirely, following a period in which the annual catch had actually been rising as more and better equipped vessels from various countries had been exploiting the stock. Once it had collapsed the stock of herring took over 25 years to recover, and had changed its spawning and migratory behaviour in the meantime. The North Sea herring population is still very low, though the Norwegian spring spawning herring population has recently risen to historically high levels. The population of cod has also been subject to at least two periods of partial collapse in the past two decades. These two fisheries together provide the bulk of the revenue for Norwegian fishing vessels, although a number of other species are also of economic interest. The rest of this section concentrates on North East Arctic (Barents Sea) Cod and Norwegian Spring Spawning Herring.¹⁵

A key aspect of these fisheries is that they are shared with other countries. A large number of countries are involved, though for herring and cod the principal ones are Russia

and the European Union (Figure 3.9). While over-fishing can occur even within a national fishery, it is obviously even more likely when shared between countries, so efforts to manage stocks necessarily require international co-operation. Open access regimes are now very rare, nearly all fisheries are managed by setting a limit on the total amount of fish that can be caught from each stock in any one year – the Total Allowable Catch (TAC). Table 3.3 sets out the main agreements that regulate Norwegian fisheries, showing the total allowable catch for the fishery as a whole, along with the national quota allocated to Norway.

Figure 3.9. **Sharing fish with other countries**



1. Availability of Norwegian estimates of unreported catch: 1990-94 and 2002-08.

Source: ICES (2009).

StatLink  <http://dx.doi.org/10.1787/808865067263>

The process of setting limits on catches starts with the International Council for the Exploration of the Sea (ICES) which provides scientific advice¹⁶ on what a safe level of catch would be. As well as recommending a particular level for the total allowable catch to be set for each managed fishery, ICES specifies a lower level which should allow the stock of fish to expand and an upper level at which it would decline. The agreed TAC tends frequently to be in the upper end of this range. This is not always due to the difficulties of international negotiation, however. The current ICES advice on Norwegian coastal cod is to set a zero TAC, but Norway has not done this because of the adverse short-term consequences for coastal communities. Current policy for coastal cod, which is an

Table 3.3. Total allowable catch and national quotas in 2004 and 2005 for some of the important species in Norwegian fisheries

Species	The economic zone or area	Agreement between Norway and:	TAC for all countries (tons)		Norwegian national quota (tons)	
			2004	2005	2004	2005
Cod	North of N62 °N ¹	Russia	506 000	492 000	224 600	218 700
	North Sea	EU	27 300	27 300	4 114	4 114
	Skagerrak	EU	3 900	3 900	127	127
Haddock	North of N62 °N	Russia	130 000	117 000	71 500 ²	65 300 ²
	North Sea	EU	77 000	66 000	14 435	13 918
	Skagerrak	EU	4 755	4 018	200	169
Saithe	North of N62 °N		169 000	215 000	154 000	200 000
	North Sea	EU	190 000	145 000	93 800	72 400
Herring	North of N62 °N ³	No agreement ⁴			470 250	578 500
	North Sea West of 4 °W	EU	460 000	535 000	131 624	155 150
	Skagerrak	Sweden, Denmark	70 000	96 000	9 336	12 804
Capelin	North of N62 °N	Russia				
	Iceland, Jan Mayen and Greenland ⁵	Iceland, Greenland	985 000	210 000	103 047	33 481
Mackerel	North Sea, North of 62 °N and west of 4 °W	EU	446 961	344 562	148 728	114 437
Blue whiting	International waters	No agreement ⁶				
Redfish	Greenland NEAFC	EU NEAFC			5 230	3 500
Shrimp	Skagerrak	Sweden, Denmark	10 710	10 710	4 991	4 991
	Greenland	EU			2 830	2 750
	NAFO	NAFO			1 985 ⁷	1 985 ⁷

1. Norwegian Coastal Cod (20 000 metric tons in 2004 and 21 000 metric tons in 2005) included.

2. Norwegian Coastal Haddock (5 000 metric tons) included.

3. Norwegian Spring Spawning Herring.

4. Due to disagreement regarding the allocation of the Norwegian Spring Spawning Herring stock, the states involved – EU, Norway, Iceland, Faeroe Islands, Greenland and Russia – have not yet adopted a management regime for this stock.

5. Quotas for the 2004/2005- and 2005/2006-seasons.

6. Due to disagreement regarding the allocation of the blue whiting stock, the states involved – EU, Norway, Iceland, Faeroe Islands, Greenland and Russia – have not yet adopted a management regime for this stock.

7. Days at Sea.

Source: Country note to 2006 Fisheries Review.

ecologically complex population, includes a system with more strict regulations inside fjords than outside fjords. The authorities are developing a rebuilding plan and will ask ICES to evaluate whether it is consistent with the precautionary approach. If not, they will ask for suggestions for modification or alternative plans.

In addition to catch limits there are many rules on what equipment should be used, generally to avoid catching fish that are too young (so as to safeguard the ability of the stock to reproduce) and to allow fish of the non-targeted species to escape. These rules can be legally enforced for vessels at sea when they are in some country's territorial waters, but enforcement is also the responsibility of the country of registration of the vessel. Most of Norway's shared fisheries are in waters covered by a national jurisdiction, although not all of the Barents Sea cod stock, for example. The Norwegian coast guard makes nearly 2 000 at-sea inspections every year, compared with the Norwegian fishing fleet of over 6 000 vessels, not to mention foreign vessels fishing in Norwegian waters. As is the case for most countries, Norwegian law allows Norwegian vessels to fish only in areas which are subject to some national regulation or to a regional management scheme in which Norway participates.

Enforcing limits on fishing

The success of all these efforts at conservation depends strongly on enforcement. The Norwegian authorities feel that their system of both at-sea inspection and, especially, the monitoring system for landings is quite effective. Hanneson (2008) has estimated the probability of a given vessel being detected fishing illegally in one way or another at about 12%.¹⁷ Although an illegal catch can be confiscated, fines, at least for first offenders, do not seem to be very high and *a priori* the return on illegal fishing may be positive. The authorities argue that such calculations do not necessarily give the right impression of the effectiveness of enforcement because they have some knowledge of which types of vessels are more likely to be offenders and can target them for more frequent inspections. Nevertheless, they intend to increase the number of at-sea inspections.

Inspections on landings are facilitated by the fact that all fish landed in Norway have to be sold by or with the approval of one of six publicly recognised first-hand sales organisations. For herring and similar fish, there is only one agency, with a statutory monopoly, following the merger of some smaller agencies. These agencies handle only the landing, inspection and sorting of fish which are then sold on to wholesalers or processors. The records of these agencies are used for matching vessels' cumulative catches against their quotas. A significant number of landings are also inspected by the ministry. The agencies are present in all Norwegian ports and some in other countries as well. There is clear potential for collusion in this system, although the small number of organisations involved may also mean that it could easily be detected. The Norwegian authorities argue that one of the key barriers to collusion is the collective and individual interest that all vessels have in ensuring that others do not cheat, since that would put all their future livelihoods at stake. This is hard to verify, but commands a consensus among fishery researchers. In addition the size of penalties is important, as is the kind of offence to which they are applied. For example, there is a significant difference between the way Norway and the European Union treat discarding unwanted catch at sea, though it is hard to be sure which is in fact superior (Box 3.10).

The system nevertheless operates to a considerable extent on a degree of trust. There are nearly a quarter of a million recorded landings of fish each year. Of these the Fisheries Directorate of the Ministry makes a direct inspection of about one in a hundred (of which, in 2008, just over 1½ per cent resulted in either a written warning or police action). The coastguard makes about 2 000 at-sea inspections per year; this frequency has increased recently, though the overall duration of inspection activity has remained the same, so the time devoted to each inspection has fallen. The sales organisations' main role in enforcement is to ensure that accurate records are kept of *declared* catches and landings, but in addition they undertake some specific inspections, of about one in two hundred landings in 2008.

Serious violations of fishing regulations can result in a vessel being put on Norway's IUU (Illegal, Unreported and Unregulated fishing) list. While on the IUU-list, vessels may not land or tranship fish, take delivery of supplies or services in Norwegian waters, may not fly the Norwegian flag and are denied access to Norwegian ports; 45 ships are currently on this list.¹⁸ If they subsequently accept certain conditions, they may be removed from the list. The final sanction that the authorities use is the black list. Instituted in 1994, it currently lists nearly 150 vessels that have either violated Norwegian fisheries regulations in waters under Norwegian fisheries jurisdiction or are listed on the IUU lists of regional

Box 3.10. To discard or not to discard?

In the European Union fisheries it is illegal for a vessel to land over-quota fish or those that do not satisfy other restrictions (notably on minimum size/age) but it is not illegal to discard them. In Norway a vessel with an illegal catch, which can happen accidentally (for example as a by-catch when fishing for a different species), will be told to cease fishing or move to another area, but it is prohibited from discarding the illegal catch; on landing such fish the excess may be confiscated but it is more likely to be purchased by the authorities, perhaps at a discount to the market price. Which method is better for conservation?

The answer is not obvious. Quite apart from deliberate over-fishing, some level of accidental illegal or over-quota catch is always likely. If they are thrown back into the sea (“discarded”) they do not survive (with rare exceptions) so although they may conceivably provide food for some other species they do not help the conservation of their own species; nor do they contribute to satisfying market demand for fish, so more fish than are needed for this are caught. Rather than throw them into the sea a vessel may hope to land them illegally or transfer them to an intermediary who will land them in a port outside the national or EU jurisdiction.

If a vessel is able to land such fish there are two key advantages. One is that they are not wasted and the other is that they are recorded. The disadvantage is that there is some economic incentive to over-fish, which seems counter-productive. The Norwegian view is that allowing discards while penalising landings provides an economic incentive to systematically fish for large and higher priced fish and systematically discard “unwanted” fish – so-called “high grading”. However, the EU did introduce a ban on high grading in the North Sea in 2009. Furthermore, a vessel’s record of overfishing can be monitored and the economic incentive removed in the case of persistent offenders. Of course, the incentive to over-fish and sell the fish outside the set of monitored ports (in the case of Norway, this means outside Norway) remains the same, so that the equilibrium may well involve more over-fishing.

Whether this is the case will depend on relative enforcement and monitoring efforts, how it is split between monitoring landings and at-sea inspections, as well as the attitude of fishermen themselves, which may vary across different countries. Even if it does result in higher over-fishing, the advantage of a better recording of catches is not insignificant. Conservation efforts depend on accurate statistics and biological models that properly reflect stock dynamics (even with accurate statistics on catches, estimation of the underlying stock is still difficult). In Norway, data on catches and landings are thought to be relatively reliable.

In Norway the discard ban is part of a package of measures aiming at avoiding unwanted catches in the first place (selective gears, area closures, by-catch rules). As a consequence, high-grading is not allowed in Norwegian waters. The Norwegian authorities strongly believe in the usefulness of the discard ban, and the European Commission, in its review of the Common Fishing Policy, has drawn attention to it as a possible improvement in its own set of policy tools.

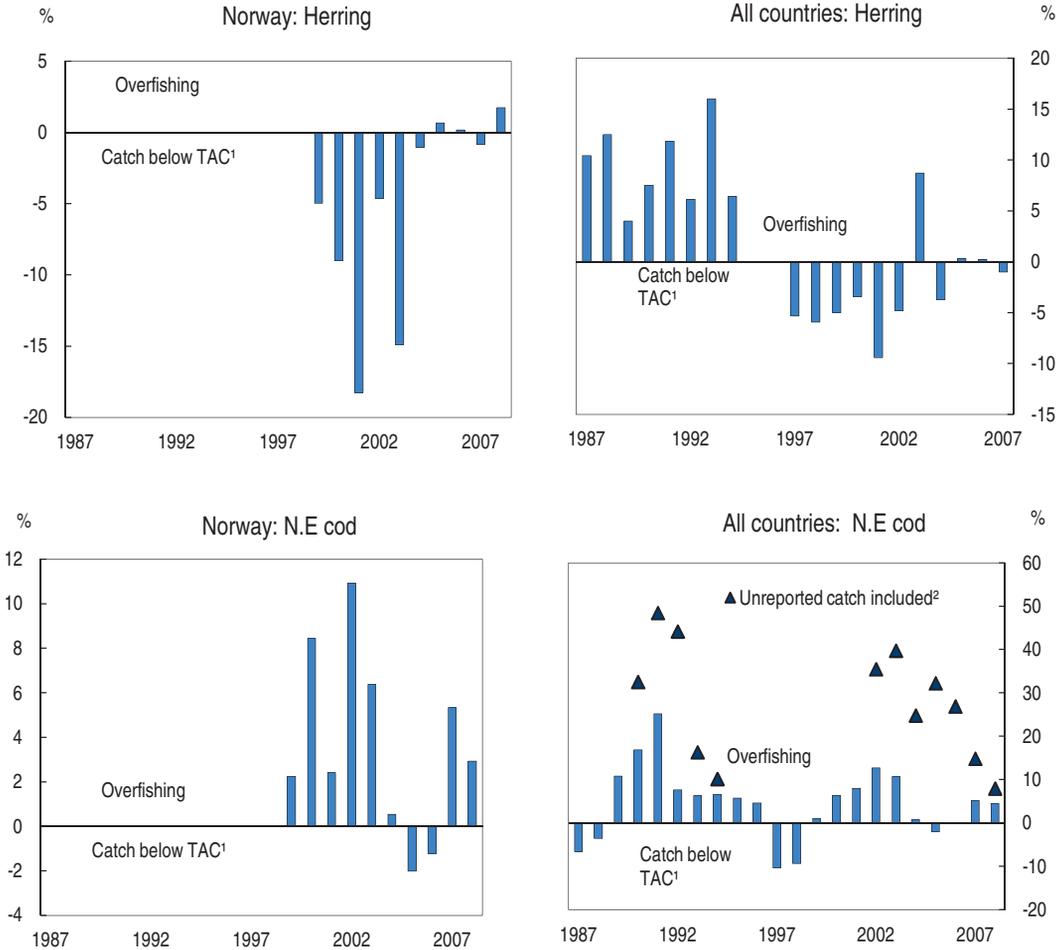
fisheries management organisations. There is no provision for removing vessels from this list.¹⁹ These lists reveal one of the difficulties for fishing inspectorates, in that many of the vessels have sailed under a number of different flags, and may also have changed their name several times. In September 2009, members of the UN Food and Agriculture Organisation agreed a treaty²⁰ that would, if effectively enforced, improve the effectiveness

of this kind of measure by refusing port access to foreign ships that cannot justify the legitimacy of their catch and requiring ships' flag countries to take action against their own vessels subject to such refusal.

The actual results of enforcement efforts are mixed – and they are also difficult to analyse because data on overall catches are not fully reliable. Considering the tendency of total allowable catches to be set relatively high, it should be important to ensure that they are not exceeded. The example of spring spawning herring suggests that in recent years this has been successful, as the total officially recorded catch has exceeded the TAC only once since 1997 (Figure 3.10). In the years prior to this, ICES data show systematic overfishing, even though up to 1994 the fish were largely confined to Norwegian waters,²¹ and these were the years during which the stock was remaining low, despite low catch levels by historical standards (see also Stokke, 2000 and Churchill, 1998). In the late 1990s and subsequent years, aggregate compliance was much better and the stock has recovered very rapidly.

Figure 3.10. Aggregate fishing quotas are not always well respected

Total catch minus TAC, Norwegian spring spawning herring and North-East arctic cod



1. Total allowable catch.

2. Including unreported catch shows, for example, that in 2007 while the reported catch exceeded the TAC by 5% the total (reported plus estimated unreported) exceeded it by 15%.

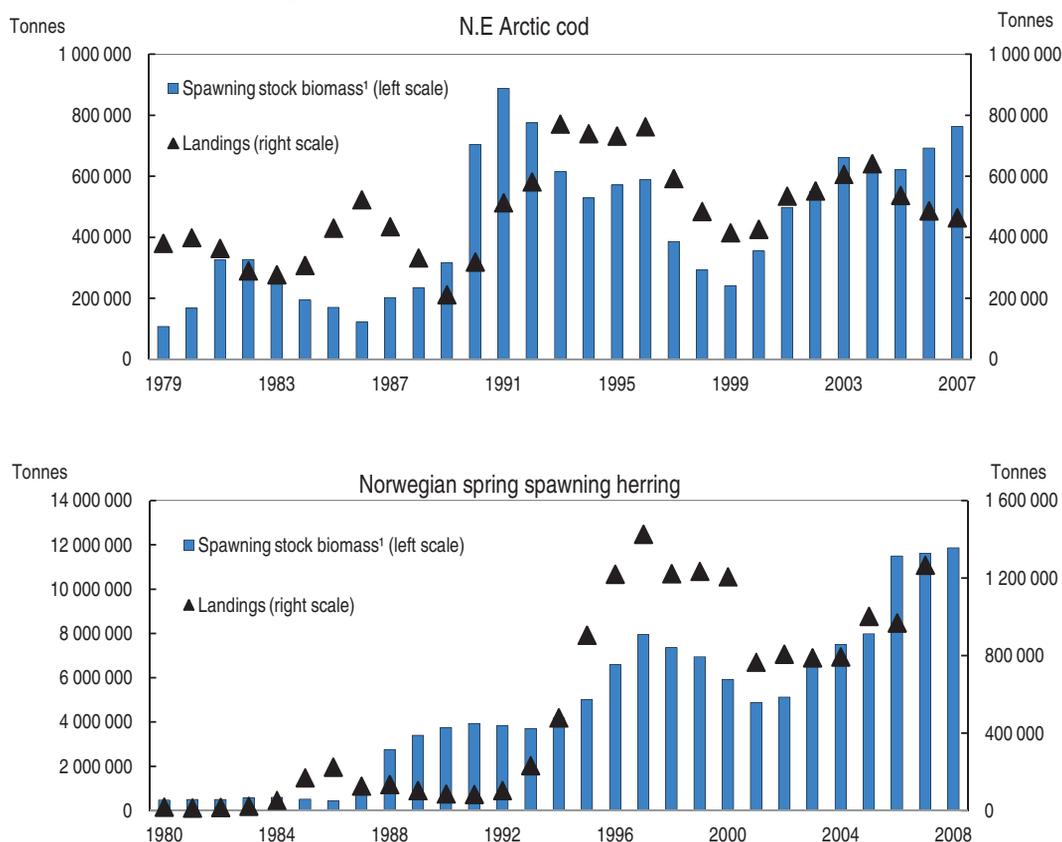
Source: Norway Ministry of Fisheries and Coastal Affairs.

StatLink  <http://dx.doi.org/10.1787/808866376486>

For North East Arctic cod the record is somewhat different (Figure 3.10). There have been quite wide swings in the discrepancy between the actual catch and the TAC, both for all countries taken together and for Norway alone (for Norway, data were not available prior to 1999). But there has been a general tendency towards overfishing even using data from recorded catches. When estimates of unreported catch are included, overfishing has frequently amounted to over 20% of the TAC. Estimates of unreported catch are obviously in themselves very uncertain. They are not available for all years. Both Norway and Russia have published estimates for certain years, and the Norwegian estimates are higher. ICES includes the Norwegian estimates in its data for total catch. Norway has increased its efforts to reduce illegal and unrecorded fishing, mainly by seeking co-operation in non-Norwegian ports where fish may be landed.²²

While it seems obvious that overfishing will lead to declining stocks, the link between levels of catch and changes in fish populations is not straightforward; many other factors are relevant. Nevertheless, simple comparisons suggest some recent success for cod stocks. From the early 1980s up to around the year 2000, total landings seem to move quite closely in line with the estimate of the spawning stock biomass (SSB: the SSB is a measure of the quantity of fish of reproductive age, rather than of the total stock) which is what one would expect if the “safe” catch is a function of the stock (Figure 3.11). For conservation

Figure 3.11. **Total catch and the total stock**



1. A measure of the size of the reproductive stock.

Source: Norway Ministry of Fisheries and Coastal Affairs.

StatLink  <http://dx.doi.org/10.1787/808887128017>

policy to work effectively, the stock itself should be affected by earlier catch levels, but the relationship is complex. For herring the SSB rose suddenly in the early 1990s even though there was no particular change in the very low level of catch; it then stabilised although the catch stayed low before increasing again at the same time as the catch in the late 1990s. Subsequently the ability of the stock to rise after 2005 may also be related to the maintenance of the total catch below the perhaps prematurely optimistic levels of 1997-99.

One of the key “other factors” that affects the evolution of a particular fish stock is what is happening to related stocks. Different fish populations either compete with or feed on each other.²³ The last sharp decline in cod was related not just to cod fishing but to the collapse of the capelin stock on which it feeds. Thus over or under fishing can be harmful or beneficial to other fisheries, depending on their position in the food chain. The implication of this is that TACs should be set on some kind of eco-system basis. While this idea is sound, better data and understanding of the links is likely to be needed before it is feasible, even without taking into account the more complicated international agreements that would be likely to be needed.

The impact of fisheries management on the industry

The objective of sustainability is not inconsistent with a high level of economic return. The fishing industry has a collective interest in maintaining a high stock in order to extract a high harvest, even if the economically optimal stock is necessarily smaller than the maximal biologically sustainable stock. But enforcing the Norwegian share of the TAC in each fishery requires strong intervention in what was previously felt to be the right to go and fish in open access fisheries. Following the lead of, in particular, New Zealand, the method that Norway has chosen is to allocate shares of the overall Norwegian quota to different vessel groups, and then distribute this quota among the vessels holding the necessary licences to participate in the groups. This allocation is based on a fixed key system, giving the vessels a certain share of the group quota, and thus a share of the TAC. Individual vessels may have quotas for several different fisheries.

Some aspects of this system and its management are likely to generate “local” economic inefficiency, though they may be justified by the fact that the global outcome, *i.e.* for the industry and economy as a whole, is superior. A fundamental reason for this is the backward sloping long run supply curve that exists in capture fisheries: as fishing effort increases, the catch rises but after a certain point it reduces the stock so much that the long run average catch begins to decline. So for a potentially wide range of total catch there is a low cost and a high cost solution (see *e.g.* Nielsen, 2006, Figure 2). The resource saving in the low cost solution can be quite significant (quite apart from any environmentally-motivated conservation effort) but only the high cost solution is a market equilibrium in open access. It follows that even an imperfect management system can be better than risking returning to the “bad” equilibrium. However, it remains important to look for ways to improve efficiency where this can be done without jeopardising fisheries management.

Corporatism

The Ministry of Fisheries and Coastal Affairs sets policy. Its executive arm, the Fisheries Directorate, is responsible for implementing policy and the Institute of Marine Research is the research agency giving technical advice. However, the Fisheries Directorate plays very little role in allocating quotas because this is done according to long term allocation keys both at the group and vessel level. The industry has played an important

role in the establishment of these allocation keys. At the other end of the process, the handling agencies have a kind of statutory quasi-monopoly. In the case of herring and other pelagic²⁴ fish, the Norges Sildesalgslag is a full monopoly, as described earlier.

Quotas are issued in quite a specific form. They do not simply specify a quantity of a particular species of fish but the type of fishing gear that is to be used and the area in which it is to be fished. Unlike in some other countries that use individual quotas, Norwegian quotas are tied to a particular vessel.²⁵ Trade in quotas cannot be separated from trade in the vessel to which they are attached. Taken together, all these factors add up to a high degree of policy-encouraged corporatism and self-regulation by the industry, likely to generate regulatory rents, insider/outsider restrictions and possibly low productivity.

Monopoly rent or resource rent?

As noted previously, profits have been much higher over the last 10 years than they were earlier. This also coincides with a period when the TACs were perhaps beginning to bite more effectively. If this meant less competition for scarce stocks, fishing vessels could perhaps afford to take more time to catch their allocations if this allowed them to lower costs. With the catch restricted so that markets were not over-supplied but with stocks of key fisheries nevertheless rising, revenues increased. Some of this revenue is likely to be a regulatory rent, at least on the surface, i.e. apparently attached to the possession of a fishing quota. Certainly fishing quotas are quite valuable, although exactly how valuable is difficult to know because trading is very restricted. It is said that a fishing vessel with a quota is worth four or five times as much as the same vessel without one. But this may not say very much because the value of a second-hand fishing vessel, often with limited versatility, may not be very high.

But while it is likely that some fishing profits are a rent, they are not so much a regulatory rent as a resource rent, since the regulations themselves simply translate the common resource constraint into private property, which is economically efficient rather than the reverse. Nevertheless, some of the income is still rent and could reasonably be taxed – for example by charging an annual fee for each quota. To some extent this already occurs, as the expenses of the fisheries control system is partly financed out of landing fees and other charges on vessels. However, such charges finance only part of these expenses while the industry benefits substantially from reduced fuel taxes discussed earlier. It may be felt that significant progress has been made in weaning the industry off its earlier dependence on subsidies so some support should be retained, particularly as it is important in remote coastal communities. To the extent that this is true, the wider sustainability arguments might suggest that tax subsidies to employment (though these are already available for remote communities) rather than to energy use would be more appropriate.

Although fish landing and handling agencies have some attributes of monopolies, it is unlikely in practice that they generate the supply or price problems that monopolies are normally associated with, since they are part of a system whose *aim* is to restrict supply. The handling agencies are in fact exempted from normal competition law. This is because their role is highly specific, perhaps more like the role of the commodity exchange than of an industrial company. They act as agents through which fishing vessels supply fish to the processing industries, almost always by public auctions which usually occur before the fish are even landed. The pelagic fish agency for example provides very detailed information on

prices and quantities on its website (www.sildelaget.no) including the position of vessels with respect to their quota for different species.

The role of quotas

In Norway there was strong reluctance among the fishing community to the original introduction of individual tradable quotas, even when it seemed clear that fishing stocks were threatened. Now that the quota system is in place it seems (according to the Fisheries Directorate and a number of researchers), on the contrary, to play an important role in generating support for fisheries management in the fishing community. The tradability, even if limited, of a quota gives it a value and quota owners have an interest in maintaining the value. Since this value is likely to diminish if the fish stock declines,²⁶ the existence of the quotas gives existing fisherman a direct interest in limiting the overall catch and ensuring compliance by other fishermen. This interest is likely to be greater with restrictions on quota trading, since in that case the value of the quota is more directly related to the individual's future catch.

Rebuilding fish stocks, particularly given the limited understanding of exactly what determines outcomes, requires a degree of integration of biological, social and economic information, to ensure the needed degree of co-operation among the different actors (Cox and Khwaja, 2009). Quota-based management may thus be both part of the technical solution to fisheries management and part of the process of ensuring support within the industry.

Barriers to productivity improvement?

As the number of vessels and the number of fishermen have declined steadily, the average level of labour productivity in the industry has increased. One of the ways that this is brought about in "normal" industries is through more efficient operators capturing the market from the less efficient ones or from adopting measures to improve economies of scale. In the fishing industry, the restrictions on trade in quotas slow this process and prevent some of the mechanisms from working at all. Since the fishing capacity of the fleet is considerably higher than the overall TAC, many vessels and their crews are effectively underemployed. It would make economic sense, especially in times of very low TACs, for vessels' owners to transfer their quota to another vessel (either one of their own or, for a fee, to a competitor). This is not allowed, however. Quotas can be transferred to another vessel, say from vessel A to vessel B, but only if A is sold to the owner of B who must then scrap one of the boats; after that he retains the quota of the surviving vessel but only 80% of that of the scrapped vessel. The remaining 20% is returned to the pool to augment everyone else's quota. Furthermore, this kind of transfer can occur only within restricted geographical areas and between vessels operating with the same technology.

This clearly slows potential productivity improvements, but there are some justifications for it. The most persuasive is based on conservation. The greater the excess capacity in the fleet, the greater the temptation to cheat and the higher the costs of monitoring. By ensuring that quota transfers are generally accompanied by a physical reduction in capacity through scrapping,²⁷ the system encourages a reduction in capacity. It does, however, create a more or less impenetrable barrier to entry. A potential new entrant with a more efficient vessel could only get a quota by buying an existing vessel but would not get that vessel's full quota.

Box 3.11. Recommendations on fisheries policy

- Norwegian fisheries management is at least as effective in encouraging sustainability as in most other countries. If Norway nevertheless wanted to lead further from the front it might wish to instigate an independent (*e.g.* by a non-European country or fishing organisation) assessment of over-fishing in fisheries exploited by Norway and compliance by the Norwegian industry in particular.
- If assessment of the trial discard ban on joint Norwegian-EU fisheries proves positive, Norway should work for its extension to other shared fisheries in the North Sea.
- Ask the Competition Authority to investigate the fishing industry to assess whether conservation management *unnecessarily* restricts competition.
- Unless it can clearly be shown that sustainability would be threatened, relax the conditions on trading quotas. A first stage might allow *temporary* transfers (against payment) between vessels without any change in ownership or vessel scrapping.
- Announce the gradual phasing out of the exemption on fuel taxation in co-ordination with neighbouring countries, and the introduction of a charge on quotas to fully finance expenditure on monitoring and enforcing fisheries management policy. (This would not exclude finance from general taxation for, for example, health and safety policy as in any other industry.)
- Assess the compatibility of Norway's aims, and of its monitoring and enforcement regimes, with those of the European Union.

Notes

1. The “level 3” indicators in the EU system are much more numerous but are designed to represent actions or explanatory variables that affect the level 2 indicators.
2. Assuming that net emissions are calculated ignoring the impact of changes in land use and forestry Norwegian emissions taking account of land use and forestry are much lower. The reduction in net emissions due to these effects is much more significant for Norway than for most countries. Due to difficulties of estimation and verification, these changes are excluded from the calculations of emissions for the purposes of the Kyoto Protocol. Taking them into account could be expected to reduce the relative burden on Norway; however, Norway has announced that it will continue to ignore them for the purposes of its own announced emissions targets.
3. See, for example, the importance given to the “peer review” of Norwegian sustainable development policy by Swedish academics and officials, and the interest of the latter in it.
4. However, Norway has not done as well as the average Annex 1 countries if the USA is also removed from the comparison.
5. This covers only the cost of the carbon capture. Its transport and storage will be dealt with in a separate project by GassNova, a government agency recently established for this purpose.
6. The Norwegian prime minister has described it as the equivalent for Norway of what the moon landing was for the United States.
7. Many of the most energy-intensive industrial plants (including some GFG-emission intensive industrial processing plants) obtain low priced electricity on very long-term contracts, a substantial number of which are expiring over the next year or so.
8. In practice there is no single strict marginal cost, which will depend on time of day, the season and so on. But the current bias in “average” marginal cost seems clear.
9. Nothing is simple, however. Emissions from this sector were already 8 million tonnes in 1990. Perhaps only the increase from this level should be “eligible” for purchasing offsets. In fact there is no economic logic that can determine the “right” balance between domestic abatement and permit trading, especially when marginal costs of domestic abatement measures range from well below the trading price to well above it.

10. Here and elsewhere the word “permit” or “allowance” is used for what the Kyoto Protocol refers to as an AAU (Allowable Amount Unit) and other trading systems may refer to in other ways.
11. See, for example, Neuhoﬀ *et al.*, (2007), OECD (2009), Dröge (2009).
12. In addition, the structure of the tax is such that the implicit penalty for CO₂ emissions is higher – per unit of CO₂ – when they are made from a large car than from a small car (Braathen, 2009).
13. The car-buying behaviour of Nordics living abroad suggests that, without this tax, there would indeed be more and larger cars on Norwegian roads.
14. A more obvious measure of total displacement tons cannot be used because statistics on a consistent basis are not collected.
15. It is diﬃcult for a relatively short section to cover many important aspects of the ﬁshing industry. For example, it is often relevant that there are diﬀerent varieties of cod, as well as several diﬀerent populations that have diﬀerent spawning and migration patterns. Unless otherwise stated, in the rest of this chapter, “herring” excludes North Sea herring, where the current low level of the stock is estimated at only around one tenth of the spring spawning herring, and “cod” includes both Barents sea cod and the coastal cod ﬁshery. For an overview of the Norwegian ﬁsheries see Gjørseter *et al.* (2008).
16. Much of the analysis is done by scientists from national research organisations working in joint teams under the auspices of ICES.
17. More precisely, a 12% chance that an illegally caught ﬁsh would be in an inspected catch.
18. As of 22nd October 2009: www.fiskeridir.no/fiske-og-fangst/iuu-listen. There are 10 Russian-registered ships on this list. There are only 2 registered in OECD member countries, both from the UK.
19. Some Icelandic vessels were been removed in 1999 nevertheless, as one of the conditions that Iceland imposed on was a key agreement (the Loophole Agreement) on managing cod (Stokke, 2009).
20. The “Agreement on Port State measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing”.
21. After 1994, perhaps due to changes in water temperature, the stock moved further north.
22. One of the ways in which overfishing of cod is thought to occur is where vessels that may have, either deliberately or accidentally, caught cod as well as their main target haddock, land the cod outside Norway and record the catch as all haddock.
23. Or themselves. Large cod eat small cod when other food is scarce.
24. “Pelagic” ﬁsh, such as herring and mackerel, live in mid-depth water, largely independently of the sea ﬂoor, except for spawning. “Demersal” ﬁsh, such as cod, haddock and ﬂat ﬁsh, live on or near the sea ﬂoor.
25. This is a simpliﬁed description. Vessels are subject to both licensing and quota arrangements. Licences and permits are issued annually. Non-tradable vessel-speciﬁc quotas are issued for the life of the vessel. “Structural” quotas, that can be traded (subject to the restrictions described in the main text) along with the vessel, are issued for 20 years. Structural quotas were ﬁrst introduced in 1984 for certain ﬁsheries and have covered all ﬁsheries since 2004. Structural quotas were suspended at the end of 2005 and re-introduced in mid-2007.
26. Not necessarily, since if the price elasticity exceeds unity a cut in supply increases revenue. But costs per ﬁsh caught probably increase as the stock declines, so a net beneﬁt from declining stocks is probably just a theoretical possibility.
27. Even sales to non-Norwegian owners for use elsewhere are prohibited. This might seem unnecessary, but also follows a conservation logic.

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