




OECD ECONOMIC SURVEYS



1999



SPECIAL FEATURE
Coping with ageing:
The Icelandic model



ICELAND

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BASIC STATISTICS OF ICELAND

THE LAND

Area (1 000 sq. km)	103	Unproductive area (1 000 sq. km)	82
Productive area (1 000 sq. km)	21	<i>of which:</i>	
<i>of which:</i>		Glaciers	12
Cultivated area	1.1	Other area devoid of vegetation	70
Rough grazings	20		

THE PEOPLE

Population, 1st December 1998	275 264	Occupational distribution, 1998 (per cent):	
Net increase 1988-98, annual average (per cent)	1.0	Agriculture	3.6
		Fishing and fish processing	9.9
		Other manufacturing	12.0
		Construction, total	8.4
		Commerce	11.5
		Communications	7.0
		Services and other	47.6
			100.0

GOVERNMENT AND PARLIAMENT

	1995	1999
Parliament, number of seats:		
Independence Party	25	26
Progressive Party	15	11
People's Alliance	9	-
Social Democratic Party	7	-
Women's Alliance	3	-
Alliance	-	17
Left Green Alliance	-	7
Liberal Party	-	2
Other	4	-
	63	63

Last general election: May 1999

PRODUCTION AND CAPITAL FORMATION

Gross national product in 1998:		Gross fixed capital formation in 1998:	
IKr million	578 802	IKr million	125 365
Per head, US dollars	29 545	Per cent of GNP	21.7

FOREIGN TRADE

Exports of goods and services in 1998, per cent of GNP	35.4	Imports of goods and services in 1998, per cent of GNP	39.8
Main exports in 1998 (per cent of merchandise exports):		Imports in 1998, by use (per cent of merchandise imports)	
Fish products	72.7	Consumer goods	31.0
Aluminium	13.5	Investment goods	34.4
Other manufacturing products	9.5	Intermediate goods (excl. fuels)	29.4
Agricultural products	1.4	Fuels and lubricants	5.1
Miscellaneous	2.9		

THE CURRENCY

Monetary unit: Krona		Currency units per US dollar, averages of daily figures:	
		Year 1998	71.17
		October 1999	70.80

Note: An international comparison of certain basic statistics is given in an annex table.

This Survey is based on the Secretariat's study prepared for the annual review of Iceland by the Economic and Development Review Committee on 18 October 1999.

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After revisions in the light of discussions during the review, final approval of the Survey for publication was given by the Committee on 23 November 1999.

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The previous Survey of Iceland was issued in May 1998.

Assessment and recommendations

With the economy growing above potential...

Iceland's growth performance since 1994 has been one of the best in the OECD area, averaging 4½ per cent in real terms. In 1999, output should expand even faster, by around 6 per cent. The nature of the boom has changed in the past eighteen months, however, in a way that makes it less sustainable. The principal element feeding demand now is private consumption that, in the last two years, has increased at an annual average rate of close to 8½ per cent. Such a surge has followed generous three-year wage settlements, strong employment growth, tax cuts and buoyant borrowing. At the same time investment has remained flat, following the completion of large-scale projects, thereby slowing the growth in capacity. As a result, according to Secretariat estimates, the current pace of expansion is exceeding potential output growth by at least 3 percentage points.

... signs of overheating have emerged...

Such developments have brought clear signs of overheating in the economy. The labour market has become extremely tight, with unemployment moving below 2 per cent recently and wages rising rapidly. Another indication of the pressure on resources has been the persistent current account deficit that, while expected to narrow in 1999 to around 4½ per cent of GDP, is still well above historical averages. These tensions already produced an upsurge in the growth of the GDP deflator to 5 per cent in 1998, even though consumer price increases were held back by the appreciation of the currency and weak world prices. Now that the latter factor has been reversed consumer price inflation has started to rise. Its expected increase in 1999, at close to 5 per cent, seems likely to be double the Central Bank's initial

estimate, bringing a surge in financial markets' expectations of medium-term inflation.

... and are projected to build up...

Looking forward through 2000, the prospect is for some slackening in the pace of expansion. Public sector demand is likely to fall, following delays in investment projects announced in the budget for 2000. On the other hand, consumers are now benefiting from a pickup in the prices of houses that make up more than two-thirds of marketable household wealth. This is projected to lead to further increases in household indebtedness and falls in the savings ratio. While the prospects for nominal disposable income growth are uncertain, as the new wage contracts that will start in 2000 have not yet been negotiated, the continued low level of unemployment should ensure that pressures for real wage increases remain high. The strength of retail sales should sustain commercial investment. Overall, GDP growth seems likely to remain close to 3 per cent in 2000, perhaps bringing a slight increase in unemployment towards 2 per cent. As the growth of domestic demand slackens, the current account deficit should stabilise, but might still be above 4 per cent of GDP. Moreover, with the level of output remaining well above potential, consumer prices are projected to continue to rise rapidly in the next two years, though, if maintained, the renewed appreciation of the currency may help limit the extent of the increase.

... bringing risks of renewed inflation and financial instability

The combination of strong output growth, low unemployment and wage pressure could make for a markedly worse inflation outcome than projected. As noted, the immediate outlook is already for faster price increases, but if the forthcoming wage settlements are made over an extended period of time, during which inflation expectations are ratcheting up, there is the risk that a wage-price spiral could develop. This risk is accentuated by the fact that bank credit is growing very fast, fuelled by foreign borrowing, so pushing up asset prices. Moreover, the money stock is currently expanding at a pace not seen since the introduction of the inflation stabilisation programme in 1990. Under such conditions, if confidence in the economy were to weaken, downward pressure on the exchange rate could emerge, which might adversely affect bank balance sheets and, in

turn, private investment. In order to guard against such a risk of financial instability, the authorities have already pushed the banks to take steps to improve their overall liquidity, and further action is being considered, focusing on the maturity structure of assets and liabilities of the banking system.

A further tightening of monetary policy is thus required...

As the limits of non-inflationary growth seem to have been reached, a significant tightening of monetary policy is needed to preserve the notable progress in disinflation achieved this decade. Since the end of 1997, the authorities have raised interest rates five times, by a total of 210 basis points to 9 per cent in September 1999. Nonetheless, given the rise in inflation expectations, real short-term interest rates are only slightly higher than at the end of 1997 when the economy was broadly in equilibrium. Since the magnitude of the restriction so far has proved insufficient to prevent economic overheating from building up, additional monetary restraint is therefore required before confidence deteriorates. Such a move would help avoid a further pickup in inflation by sending, in advance of the new wage agreements, a clear message to financial markets and the social partners that the monetary authorities are determined to maintain stable prices in the future.

... that may imply more exchange rate flexibility...

Focusing on inflation control requires giving less priority to exchange rate stability, which, in current circumstances, could imply leaving the exchange rate to appreciate in the period ahead. Indeed following the last increase in official rates and the subsequent tightening in money markets, the exchange rate has appreciated to within 2 per cent of the upper limits of its target range. A flexible approach to exchange rate policy would seem to be consistent with the fundamental characteristics of the Icelandic economy which is subject to important supply shocks, as a result of its dependence on fish and energy-intensive products. These shocks are markedly different from those facing its trading partners. While such disturbances could be overcome with increased labour mobility and real wage flexibility, this may be difficult to achieve if past downward rigidity of nominal wages persists. Greater exchange rate flexibility would not only provide a means for ensuring stabilisation of the

domestic economy in the short run, but it would also help cope with increased capital mobility in the context of the ongoing financial liberalisation.

... and the adoption of a different anchor for policy

It would therefore seem appropriate to consider an alternative to the exchange rate as an anchor for monetary policy. The money stock could be one such anchor as the demand for money has been stable over the past decade. However, in the future, continuing financial deregulation could result in fluctuations in the behaviour of money aggregates. This points instead to targeting inflation in the conduct of monetary policy. Experience in other countries in this regard would suggest setting a time frame of between two and three years to achieve such a target, in order to avoid excessive short-term output fluctuations, especially as import prices have a significant direct impact on consumer price inflation in Iceland. It also suggests that the Central Bank would need to have a large degree of autonomy for setting interest rates, subject to transparently explaining its decisions to the public and the markets.

At the same time, to extend gains in budget consolidation...

Public finances have benefited from the expansionary environment, although not as much as might have been expected. In the past four years, they have improved substantially with the general government budget balance moving from a deficit of $4\frac{3}{4}$ per cent of GDP in 1994 to a surplus of around 1 per cent of GDP in 1998 – a move that is projected to continue in 1999. The fall in public debt may be even greater than suggested by the budget surplus, thanks to privatisation receipts, with net and gross debt projected to drop by 10 and 17 percentage points of GDP between 1994 and 1999, respectively, to reach 27 and 40 per cent of GDP. However, despite the fiscal “bonus” generated by rapid economic growth, recent stimulatory policy measures have limited the extent of these budgetary improvements. In 1999, tax cuts and expenditure increases resulted in a slight worsening in the structural budget balance of around $\frac{1}{4}$ per cent of GDP, a not uncommon experience during upswings. Moreover, the structural deficit would be slightly greater if the increase in civil service pension liabilities were taken into account.

... a tight fiscal stance is needed over the medium term

Compensating for these developments, the draft 2000 central government budget envisages limiting the growth of expenditure in order to achieve a budget surplus of the order of 1 per cent of GDP on a structural (*i.e.* cyclical adjusted) basis. In particular, the government will restrain the growth of income-support programmes and tighten the controls over government agencies in order to ensure that they stick to agreed budgets. Moreover, a significant portion of investment projects will be delayed, while public sector wages will be reined back, after the large increases of the past two years. The resulting decline in government indebtedness will be accentuated by the proceeds from privatisation. Building on such a course, fiscal stability would be best served by the introduction of a medium-term plan that aims for a continued central government structural budget surplus. Such a plan would provide the resources for meeting the unfunded pension liabilities for existing government employees, that have accumulated in the past. It would also help to reduce pressure for spending at the wrong time and better limit commitments being taken in one year that have their full budgetary consequences only subsequently.

The task of the fiscal authorities will be made easier by the limited economic consequences of ageing...

Sound public finances should allow private saving and capital inflows to be used productively, so helping to maintain growth in the face of an ageing population. However, Iceland will need to transfer fewer resources to the elderly than other European countries. Among people aged between 65 and 74, fully 40 per cent are economically active. In addition, although the proportion of elderly in the population is likely to increase at a similar pace to other countries, the working population is not expected to fall as the birth rate has stayed close to its replacement level.

... and by the fact that pensions will be increasingly provided by the private sector

Furthermore, the future path of public finances should be largely insulated from the consequences of increasing social security pension payments thanks to a decision taken in 1969 by the social partners to set up private pension funds. This system, which has become mandatory, now covers all workers including the self-employed. By 1998, private funds operating under this scheme had accumulated assets amounting to 69 per cent of GDP and these should continue to build up, as all individuals will not receive maximum

pensions until around 2025. There is still, nonetheless, a small state basic pension and means-tested supplementary benefits that provide a “safety net” to most of the retired people as yet without a full occupational pension. As private pensions increase, entitlements to supplementary state pension payments should gradually decline given current income limits, largely offsetting the growth in basic pension outlays caused by the rising number of elderly people.

*Nonetheless,
some problems
remain*

Although fiscal pressure is, thus, unlikely to arise from state pensions in general, growing claims on public resources are expected from the increased cost of pensions of government employees. The authorities have taken steps to limit the growth of this liability by recognising the cost of the new rights that accrue each year in the budget, but nonetheless such claims remain significantly underfunded. There is also a risk of growing demands to raise the thresholds at which social security pension benefits are withdrawn. Recent changes to the disability pension that increased the eligibility ceilings for some benefits should not be taken as a precedent for changes to supplementary pension benefits. Were this to occur, spending pressures on the government budget could intensify. In this regard, it is important that the transitory nature of the means-tested component of public pension benefits for most of the population be respected. Spending growth should also be limited by linking the value of state pension benefits to wages, rather than to the faster of either wages or prices as this would allow any drop in real wages to be reflected in pension payments. In addition, the government will have to make sure that all people do join the occupational pension system for which they are eligible, by using the powers it obtained from the new legislative framework for pension funds introduced in 1997.

In addition, the future review of private pensions should aim to preserve the stability of the present system...

The government is committed to review the current legislation governing occupational pensions in 2001, looking especially at the provisions for freedom of choice between different savings schemes. At present, people are given limited possibilities to divert part of their total pension contributions to individual accounts, as in other countries, the bulk of such contributions is used to generate a pension that is proportional to life time earnings. But individual accounts, now on offer, generate greater final benefits for the young generation than for older people as their contributions will have a longer time to accumulate interest. Thus the young are more likely to opt for such accounts, so potentially worsening the financial position of existing funds that will have to rely on a reduced flow of interest payments to pay benefits. When reviewing the current system, the government will, therefore, need to ensure that any further extension of individual accounts is not destabilising. One option would be to couple any extension of individual accounts with changes in benefit accumulation rules of pension funds in order to link the size of benefits to the age at which contributions are made. At the same time, the government should consider raising the limits on both equity and foreign investment, so allowing a greater diversification of pension fund portfolios and an improved return on their assets.

... while state services for the elderly should be restructured...

Although direct government expenditure on pensions is low, relative to other OECD countries Iceland spends a significant amount on services for the elderly, notably in the areas of housing, home-care and long-term institutional care. The cost of such a system appears to be higher than necessary, and the goal of maintaining the elderly independent is not being met as well as it could, with a higher proportion of them living in institutions compared with other Nordic countries. Excessive supply of institutions providing long-term care in the more rural parts of the country results in pressures to fill these retirement-home beds. At the same time, there is a short supply of nursing care beds in the capital area, that results in elderly people staying in costly hospital beds for long periods. A better geographic distribution of facilities would ease this problem and, in the long run lower costs. In addition, there are wide differences

in the unit costs of providing services in different homes, suggesting that a pricing policy that set uniform tariffs for given levels of care at the level of the costs of the most efficient homes would generate significant savings. The government is attempting to increase the information on patient needs that could be used to determine the appropriate level of care and its associated cost. Such data should be used to improve the cost-effectiveness of the less efficient institutions, helping to lower spending. Moreover, in case the recent experiment to finance municipally-provided residential care by a block grant from central government, rather than through *per-diem* payments, proves successful in lowering spending, it should be quickly generalised.

**... and user
charges increased**

The cost of care for the elderly to the Treasury could be contained by increased user charges. At present, residents of institutions pay little more than their low basic state pension for care. Although payments should rise as the occupational pensions increase, costs are unlikely to be fully covered in nursing or geriatric homes. Some scope exists for raising charges by lowering the amount of occupational pensions that individuals are allowed to keep. But, in the light of the level of assets of the elderly, the government should also consider requiring residents to use part of their wealth to pay for the services received, if only by building up a debt to the government that would eventually be repaid. In this context, regulations would need to be carefully set to limit the risk of individuals running down their assets early or transferring them to their children.

**Long-run growth
prospects
depends on
improving the
fishing quota
system...**

Securing a sustainable growth of incomes over time, as the population ages, will depend as well on a successful fisheries management policy. The scientific establishment of total catch limits for cod has restored stocks in areas around Iceland sufficiently to allow a relatively high level of fishing. Moreover, by allowing the transfer of quotas nationally, it also ensures that the catch is made efficiently. Recent and pending court cases could pose a threat to this system, however. Against this, it is essential that such a system be retained and even expanded, bringing in smaller fishermen and widening the range of species for which there are

automatic quota rules. Public acceptance of the system might, nonetheless, be improved by the introduction of an auction mechanism for allocating increases in quotas, as this might be seen as fairer than the current regime where rights depend on historical catch levels. Moreover, if revenue from this source were used to reduce tax distortions in other sectors, the economy would become more productive. However, now that the quotas have been capitalised both into the market values of quoted companies and by sales between individuals, any change in the system will have to be gradual. Finally, the trade in fish should be made more transparent to ensure that the fishermen can continue to be compensated by receiving a share of the value of the catch.

... and on reform initiatives in other areas

Elsewhere, recent structural reforms should be extended. In particular, the government should complete its withdrawal from the financial sector quickly by selling its holdings in the commercial banks and the government-owned housing fund. Moreover, privatising the national telephone company would help improve competition. Before this is done, however, an independent regulatory agency should be established that should develop a competitive pricing system for network access. Those branches of the national company that operate in competitive markets should be placed in arms-length subsidiaries. Finally, a new mobile phone operator should be licensed, provided it agrees to use new high capacity technology. A competitive telecommunications environment would clearly help lessen the barrier of Iceland's geographic isolation, thus contributing to boost its nascent high-tech industries. Finally, in the area of mergers, the government needs to introduce a pre-notification system in order to ensure adequate time for considering the merits of a particular case.

In sum

To sum up, the Icelandic economy has expanded rapidly over the past five years, bringing output to well above its potential. Clear signs of overheating have emerged, with unemployment below 2 per cent, inflation picking up and a large current external deficit. These developments are projected to continue, raising the risks of a wage-price spiral and financial instability. To guard against such risks, a significant tightening of monetary policy is required, with less

priority attached to the exchange rate as a target for policy. This should be complemented by a medium-term fiscal discipline aiming at achieving a structural budget surplus. Such a course would help cope with long-term care spending that will rise with ageing. On the other hand, except for government employees, pensions should not constitute a burden for public finances, as, for the main, they will be provided by the private sector. To enhance future growth prospects, it will be important to maintain and extend the fishing quota regime in the face of legal threats and to increase competitive forces, especially in the telecommunications industry.

I. Recent trends and prospects

After six years of stagnation, economic activity in Iceland picked up in 1994. Foreign investors started building and expanding plants in the power-intensive industry. Even excluding that industry, investment as a share of GDP moved up considerably. With employment growth picking up, real incomes improved, and consumers increased spending, partly to replace durable goods. Inflation was successfully stabilised at low levels, which, together with government policies to bring spending under control, strengthened private-sector confidence. However, by the start of 1998, it was clear, as the previous *OECD Economic Survey* (1998) noted, that “the economy was approaching capacity limits”.

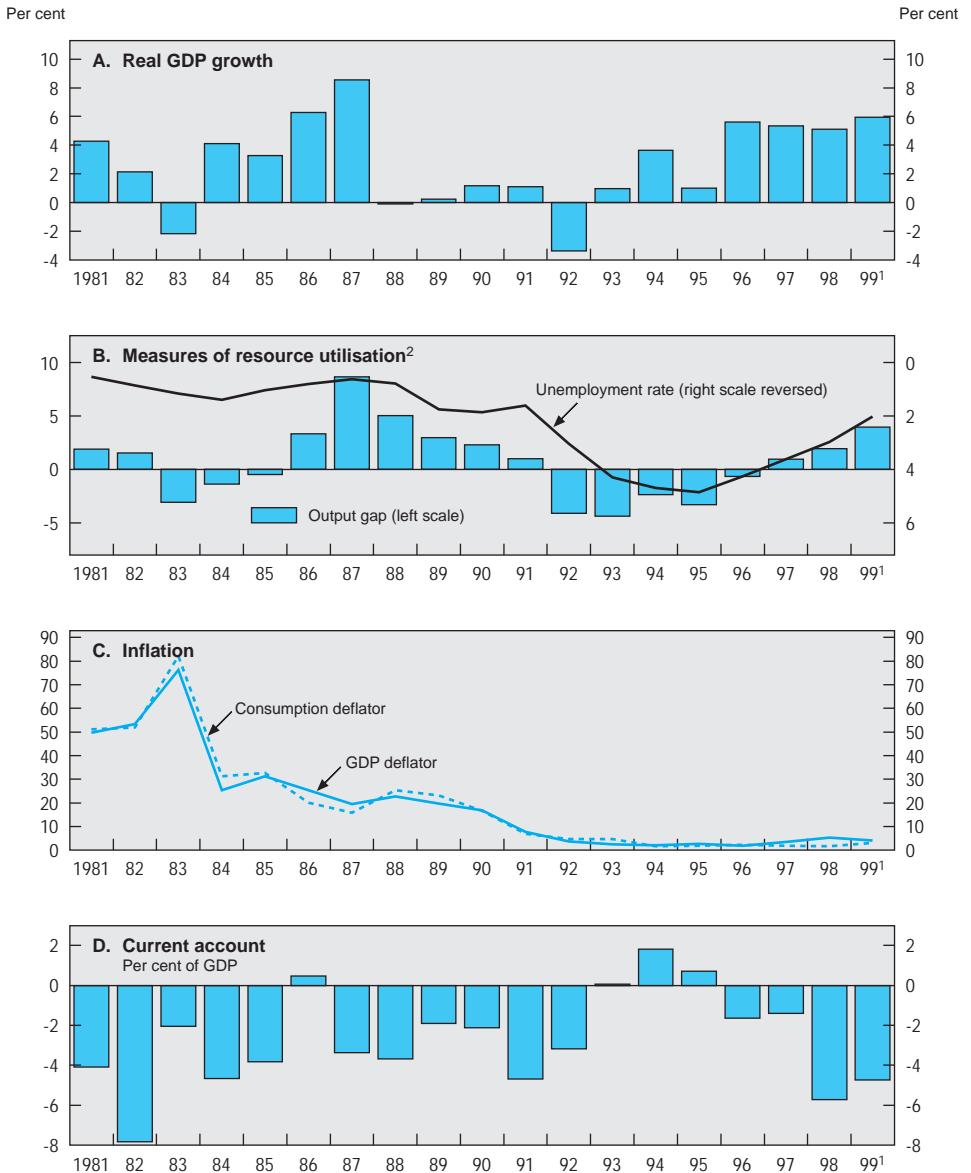
The economy has passed the limits of non-inflationary growth

In the event, real GDP increased 5 per cent in 1998, pushing output well above its potential level (Figure 1, panel A and B; Table 1). In 1999, output could well be over 3 per cent above potential, as output growth does not appear to have slowed down. So far, abundant credit has continued to feed private expenditure, although this category of demand may have slackened somewhat as large-scale investment projects terminated. At the same time, there has been a marked improvement in net exports. With the unemployment rate dropping below 2 per cent, labour markets have tightened and have continued to push up real wages and hence to buoy private consumption. Nominal wages continue to outrun productivity gains; their recent pace could only be sustained with an increase in output price inflation and indeed inflation, which had been low (panel C), is now picking up. Finally, the current account deficit remains at a high level, though less than the exceptional level of 1998 (panel D). The paragraphs below review these developments in more detail.

Domestic demand has remained buoyant

Private consumption has been particularly buoyant in the past two years. It shot up 11 per cent in 1998, prolonging the sustained growth seen in the previous

Figure 1. Aggregate economic indicators



1. Projected based on available data.
 2. Percentage difference between output and estimated potential output.
 Source: OECD.

Table 1. **Output and demand**
Per cent change in volume terms, 1990 prices

	Average 1987-93	1994	1995	1996	1997	1998	1999
Private consumption	-2.1	1.9	4.2	6.4	6.0	11.0	6.7
Government consumption	2.8	3.7	1.3	1.0	3.1	3.7	3.4
Gross fixed investment	-4.5	-1.1	-2.8	26.5	10.6	22.8	0.1
Residential	0.3	0.0	-9.9	4.0	-6.1	5.0	7.0
Business	-10.0	0.2	6.8	53.1	17.9	33.0	-3.0
Government	5.4	-4.3	-12.0	-4.3	6.6	3.7	7.5
Final domestic demand	-1.6	1.8	2.5	8.3	6.2	11.7	4.8
Change in stockbuilding ¹	0.3	-0.2	0.6	-0.7	0.0	0.3	0.0
Total domestic demand	-1.4	1.5	3.1	7.5	6.2	12.1	4.7
Exports of goods and services	-0.3	10.0	-2.2	10.0	6.0	3.0	8.5
Imports of goods and services	-4.3	4.2	3.8	16.6	8.6	22.4	5.1
Change in foreign balance ¹	1.4	2.2	-1.9	-1.5	-0.7	-6.7	1.0
GDP	0.0	3.7	1.0	5.6	5.3	5.1	6.0

1. As a percentage of GDP in the previous year.

Source: Statistics Iceland and the National Economic Institute, except for 1999 figures which represent OECD estimates.

three years. Spending remained particularly heavy on items such as durable goods, entertainment and travel. An acceleration in wages and significant employment gains, along with moderate consumer goods inflation, explain much of this development. However, households also have increased their borrowing to support their spending. Consequently, personal debt as a share of total assets moved up $3\frac{3}{4}$ percentage points in the past five years, with a $1\frac{1}{2}$ percentage point increase posted in 1998 (Table 2). Non-housing debt as a share of liquid assets has risen even faster. Moreover, the increase in debt related to housing has been substantially in excess of residential investment, on average by an amount equal to $\frac{3}{4}$ percentage points of additional borrowing over the past six years. In 1998, the increase in debt was only marginally lower. Such rapid borrowing growth has resulted in a deterioration of the household wealth to consumption ratio, despite significant capital gains. This fall has been especially noticeable for wealth held outside pension plans. Early indicators in 1999 suggest that private consumption is still growing rapidly, supported by rising real incomes, through additional increases in wages and employment, and robust credit growth. Real imports of consumer goods excluding autos showed no slowdown in the first half of the year, rising by $7\frac{1}{2}$ per cent.

Table 2. **Balance sheet of households**

	IKr billion					
	1993	1994	1995	1996	1997	1998
Assets	937.2	980.9	1 039.0	1 152.5	1 255.7	1 387.9
Fixed	551.0	560.8	580.7	638.8	678.2	721.9
Pensions	204.5	229.7	258.1	302.0	345.6	396.0
Other financial	181.6	190.4	200.2	211.7	232.0	270.0
Debt	262.5	289.1	317.9	350.7	388.9	440.3
Credit funds and bank debt for housing	156.9	176.0	194.0	215.0	234.5	255.1
Bank debt, not for housing	39.2	42.6	47.5	52.5	61.4	87.0
Other debt not identified	66.4	70.5	76.4	83.2	90.0	98.2
Net wealth	674.6	691.8	721.1	801.8	866.8	947.6
Financial	123.6	131.0	140.3	162.9	188.7	225.7
Excluding pensions	-80.9	-98.7	-117.8	-139.1	-156.9	-170.3
<i>Memorandum</i>						
Consumption	248.2	256.9	272.7	296.8	320.4	361.8
Residential investment	18.2	18.7	17.3	19.5	19.1	20.8
Net investment	7.1	7.2	5.5	7.2	6.0	7.0
Saving and capital gain on financial assets ¹	22.2	14.5	14.8	29.8	31.7	44.0
<i>Analytical shares (percentage)</i>						
Debt as a share of gross wealth	28.0	29.5	30.6	30.4	31.0	31.7
Debt as a share of gross wealth excluding pensions	35.8	38.5	40.7	41.2	42.7	44.4
Debt as a share of net wealth	38.9	41.8	44.1	43.7	44.9	46.5
Debt as a share of net wealth excluding pensions	55.8	62.8	68.7	70.2	74.6	79.8
Net wealth relative to consumption	271.8	269.3	264.4	270.1	270.5	261.9
Net wealth excluding pensions to consumption	189.4	179.9	169.8	168.4	162.7	152.5
Changes in net wealth as a share of consumption ²	12.9	6.7	10.7	27.2	20.3	22.3

1. Equals changes in financial net worth plus net residential investment.

2. Changes in net worth plus net residential investment as a percentage of itself, consumption and unrequited transfers, which are small.

Source: Central Bank of Iceland.

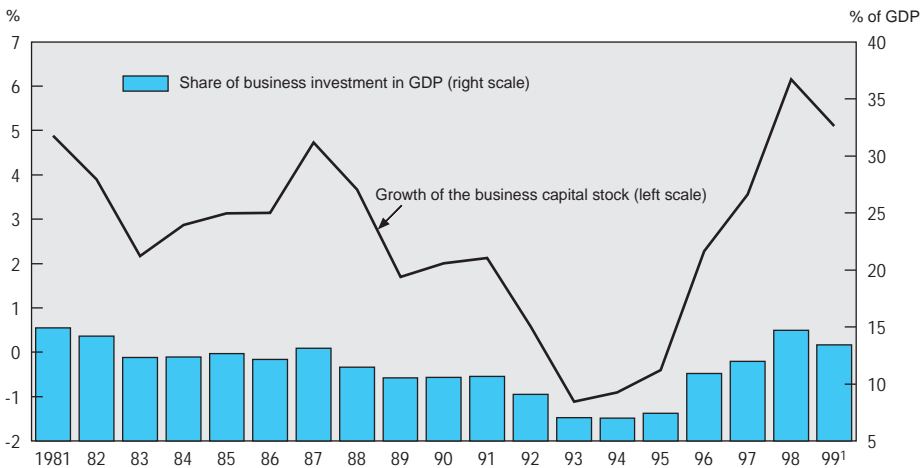
After two years of rapid growth, *business sector investment* increased by nearly 36 per cent in 1998, with significant gains posted in most major sectors. The fishing and fish processing industries reversed a substantial decline the year before, as imports of ships jumped 45 per cent in value. Office and building construction boomed with a commensurate rise in spending on construction-related equipment. Icelandair's purchase of a Boeing 757 added about 8 percentage points to investment growth. Investment also increased in the

communications sector, while computer and office equipment investment soared 20 per cent, some of which is likely related to work on the Y2K bug (see Chapter III). In contrast, investment spending in the aluminium industry levelled off in 1998, as a full year's work on the new plant in Grundartangi offset completion of the expansion of the Isal smelter. However, outlays in other major plants in ferro-silicon and hydroelectricity industries continued to grow.

Private-sector investment is expected to fall in 1999 as major projects in the aluminium industry were completed at the end of 1998. However, additional work on the expansion of the ferro-silicon plant, significant investment in plant and equipment for the generation and transmission of electrical power and the expected delivery of Boeing 757 in 1999 should help to partly compensate this drop. Analysis of the timing of outlays on specific large-scale projects is confirmed by the data for imports of capital goods excluding aircraft, ships and autos. In the first seven months of the year, these remained at their level of the previous year which contrasts to the 33 per cent growth registered in 1998. Nonetheless, capital stock growth should remain high by recent standards given the level of investment to GDP (Figure 2).

Government spending also contributed to demand growth in 1998, a development that should continue in 1999 (see Chapter II). Real public consumption rose 3¾ per cent in 1998, with some employment increases. Public investment

Figure 2. **Growth of the business capital stock and the business investment share**



1. Projected based on available data.
Source: National Economic Institute.

grew a little more rapidly with substantial spending on roads, bridges and schools, some of which may be the result of uneven development across the regions (see Chapter III). Central and local government budgets suggest that government spending will accelerate somewhat in 1999 with additional increases expected in both consumption and investment.

Much of this demand was met by a rapid rise in imports...

Real imports of goods and services climbed 22 per cent in 1998, which – as in the two previous years – is significantly faster than output. Imports of capital equipment have been particularly buoyant, some being related to investment in the power-intensive industries, as well as to Icelandair's jet purchase. Car imports jumped by almost one-third, and those of consumer goods also surged. Likewise, reflecting greater spending by households, imports of non-factor services also rose substantially, especially on tourism and related categories. Imports of goods, however, appear to have slowed in 1999. Little real growth in capital goods imports and a drop in imports of materials and supplies have helped offset continued rapid increases in imports of consumer goods and motor vehicles.

... and since exports grew more moderately...

Real exports of goods and services expanded at a more moderate pace in 1998, rising only 2½ per cent in 1998. Marine production dropped over 5 per cent, which is more than accounted for by a substantially lower capelin catch (Table 3). As fishermen went on strike in the second half of March, declines in these months compared with the year before explain half of the drop. Elsewhere, a large increase in cod landings helped offset overall declines in other demersal species and in shrimp.¹ Ferro-silicon and diatomite exports also declined in 1998. In the case of ferro-silicon, production was cut at the end of the year because cheap electricity became unavailable due to low water levels at hydroelectric dams. On balance, exports of other non-commodity goods declined as well, especially those of used boats and aircraft, as Icelandair had sold a jet in 1997. Offsetting these decreases, aluminium exports rose by over 40 per cent, with the new plant coming on line, and exports of services increased sharply, with particular strength from tourism. In the past five years, such receipts have risen by 0.7 percentage point of GDP as the number of tourists visiting Iceland overnight has increased over 50 per cent. Such a trend should be maintained this year.

Trade data up to August 1999 show a fall in exports of marine products. This drop is unlikely to be reversed as the quotas on catches for the upcoming fishing year have been cut somewhat. Aluminium exports should continue to increase during the year, as production builds up at the new smelter. Moreover,

Table 3. **Recommended fish catch and landings**

	Tonnes						
	1997/98 Cod-equiv. Units	FY 1999/00 TAC Recom.	FY 1998/99 Total allowable catch		FY 1997/98 Total allowable catch		
			Recom.	National	Recom.	National	Landings
In Icelandic waters, including foreign fleets							
Cod	1.00	247	250	250	218	218	227
Haddock	1.00	35	35	35	40	45	38
Saithe	0.60	25	30	30	30	30	33
Redfish	0.70	60	65	65	65	65	68
Greenland halibut	2.40	10	10	10	10	10	11
Plaice	1.20	3	7	7	9	9	8
Herring	0.12	100	90	90	100	117	64
Capelin	0.06	1 284 ¹	1 200	1 200	1 265	1 265	1 245
Lobster	3.86	1.2	1.2	1.2	1.5	1.2	1.4
Inshore shrimp	1.00	3.3	5.1	6.9	6.9	6.9	6.9
Offshore shrimp	1.00	20	40	40	70	75	61
Scallop (Breiðqfjörður)		8.5	8.5	8.5	8.0	8.0	8.9
Total (cod equivalent)		492	522	524	535	546	534
Total landings including in international waters							
Calendar year							
	1998		1997			1996	
Cod	245		209			204	
Haddock	41		43			56	
Saithe	31		37			39	
Redfish	72		73			68	
Oceanic redfish	50		39			53	
Wolffish	12		12			15	
Greenland halibut	10		19			22	
Plaice	7		11			11	
Other demersal	50		34			34	
Herring	269		291			265	
Capelin	752		1 319			1 179	
Blue whiting	64		11			0	
Lobster	2		1			2	
Inshore shrimp	7		7			10	
Offshore shrimp	56		76			80	
Scallop	10		10			9	
Miscellaneous	12		7			12	
Total	1 690		2 199			2 059	
Excluding capelin	938		880			880	
Index value, 1990 = 100	90.0		95.6			96.6	
Excluding capelin	87.4		86.3			90.7	

1. Scaled up by 50 per cent to reflect the fact that the Marine Research Institute initially sets its recommendation at only two-thirds of what it thinks the final value will be.

Source: National Economic Institute and the Marine Research Institute.

the power outages that reduced ferrosilicon output in 1998 should not be repeated and, in addition, the ferrosilicon plant has been expanded. These factors, alone, should boost exports by 4-5 per cent in 1999.

... the current account deficit widened

With imports of goods and services running ahead of exports, the current account deficit ballooned from 1½ per cent of GDP in 1997 to 5¾ per cent in 1998. This deficit might have been even bigger if not for a few offsetting factors: the terms of trade swung sharply in Iceland's favour, with export prices of goods and services increasing 4.7 per cent, led by a 12 per cent jump in marine product prices, while import prices rose only 0.4 per cent, held down by a drop in the cost of oil imports. Despite the accumulation of past current account deficits, the balance on factor services improved. Returns on assets held abroad jumped over 90 per cent, in part as capital gains on foreign assets, that were significant in 1998, are now counted as income. If asset income had risen at its previous five-year average rate, the current account deficit would have been wider by 0.7 per cent of GDP, all else equal. Data so far suggest some reversal in the deficit in 1999. In constant price terms, the swing in the contribution of the foreign balance to growth should offset the slowing in domestic demand, leaving output growth at about its 1998 rate.

Despite a pickup in productivity...

Consistent with the cyclical upturn, labour productivity growth in the private sector increased, growing 3.4 per cent annually in the last three years compared with an average rate of 1½ per cent since 1980. Part of this rise comes from an acceleration in total factor productivity growth to above trend (Table 4). The rest is due to capital deepening that was especially heavy in 1998, with real investment as a percentage of the capital stock moving from a low of 5 per cent in 1994 to 11.4 per cent last year. As the depreciation rate is only 6 per cent, the capital stock could continue to grow quickly in the near term, even if investment were to fall back somewhat. Nonetheless, capital's contribution to the pick up in potential growth was only an additional ¾ percentage point, not enough to stop the output gap widening to 2 per cent of potential GDP.

... the labour market is tightening...

In line with the increase of the output gap in 1998, the unemployment rate moved down from 3.9 per cent to 2.8 per cent. This rapid decline has continued during 1999. By July, the rate had fallen to 1.7 per cent, a drop of 0.8 percentage point from a year earlier. Vacancy rates have also moved up, which is consistent with tighter labour conditions. Construction firms and service providers in the capital region, as well as fish processors in the outlying areas, are particularly pressed for workers.

Table 4. **Productivity and economic growth**

	Average annual rate			1996	1997	1998	1999	2000
	1983-87	1987-92	1992-98					
Business sector productivity¹								
Labour	2.3	1.6	2.7	3.8	2.6	3.8	..	..
Total factor productivity	2.3	0.3	2.6	3.8	2.4	2.2	..	..
Business sector inputs¹								
Labour	3.5	-2.0	1.1	2.4	3.0	1.3	..	..
Capital	3.5	2.0	1.6	2.3	3.6	6.2	..	..
Potential GDP²								
Whole economy	2.6	2.3	2.6	2.8	3.7	4.1	3.9	3.3
Total factor productivity	1.3	1.9	2.6	2.7	2.8	2.8	2.7	2.6
<i>Memorandum</i>								
Output gap ³	15	3.3	-2.0	-0.7	0.9	2.0	4.0	3.6

1. Actual growth in the period indicated.

2. Based on the trend growth of total factor productivity and the labour force but actual and projected growth of the capital stock.

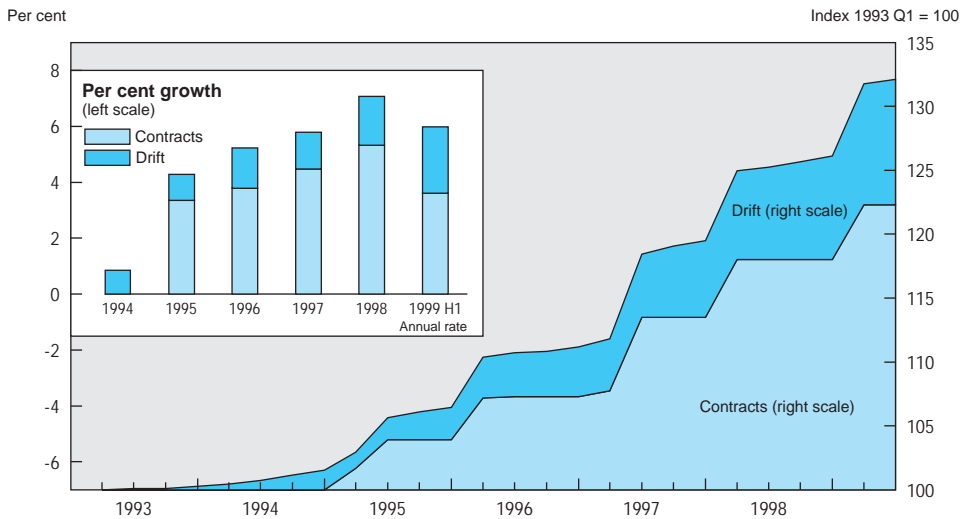
3. The average level of real GDP as a per cent of potential output over the period indicated.

Source: OECD.

... and wages are accelerating...

Wages in the economy grew 9½ per cent in 1998 on the strength of considerable contracted pay raises and additional wage drift. Government and bank employee wages rose even faster, gaining 13 per cent over the previous year. Some workers, such as junior doctors, nurses and teachers won larger pay raises than others after they resigned in mass. Members of parliament also received a 30 per cent wage boost right after the elections in 1999. Private pay grew less quickly but, at 7.1 per cent, it was well above the rate of inflation in 1998 (Figure 3). Wage drift on top of contracted increases accelerated by almost ½ percentage point as labour markets tightened. A survey of workers in one union found that only 10 per cent of its members were earning wages at contracted rates, with the rest being paid more. Contracts signed in the last negotiation round called for smaller boosts in 1999, but wage drift moved up faster in the first half of 1999. Overall wages in the private sector rose 6.7 per cent at an annual rate in the first half of 1999, compared with a 9.4 per cent increase for all of 1998.²

Figure 3. Private sector wages



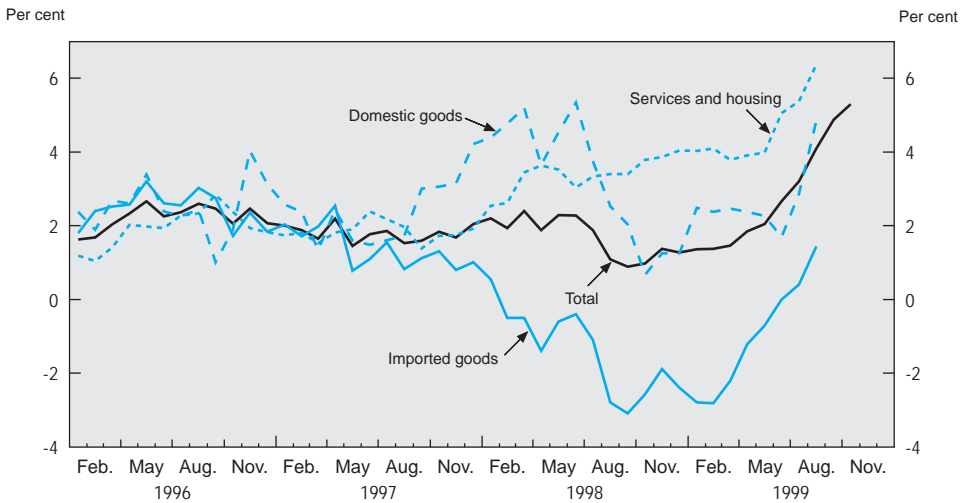
Source: Central Bank of Iceland and Statistics Iceland.

... leading to significant domestic price pressures...

Despite strong labour productivity growth, on the back of high investment, high wage increases have generated an acceleration in domestic prices and unit labour costs. In 1998, such costs picked up by over 4 per cent. As a result, domestic goods inflation has risen, peaking at 5¼ per cent in the first half of 1998 before settling back down (Figure 4). Food and beverage prices produced the biggest swings, but price inflation for other domestic goods also increased. After bottoming out in the fall of 1997, the accommodation cost component of the consumer price index has steadily accelerated, rising 9 per cent in the year to August 1999. In addition, some of the price increases have been due to special factors like a tax increase on petrol (that was reduced later in the year) and regulatory changes that pushed up insurance charges. Nonetheless, strong demand and high wage increases are still mostly responsible for the acceleration in prices.

Strong aggregate demand and a pick up in domestic inflation may now be showing through to real estate prices. By the end of the third quarter of 1999, house and apartment prices in the capital area had grown 18.8 per cent from the same period a year ago, compared with an increase of only 7 per cent four quarters earlier, bringing them back to their previous peaks.

Figure 4. **Consumer price inflation**
12-month per cent change

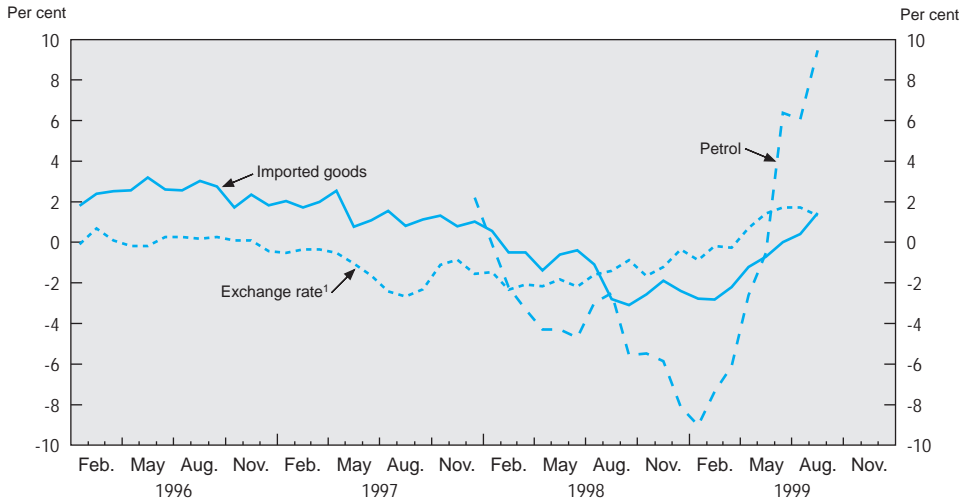


Source: Statistics Iceland.

... that are now reflected in the overall inflation rate

While domestic price inflation increased in 1998, imported goods prices fell, keeping the total inflation rate low (Figure 4). Petrol prices dropped as world oil prices plunged (Figure 5). Meanwhile, the krona appreciated in the first half of 1998, helping to reduce imported inflation. As a result, prices of consumer goods rose only 1.7 per cent year-on-year in 1998, little changed from 1997. More recently, however, support from imported goods prices has begun to wane, as petrol prices have moved up sharply with developments in world oil markets. With domestic prices rising rapidly, overall inflation has therefore picked up significantly in 1999. Over the twelve months ended in October, the CPI rose 5.3 per cent, an increase of $4\frac{1}{4}$ percentage points from the previous twelve months.

Figure 5. Price developments of imported consumer goods
12-month per cent change



1. Positive growth implies a depreciation of the krona.
Source: Statistics Iceland and Central Bank of Iceland.

The near term outlook

Output growth could slow somewhat...

The outlook for output growth continues to look robust through 2000, despite a fall in public sector demand with GDP rising a little slower than potential output (Table 5). Domestic demand should decelerate, and trade could cut into output growth as exports slow after the energy-intensive industries adjust to a higher level of output. As a result, the unemployment rate could edge up slightly to 2 per cent in 2000, as the participation rate should remain high.

... as macroeconomic policy is tightened

These projections are based on a tightening of economic policies. With the economy already clearly overheating, the monetary authorities are expected to raise short-term nominal interest rates further. Along with perhaps a building risk premium, such a policy response is expected to lead to a turn around in long-term real interest rates that had been trending down. However, the projections

Table 5. **Short-term projections**
Percentage changes, volume (1990 prices)

	Official forecast September 1999 1999	2000	OECD		
			1999	2000	2001
Private consumption	6.0	2.5	6.7	4.0	3.5
Government consumption	3.4	2.5	3.4	2.5	2.0
Gross fixed capital formation	-0.1	2.1	0.1	2.6	0.6
Final domestic demand	3.4	2.4	4.8	3.5	2.7
Change in stockbuilding ¹	-0.3	0.0	0.0	0.0	0.0
Total domestic demand	4.0	2.4	4.7	3.4	2.7
Exports of goods and services	8.3	2.6	8.5	6.2	5.2
Imports of goods and services	3.4	2.0	5.1	7.2	5.3
Change in foreign balance ¹	1.8	0.3	1.0	-0.6	-0.2
GDP	5.8	2.7	6.0	2.9	2.6
GDP implicit price deflator	3.4	4.3	4.1	5.2	5.7
Consumer price deflator	3.2	4.0	3.1	5.1	5.4
Unemployment rate (in per cent)	2.6	n.a.	2.0	2.1	2.4
Current balance ²	-4.6	-4.2	-4.7	-5.3	-5.4
3-month Treasury bill	n.a.	n.a.	8.5	10.5	11.5
5-year non-indexed Treasury note	n.a.	n.a.	8.3	10.3	10.7

1. As a percentage of GDP in the previous year.

2. As a percentage of GDP.

Source: National Economic Institute and OECD.

are based on a constant nominal exchange rate. As to fiscal policy, the 2000 budget suggests that public sector demand will be reduced by about 1/2 per cent of GDP, mainly through deferral of investment projects but also by checking the growth of public sector wages and welfare benefits.

Among domestic demand components, real private consumption may slacken somewhat in 2000, as real wage growth decreases due to higher inflation. Only one new large-scale investment projects is incorporated in the projections for 2000. Columbia Ventures, who have just finished work on a plant in Grundartangi, are now extending it. However, the government has begun talks with Norsk Hydro over an aluminium smelter in eastern Iceland, with a final decision as to whether to begin construction due by the first half of 2000. With very strong real estate prices and buoyant borrowing, housing investment is projected to pick up some of the slack in business investment in the near term. Moreover, investment in the retail sector should be buoyant because of still robust household consumption growth. Consequently, with no negative drag coming from the termination of large-scale projects, overall private sector investment should pick up again.

With imports still increasing, though at a slower pace, and exports weakening, the current account deficit is set to continue to increase. Export prices are expected to moderate. Those for aluminium could move down further on average in 2000, although they have bounced back recently. Moreover, there is little prospect for another significant increase in fish prices. Capital gains on overseas assets are expected to contribute less to net investment income than they had in the past. In total, while the current account deficit could ease to below 5 per cent of GDP in 1999, and move back further to 5¼ per cent in 2000.

Looking further forward the combination of tighter monetary and fiscal policy is projected to keep growth below 3 per cent in 2001. Higher interest rates should reduce the growth of consumption and investment significantly. As a result, import growth could drop below that of exports bringing a smaller current account deficit and offsetting some of the slackening in domestic demand. Nonetheless, slower GDP growth is unlikely to eliminate the output gap.

... but inflationary pressure would remain...

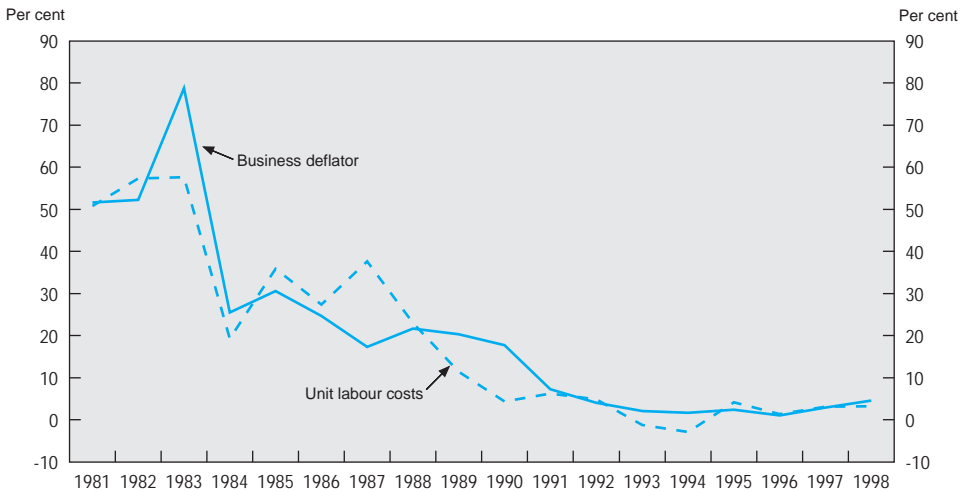
In this environment, wage and price inflation is projected to increase further. Because consumer inflation has already begun to edge up at the start of 1999, inflation expectations in the financial markets have risen (Chapter II). In addition, with labour markets projected to remain tight, wage drift should maintain at least its recent pace. As yet there are no clear indications of the extent of pay rises for next year, but with a strong demand for workers and productivity growth slackening somewhat, reflecting slower growth of the capital stock, unit labour cost could accelerate. This should push up price inflation in the business sector, as there appears to be a strong link between the two (Figure 6); consequently, overall inflation, as measured by the GDP deflator, could increase further. Adding the effect of accelerating import prices suggests a significant rise in consumer price inflation for the year 2000, relative to the rate seen in 1999.

Major risks to the outlook have emerged

A major risk to the current projections is the possibility of a wage-price spiral. If negotiations early in the forthcoming wage negotiation conclude with generous nominal pay rises, unions and employers bargaining later may revise up their inflation expectations, leading to more upward pressure on prices. Monetary authorities would then be faced with the dilemma of ratifying a higher inflation level through faster money growth or greater output losses to drive inflation back to the level of its trading partners.

A further risk is that if economic growth is not checked sufficiently, or if additional increases in inflation occur, there might be added pressure on the exchange rate, making it more difficult to keep the krona within its present bands. Already, some of the indicators of financial stress – official reserves, money

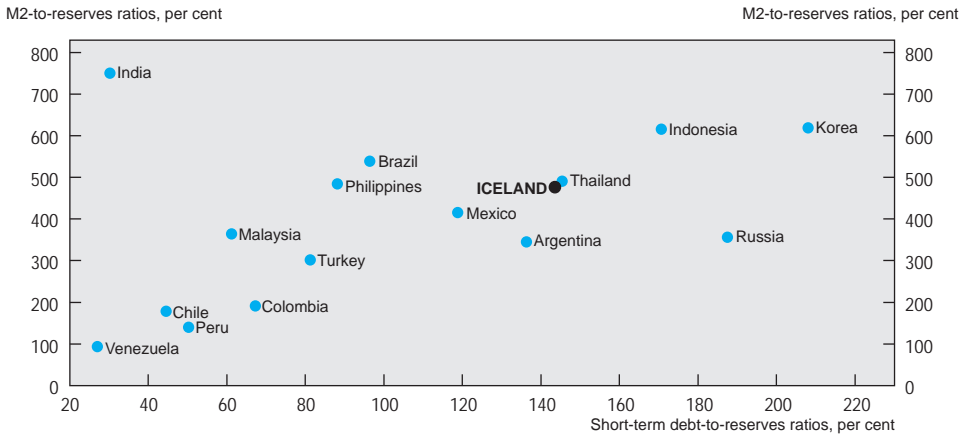
Figure 6. The value-added deflator and unit labour costs in the business sector



Source: OECD.

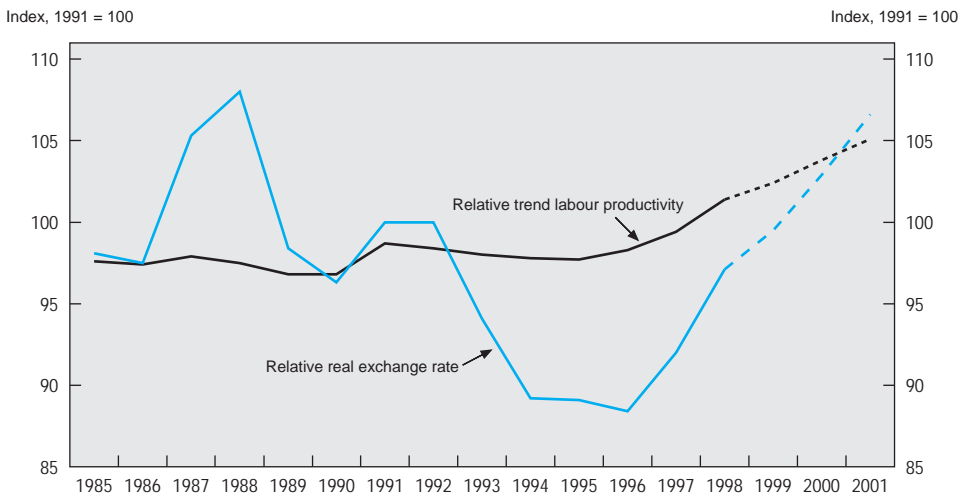
growth, credit growth, foreign borrowing, the current account deficit and the real exchange rate – point to some concern.³ While short-term foreign borrowing by banks has been reduced though deliberate policy action by the authorities, the economy remains vulnerable to swings in foreign-investor confidence⁴ given the size of the current account deficit. Moreover, the combination of rapid money growth and slower growth in reserves is also another indicator of possible stress, as has been emphasised by the World Bank in another context. Iceland looks particularly exposed in these areas as the level of money stock and short-term international bank borrowing remains quite high compared to the level of official reserves (Figure 7). In addition, credit has grown much faster than nominal output, and that development does not appear to have reversed in recent months. On the external side, the current account deficit widened considerably in 1998, and is projected to remain high. Moreover, Iceland's real exchange rate has increased recently and higher inflation could push it up even further (Figure 8). If any of these risk factors were to change market sentiment, the current exchange rate regime might become difficult to manage as, unlike a decade ago, financial flows can now swing radically because of capital-account liberalisation.⁵ In such a scenario, the quality of banking sector assets would be likely to decline both because domestic interest rates would increase and as the domestic borrowers of foreign

Figure 7. Vulnerability indicators¹



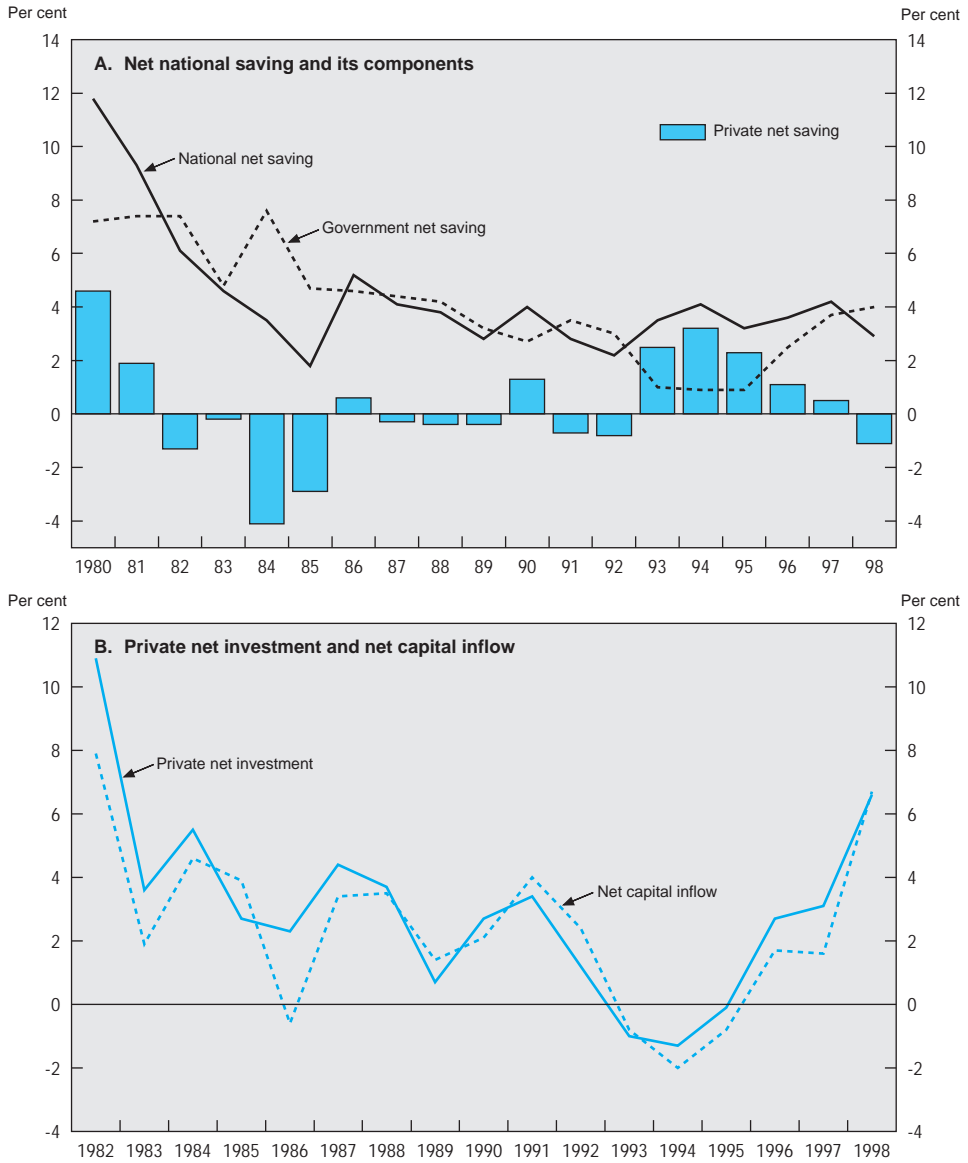
1. Data are end of June 1997 except for Argentina and Brazil (end December 1998) and Iceland (end August 1999). Source: Based on a chart from the World Bank (1998). Data are from the International Monetary Fund and the Central Bank of Iceland.

Figure 8. Real exchange rate and trend



Source: OECD.

Figure 9. **Net saving and investment flows¹**
Per cent of GDP



1. Saving and investment are net of capital depreciation.
Source: OECD.

currencies found servicing their debt more difficult.⁶ The risk is heightened all the more as banks may have increased the riskiness of their loan portfolios (Chapter II). Even if borrowers did not default, new investment would be likely to dry up.⁷

That said, Iceland has many factors that should help maintain confidence. There is a long tradition of political stability, and the government was recently returned to office in general elections on a programme that emphasises continued stability.⁸ With membership in the EEA, Iceland follows EU accounting and financial supervision guidelines. The government is generating a surplus, and financing debt is not a problem.⁹ Monetary policy has been tightened so, at the very least, expectations of even easier money are unreasonable.¹⁰ Moreover, export growth looks to be well maintained. Output in the fishing sector appears to be sustainable (Chapter III), and a sharp decline in fish prices is not likely, though if it occurred, it might provide a trigger for currency outflows.

One factor aggravating financial risks has been the size of the current account deficit. Since the change in economic policy at the end of the 1980s, net national saving has fluctuated in the relatively narrow band of 2 to 3 per cent, low by international standards (Figure 9, panel A). Private-sector saving has, on the whole, been close to zero except in recession years when it rose and the government deficit increased. With net private savings close to zero, over an extended period, the current account deficit has tracked private net investment quite closely (Figure 9, panel B). Given that the capital output ratio is low at the moment the share of investment does not seem likely to move down, pointing to little decline in the current account deficit, all else equal. Consequently, there would need to be a substantial increase in national saving to bring the current account deficit back to its historic average of $2\frac{3}{4}$ per cent of GDP. Action to further improve the budget balance might be one way to achieve this (see Chapter II).

II. Macroeconomic policies

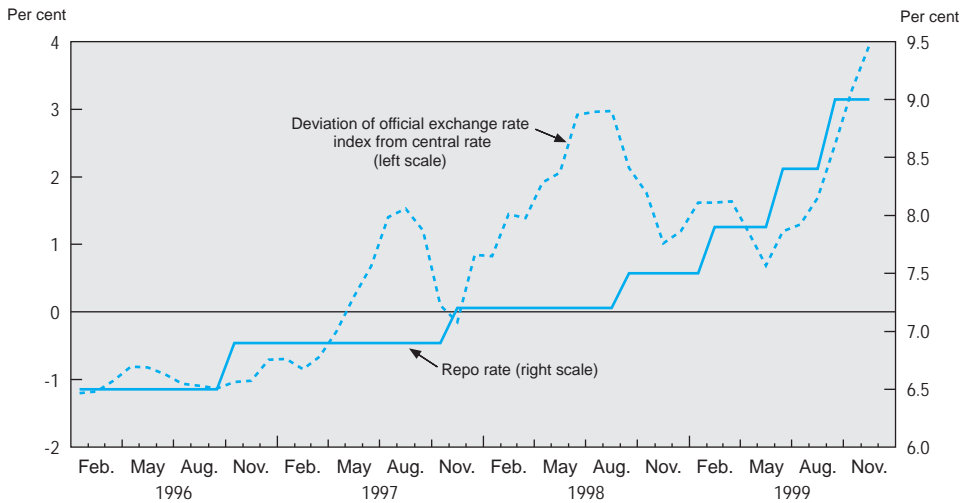
Economic policies in Iceland during the 1990s have generated low inflation, a budget surplus and an unemployment rate of less than 2 per cent. By OECD standards this is an enviable performance. Indeed, only one-third of other OECD economies had lower consumer price inflation in 1998 and a higher general government surplus, while none had a lower unemployment rate. As noted in the previous chapter, however, with the Icelandic economy now clearly running above potential there are signs that inflation pressure may resurface quickly. In view of this, the last *Survey* warned of the need to tighten monetary policy pre-emptively and, to do so, by moving away from reliance on exchange rate targeting, as this might unduly constrain interest rate flexibility. With respect to fiscal policy, the shift towards budget surplus has been generated, to a large extent, by the upswing of the economy, despite tax cuts and expenditure overruns. In this area, too, therefore, a new policy formulation is called for with a greater emphasis on medium-term control of the budget.

Monetary management

Weakness of the exchange rate has led to short-term interest rate hikes...

In the past ten years, the Icelandic Central Bank has focussed on exchange rate stability, in order to achieve, and ultimately maintain, a stable price level. The best way to make the exchange rate goal operational was thought to be through maintaining the value of the krona within a given band against an index of various foreign currencies. Initially, this interval was narrow ($\pm 2\frac{1}{4}$ per cent) and there was little fluctuation in the actual exchange rate due to the absence of a foreign exchange market. But, following the progressive liberalisation of international capital flows and exchange markets, the band was widened to ± 6 per cent in September 1995. Even so, the volatility of the exchange rate was minimised through official intervention, but since June 1997 the Bank has allowed a greater degree of fluctuation (Figure 10). Increases in short-term interest rates and exchange market intervention have, nevertheless, continued to be used to

Figure 10. **Movements in nominal exchange rate and short-term interest rates**



Source: Central Bank of Iceland.

moderate pressures on the currency on a number of occasions, such as in the second half of 1997 when the exchange rate briefly fell below its central level in the immediate aftermath of the Asian crisis.

After a period of stability in the first half of 1998, the Central Bank resumed its tightening. At the beginning of the year, extensive foreign borrowing by the domestic private sector took pressure off the exchange rate, despite a large current account deficit and significant portfolio investment outflows (Table 6). Once the exchange rate index started to depreciate again in the autumn of 1998, interest rates were raised further and the Bank bought kronur. Unusually, the next interest rate hike in the current phase of tightening (February 1999) came during a period of reserve accumulation. The Central Bank justified this move more on domestic grounds than disquiet about the exchange rate. It was concerned about the rapid growth of credit and domestic overheating, but it also wanted to rebuild foreign exchange reserves that had fallen significantly during 1998 (Table 7). A pickup in consumer prices and a revival in inflationary expectations led to a renewed weakening in the exchange rate and provoked an additional increase in the Central Bank's repurchase rate in June 1999. This weakness was reversed following a further increase in September that brought the repo rate to 9 per cent. It is noticeable that while the difference between domestic and

Table 6. **Capital account of the balance of payments**

lkr million

	1996	1997	1998	1998		1999	
				Q3	Q4	Q1	Q2
Current account balance	-8 010	-7 407	-33 407	-10 706	-1 452	-6 431	-13 181
Capital transfers	-32	14	-324	-87	-37	-59	23
Financial flows excluding reserves	20 228	10 068	42 567	9 812	10 151	19 492	-2 250
Direct investment inflow	5 479	10 265	10 395	1 997	4 875	1 480	5 020
Direct investment outflow	-4 222	-3 637	-5 147	-540	-3 552	364	-1 109
Portfolio investment	7 240	-18 915	-23 708	-5 101	-7 371	-588	-4 544
Other capital (assets)	-1 994	-11 575	3 813	-3 001	1 006	-5 936	-15 749
Other capital (liabilities)	13 725	33 930	57 214	16 457	15 193	24 172	14 132
Net errors and omissions	-2 024	-5 859	-6 575	-3 501	-7 577	-10 469	13 622
Reserves	-10 162	3 184	-2 261	4 482	-1 085	-2 533	1 786
Alternative presentation of financial flows							
Equity investment (net)	-4 027	-7 885	-18 547	-1 353	-8 523	-2 501	-7 283
Net external debt	14 093	21 137	58 853	15 647	17 589	19 460	6 819
<i>General government</i>	<i>8 361</i>	<i>-2 361</i>	<i>-4 742</i>	<i>-3 020</i>	<i>1 201</i>	<i>-86</i>	<i>394</i>
<i>Deposit Banks</i>	<i>18 512</i>	<i>15 745</i>	<i>34 997</i>	<i>7 862</i>	<i>11 116</i>	<i>19 755</i>	<i>-7 763</i>
<i>Other sectors</i>	<i>4 043</i>	<i>4 662</i>	<i>27 022</i>	<i>3 123</i>	<i>5 741</i>	<i>5 885</i>	<i>12 453</i>
Total of above flows	26 903	10 209	37 631	4 216	10 830	19 209	19 209
Monetary authority	-16 823	3 091	1 576	7 682	-469	-6 094	1 735
Total financial flows	10 066	13 252	40 306	14 294	9 066	16 959	-464

Source: Central Bank of Iceland.

Table 7. **Foreign reserves of the Central Bank**

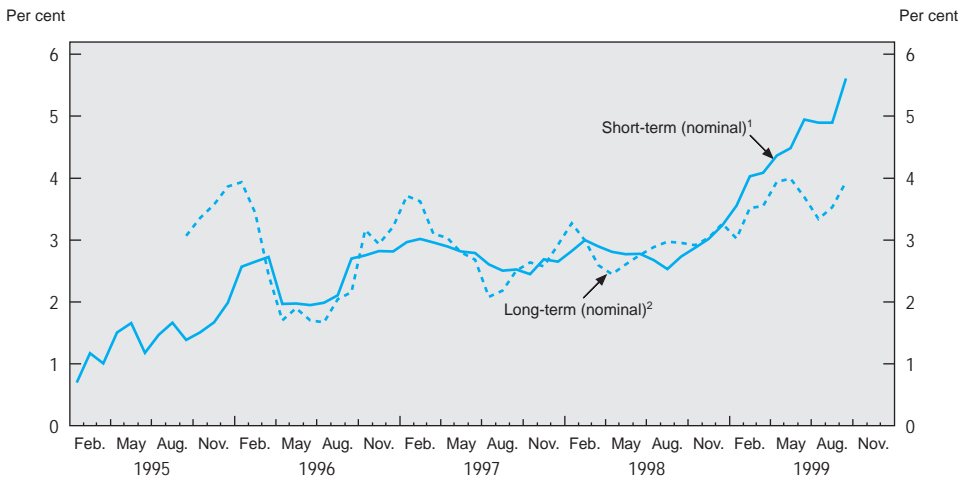
lkr million, end of period

	1995	1996	1997	1998	1999			
					March	April	July	August
Total foreign assets	25 366	36 173	33 285	35 138	35 849	37 640	36 750	32 696
Reserves	20 239	30 806	27 805	29 753	32 633	34 244	33 535	31 591
Other	5 127	5 367	5 480	5 385	3 215	3 215	5 265	1 104
Liabilities	11 379	5 049	5 418	9 072	3 520	3 554	4 987	3 806
Net foreign assets	13 987	31 224	27 867	26 066	32 328	33 906	31 763	28 890
Net foreign assets (\$ million)	214.7	468.1	387.1	376.0	444.5	462.5	437.1	397.0

Source: Central Bank of Iceland.

foreign nominal interest rates widened considerably in the past eighteen months, no significant appreciation of the exchange rate, as measured by the official index, occurred until money market rates tightened significantly following the September increase in the repo rate. End October, the krona's exchange rate was 4 per cent above the mid range of its fluctuation band (Figure 11).

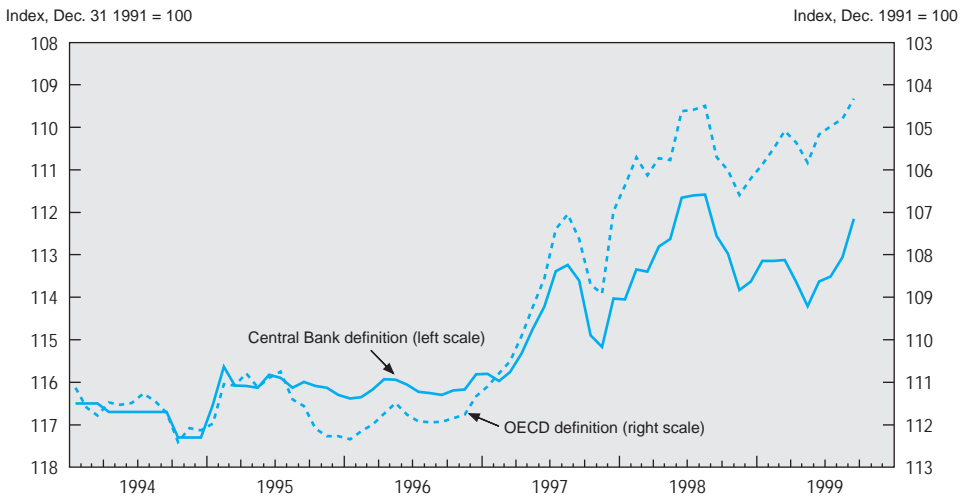
Figure 11. Interest rate differentials



1. The short-term interest rate differential is the difference between the three month rate on Icelandic treasury bills and a trade weighted average of overseas short-term rates.
2. The long-term interest rate differential is the difference between the yield on a 5 year Icelandic government bond and a trade-weighted rate on 10 year overseas government bonds.

Source: Central Bank of Iceland and OECD.

This index may, however, understate the strength of the currency. Following the introduction of the euro in January 1999, the index contains seven currencies. For each, it uses as weights the corresponding country's average import and export shares in Icelandic foreign trade. A broader index that takes into account not just an individual country's trade shares but also competition on third markets and that between foreign and domestic producers, such as the effective exchange rate index produced by the OECD suggests that the krona appreciated to a greater extent than the official index suggests during the period from mid-1997 to mid-1998 (Figure 12). Moreover, the subsequent weakness of the currency has been less pronounced on the OECD measure than on the official index. Such differences reflect the fact that the latter has a greater weight on currencies other than the euro, notably the US dollar and certain Asian currencies.

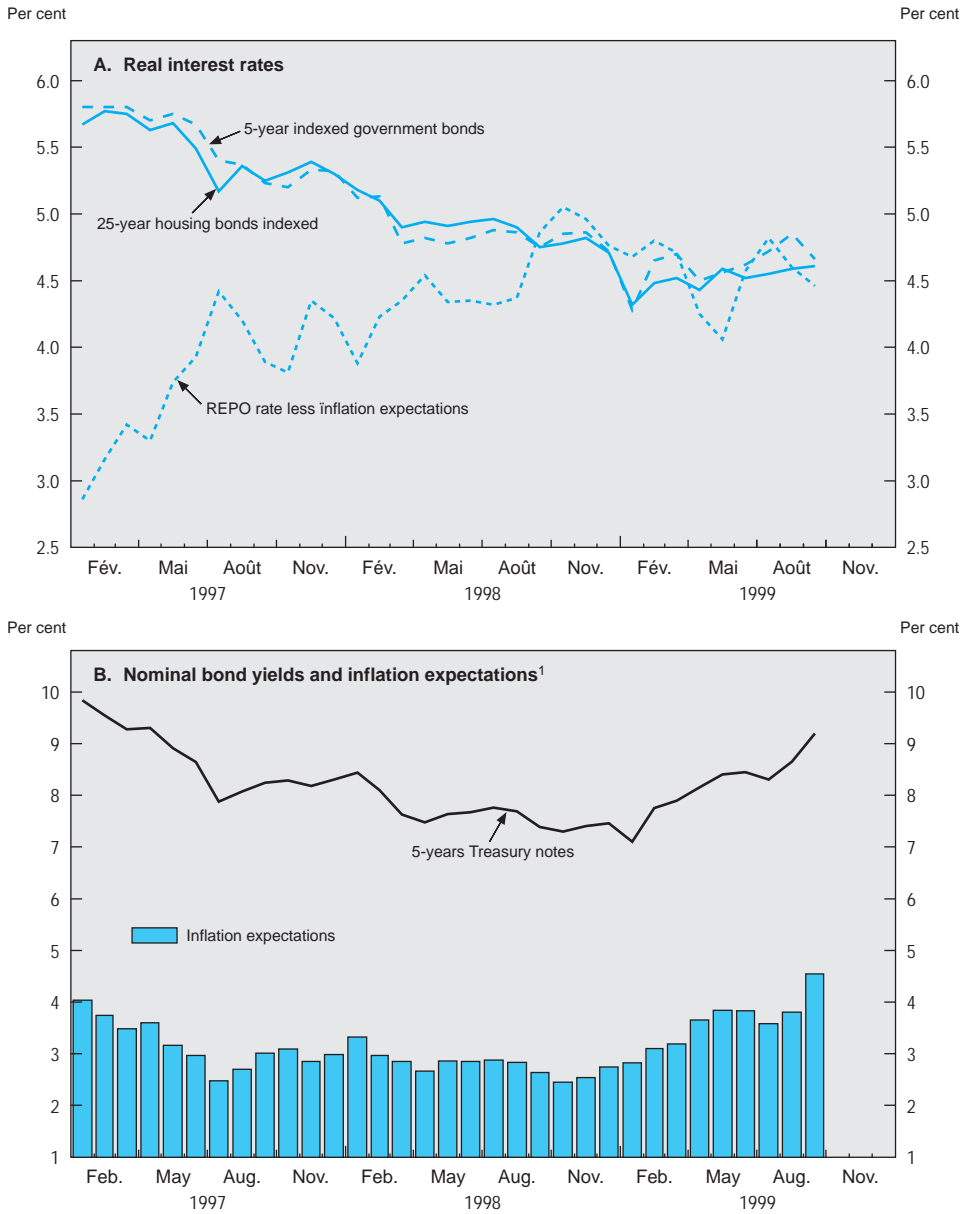
Figure 12. Two measures of the nominal effective exchange rate¹

1. The scales have been inverted so that an appreciation is represented by an upward movement.
 Source: Central Bank of Iceland and OECD.

Overall, the scale of the increase in real short-term rates interest rates in the past two and a half years appears modest. Nominal official rates have risen 210 basis points since the end of 1997, when labour market and output data suggested that the economy was broadly in equilibrium. This increase has left real short-term interest rates only 50 basis points higher than they were then, given the increase in inflation expectations (Figure 13). This is despite the high level of output, low unemployment and rising inflation that was evident in 1999.

However, real short-term rates may be better measured now by referring to the recently created inter-bank money market. Indeed, the rapid development of this market during 1998 following changes to the operation of the money market (Box 1) now permits some measure of market expectations of short-term interest rates. Yields in that market suggest that participants expect significant further increases in short-term official interest rates in the coming six months. By the middle of October, even the shortest money market maturities had moved to between 80 and 100 basis points above the official repo rate (a fourteen-day maturity), while the three-month rate was a further 70 basis points above this level. Indeed, the six-month rate was as high as 11½ per cent. This configuration of rates suggests that participants in the money-market were expecting a significant tightening of monetary policy in the months to come, a development that may have been one of the factors boosting the exchange rate.

Figure 13. Interest rate developments



1. Difference between nominal and real government bond yields.

Source: Central Bank of Iceland.

Box 1. Changes in monetary policy instruments

Since the beginning of 1998 the Central Bank has made a number of significant changes to its monetary policy instruments. These changes had three objectives. The *first* was to equalise the operating environment of credit institutions, extending the controls and instruments from deposit banks to savings and investment banks. The *second* was to create conditions for domestic credit institutions that were in line with those faced by banks elsewhere in the European Economic Area and were similar to those used by the ECB. The *third* was to reduce automatic access to Central Bank, so improving the functioning of both the money and the government securities markets. Concretely, the following measures were adopted:

- Liquidity requirements were abolished.
- New regulations concerning reserve requirements were set.
- A weekly auction of 14 day repurchases replaced tap access.
- CDs with a maturity of 14 days will be auctioned to mop up liquidity.
- CDs with 90 day maturity were made available on tap.
- An overnight loan facility was introduced for all institutions subject to reserves, collateralised by securities eligible for repurchase.
- Discount quotas were abolished.
- Foreign currency accounts of credit institutions with the Central bank were abolished.

The two most significant moves were the abolition of the liquidity requirement, which had served to induce banks to invest in Treasury Bills and had distorted pricing in the government securities market, and the change in reserve requirements, though subsequently a new form of liquidity ratio was introduced. Most importantly, all credit institutions are now covered by reserve requirements. The reserve ratio for short-term liabilities was kept unchanged at 4 per cent but the definition of short-term was extended to one year from three months. For longer-term liabilities, the reserve ratio was lowered from 2½ per cent to 1½ per cent. Reserves are now remunerated at a nominal rate that moves in line with the Central Bank's other interest rates and is currently 7.3 per cent, instead of being remunerated at a real rate of 3½ per cent as in the past. Finally, reserve deposits are averaged over a maintenance period instead of being blocked over that time frame.

The introduction of an overnight lending facility and remunerated deposit accounts with the Bank serves to set a corridor for short-term inter-bank interest rates and prevent them from diverging from the official rate. Limiting repurchase auctions to one per week means that banks have an incentive to meet liquidity requirements by trading between themselves rather than going to the Bank. Indeed, there has been a major increase in trading in this market since the finalisation of the reform process.

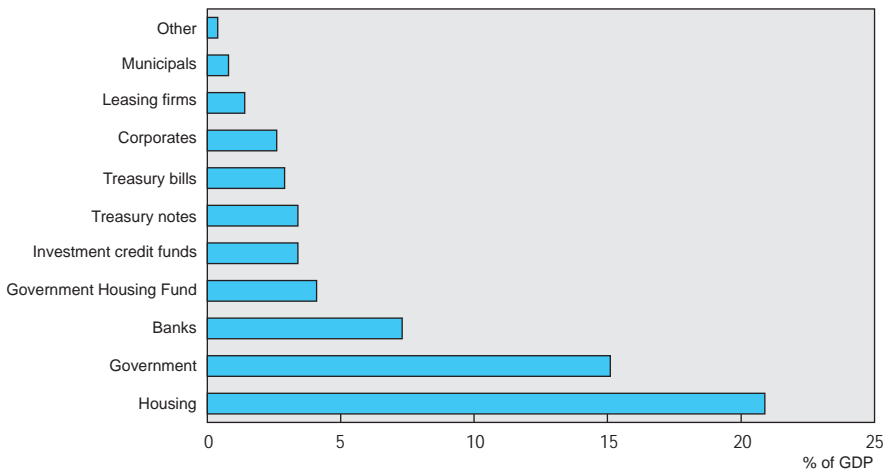
... but long-term real rates have fallen

In contrast to the increase in real short-term interest rates, the real yields on longer maturity bonds have declined since the beginning of 1998. Indexed-linked bonds constitute the bulk of the market in Icelandic government debt and

have performed particularly well in this period (Figure 13, Panel A). The yield on twenty-year government paper dropped over 100 basis points in 1998. This was more than the fall of similar bonds abroad. Part of the reason for this was the emergence of the Treasury as a buyer, using its cash surplus, and the commercial banks adding to their portfolio as the size of their balance sheet expanded. About a quarter of this increase was reversed in 1999.

It was noticeable that this decline in real yields, in 1998, was not completely shared by the housing bond market, though they carry a government guarantee and are index linked. These bonds dominate the outstanding stock of fixed interest securities (Figure 14). Turnover is high, amounting to 65 per cent of the outstanding issue annually, and there is a liquid market, with bid-offer spreads in the range of 3 to 5 basis points. The differential of housing bonds over government bonds rose some 50 basis points during 1998. In part, this is due to the fact that these securities include a prepayment option at the discretion of the issuer, if final mortgage borrowers repay their debt ahead of schedule. Because a period of falling real interest rates, such as has occurred in the past year, raises the probability that this call option will be used, the spread of housing bonds over standard securities has risen. A further reason for this movement may be the progressive re-orientation of pension funds' portfolios during 1998. Historically, these funds have invested heavily in housing securities issued by the

Figure 14. **Principal issuers in the Icelandic fixed interest market**
Outstanding amounts 1998, per cent of GDP



Source: Islandsbanki.

government-owned investment credit funds. Recent deregulation has given the pension funds greater freedom to manage their portfolios and, in the past eighteen months, such funds have reduced their holdings of housing related paper in favour of foreign securities including equities.

Nominal long-term rates also fell during 1998, but this movement was more than reversed during 1999 in a thin market. The market in nominal bonds is, indeed, rather narrow in Iceland. The government has introduced a number of issues with an initial five-year maturity, but the longest of these issues now has an outstanding maturity of only slightly under four years, and, in total, they represent only 15 per cent of outstanding government paper. Moreover, the amount of trading is small and has become even lower during 1999 as regulations concerning bank liquidity were changed (see below). Nonetheless, in the year to January 1999, nominal yields fell by some 130 basis points (Figure 13, Panel B). However, with the extent of overheating in the domestic economy becoming evident during 1999, yields moved well above their 1997 level, to 9.2 per cent by October 1999. Although limited in size, the market for these bonds does provide some indication of the mounting inflation expectations. By November 1999, the differential between five-year nominal and indexed bonds was 4 per cent, up from 2.5 per cent last autumn. At shorter maturities the differential was even higher.

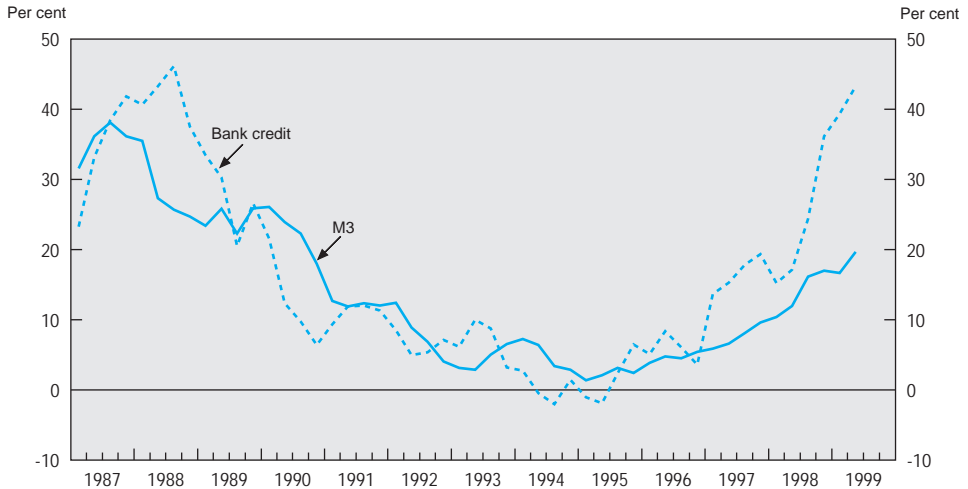
Monetary aggregates have expanded rapidly...

Despite some increase in short-term interest rates, the growth of the money stock increased during 1998 and then stabilised in 1999. Broad money (M3) expanded by close to 15 per cent during 1998 and its annual growth was as high as 22 per cent in March 1999 but then eased back to show an annual growth of 16 per cent by August, up from an increase of only 7 per cent in the same period two years previously. Such a jump represents the fastest growth of M3 in the decade following the introduction of the inflation stabilisation programme in 1989 (Figure 15). Narrower measures of money have also grown rapidly, with the expansion of M1 peaking at over 30 per cent before easing to a 21 per cent annual growth rate by August 1999. Statistical evidence does not suggest that this acceleration necessarily represents a precursor of faster inflation but is rather indicative of strong growth in nominal incomes.

... and domestic lending has grown even faster...

While the growth in money has been rapid, the expansion of domestic credit has been extreme. Total domestic lending in the year to March 1999 increased by an amount equivalent to 50 per cent of the money stock a year previously (Table 8). Almost half of the credit expansion was financed by overseas borrowing. Moreover, the banks have reduced their holdings of public sector

Figure 15. **Growth of money supply and bank lending to the private sector**
Per cent increase over twelve months



Source: Central Bank of Iceland and OECD.

Table 8. **Money and credit growth**

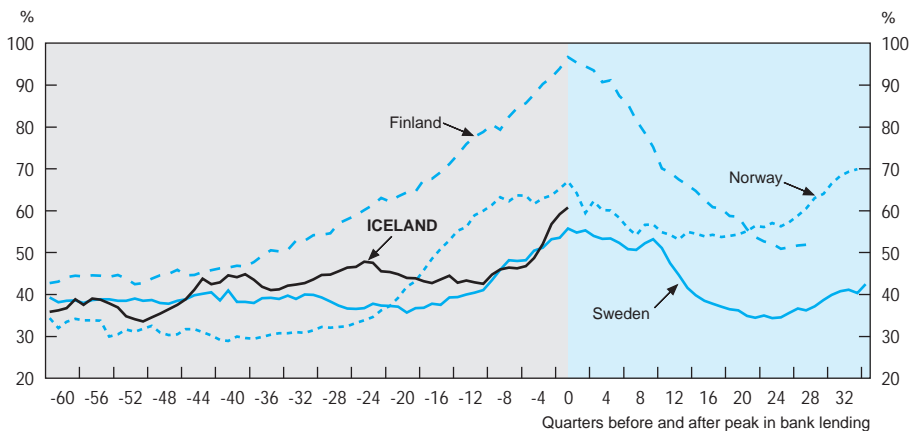
	1996	1997	1998	1998			1999	
				Q2	Q3	Q4	Q1	Q2
Changes as per cent of previous year's money stock								
Money	5.9	8.7	15.1	14.3	17.3	14.4	22.2	22.4
Foreign liabilities (net)	-1.1	11.3	18.5	9.0	12.8	18.5	21.5	16.5
Domestic credit	10.8	21.9	38.8	21.3	29.2	37.4	50.6	52.3
Government	-4.3	3.7	-9.1	-0.3	-1.1	-8.3	-1.3	-3.8
Companies	11.4	12.6	33.7	14.3	21.2	32.0	41.5	42.1
Households	3.7	5.6	14.2	7.3	9.0	13.7	10.5	13.9
Other	-6.0	-1.9	-5.1	2.1	1.0	-4.5	-6.9	-13.3
Percentage change over previous year								
Bank lending	7.8	15.5	27.7	14.3	19.7	26.8	32.9	35.2
Companies	14.8	15.1	38.1	16.2	24.8	37.3	46.5	46.9
Households	10.4	14.9	35.8	19.0	23.5	33.6	24.3	34.9
Government	-17.0	18.6	-41.7	-1.5	-4.5	-30.8	-6.1	-20.0
Investment fund lending	7.2	8.4	9.5					
Housing	10.2	9.3	9.1					
Companies	2.3	10.6	5.1					

Source: Central Bank of Iceland.

debt. Thus, within the overall expansion, the growth in bank lending to the private sector has been particularly rapid (Figure 15). Companies increased their bank borrowing by 40 per cent in the year to August 1999, indeed business investment was fully debt financed in 1998. The fisheries sector was a particularly heavy bank borrower, increasing its debt by a third in 1998. Households too pushed up their indebtedness but at a slower pace. Relative to GDP, such increases are similar to those that occurred in other Nordic countries after deregulation of the banking sector (Figure 16).

The rapid growth in lending by credit institutions creates risks for the whole sector as loans based on optimistic assumptions may turn bad. Similar developments at the end of the 1980s were associated with a pronounced increase in provisions for doubtful loans three years later. Usually, a change in the health of banks is associated with reversals in asset prices, notably in the real estate market. Available data suggest a sharp acceleration recently in residential real estate prices (Chapter I). These have now recovered all previous losses and reached previous peak levels. Moreover, share prices have increased by a quarter so for this year. There is no evidence yet that the recent increase in official interest rates has reversed this trend. Nonetheless, the experience of other Nordic countries earlier in the decade suggests that rapid increases in lending may increase the riskiness of loan portfolios.

Figure 16. **Evolution of bank credit in four nordic countries during financial deregulation¹**
Per cent of GDP



1. The peak in lending occurred in the following period : Iceland: 1999 Q2, Finland: 1991 Q4, Norway: 1990 Q2 and Sweden: 1990 Q2.

Source: Central Bank of Iceland, IMF and OECD.

... supported by a significant increase in bank capital..

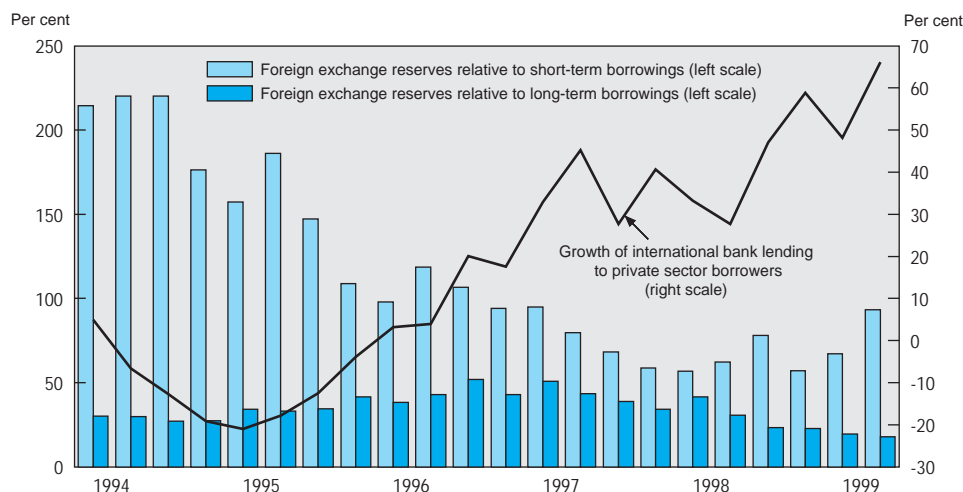
The banks have been able to sustain this expansion in lending though a rapid increase in their capital stemming from capital injections and high profits that added to an already strong position. In the year ending December 1998, the equity of the banking system rose 26 per cent. As a result, the risk-weighted Tier One capital ratio of the banks, that excludes subordinated debt, remained stable at 8 per cent – well above international regulatory limits. In part, the increase in banks' capital was due to the sale to the public of new shares by two state-owned banks (see Chapter III). Following deregulation and increased competition, there has also been a drop in banks' net interest margins in the past three years from 4 to 3 percentage points. Despite this, profitability has been high, with an average pre-tax rate of return of 14 per cent on equity, and with one unquoted investment bank obtaining returns of close to 50 per cent. Such high returns in the banking sector were supported by provisions that, at 0.7 per cent of assets in 1998, were low compared to previous years.

... and by foreign borrowing..

Almost half of the increase in bank lending was financed through foreign currency borrowing. This expansion has led to a marked growth in international bank lending to Iceland relative to GDP. Indeed by the end of 1998, foreign currency lending by international banks to the domestic private sector rose by 50 per cent in 1998 in dollar terms, and now represents 35 per cent of GDP, up from around 16 per cent in the early 1990s (Figure 16). The banking system has not itself taken uncovered positions. Rather, the banks have acted as intermediaries lending in foreign currency to domestic companies. Banks report that most of these credits are in the export sector of the economy. But, given the experience of other countries,¹¹ it is likely that companies with no export earnings also increased their foreign borrowing given the high spread of interest rates over those in other OECD countries. The past stability and recent appreciation of the exchange rate may have led them to imagine that such loans represent a cheap source of funds. If the exchange rate were to drop, such borrowers could default, leaving the banks uncovered, which has happened elsewhere.¹²

A significant portion of this foreign borrowing has been short term; by the end of 1998, about 40 per cent of the outstanding foreign currency borrowing had a maturity of less than one year. As a result, there was a marked fall in the extent to which official foreign exchange reserves covered private sector short-term borrowing from abroad (Figure 17). Relative to the banks overall balance sheet, though, the net liquid position in foreign currencies stabilised during 1998. Of equal concern to the authorities was the swing in the balance of short-term assets and liabilities denominated in the local currency.¹³ Following the revision of the monetary controls in March 1998, there was a sharp swing away from holding

Figure 17. Foreign exchange reserves relative to international bank borrowing



Source: Central Bank of Iceland.

domestic liquid assets. Consequently, the banks' domestic liquid position moved from 1.8 per cent of their assets in December 1997 to a negative 3.1 per cent by December 1998.

... that has led to new prudential controls

Such deterioration in the balance sheet of the banking sector led the Central Bank to issue new liquidity standards. The new control regime obliges banks to hold net liquid assets amounting to 1½ per cent of their balance sheet by July 1999, such assets being defined as any instrument with a remaining outstanding maturity of less than 90 days. Unused but committed lines of credit are counted as an asset. As banks had net liquid *liabilities* were substantially lower than required by the new rules starting in March 1999, the Central Bank allowed a five-month transition period – lasting until July 1999 – to make the substantial adjustments necessary to bring their assets and liabilities in line with the new regulation.

In order to comply with this regulation, banks have reorganised their borrowing. On foreign markets, they have lengthened the maturities of their liabilities by issuing substantial amounts of medium-term foreign debt. This has allowed a reduction of short-term liabilities. As a result, the banks now have an

excess of foreign liquid assets over their liabilities. Domestically, however, the impact of the new rule has been limited: the banks continue to have short-term liabilities greater than their assets. Overall, the liquidity position of the banks has improved significantly as a result of the new regulations. Bank lending slowed during the transition period, rising at an annual rate of only 20 per cent between May and September. The new regulation is likely to drive a slightly larger wedge between borrowing and lending rates, as each longer-term loan will have to be accompanied by the acquisition of a lower-yielding liquid asset. This may prove particularly onerous for banks engaged in the provision of foreign currency hedging, but lending by other banks may accelerate again once the transition period is over. The Central Bank envisages replacing these measures with controls over the maturity structure of bank balance sheets when a new law governing its operations is introduced at the end of 1999.

Moving to another intermediate target?

The past eighteen months has seen some element of conflict between the Central Bank's final goal of achieving stable prices and its intermediate target of maintaining an exchange rate within pre-determined fluctuation bands. As shown above, interest rate policy has been mainly geared towards this external goal. At the same time, the domestic economy has become overheated, as judged by recent economic indicators, monetary aggregate developments and expectations about inflation. Such a situation would have justified a significantly greater increase in real short-term interest rates than that which actually occurred. The last *Survey* already pointed to the need for a tighter monetary policy and, as a result, for more flexibility in the movement of the exchange rate, so that positive supply shocks (such as have occurred in the past two years) are reflected in an appreciation of the currency. This implies reassessing the way in which monetary policy is currently operated in Iceland.

The desirable degree of exchange rate flexibility...

The issue of whether more flexibility is desirable in the determination of the exchange rate is closely linked to the question of whether Iceland can be thought of as part of a wider optimal currency area. In general terms, the choice between fixed and flexible exchange rates can be seen as depending on the size of the shocks to supply that the economy faces and the extent to which markets – notably those for labour – can adjust to these changes. The greater these disturbances, the less correlated with changes in the partner countries and the more rigid the labour market, the more likely that greater exchange rate flexibility would be useful as it could offer a way for short-term reductions in real wages in the face of nominal wage rigidity. The more open a country, the greater is the saving on transactions costs from a fixed currency.

... depends on the extent of economic instability...

The Icelandic economy is particularly vulnerable to supply-side shocks that do not affect its trading partners. In particular, output does not move in step with that of the European area, perhaps because there is little correlation between Icelandic terms-of-trade and export volumes of other European countries.¹⁴ Once some small degree of common cyclicity with the UK and US economies is allowed for, there is also no significant correlation between remaining shocks that have faced the Icelandic economy and those that faced either the United States, United Kingdom or European economies. This suggests that there has been significant asymmetry in the disturbances that have faced the Icelandic economy and its trading partners.

Indeed, since 1961, Iceland has had one of the most variable output levels in the OECD, with only Greece, Spain and Portugal exhibiting larger fluctuations. Statistical analysis suggests that it is essentially persistent real supply shocks that generate such fluctuations in the Icelandic economy and to greater extent than in other countries.¹⁵ Most of the business cycle downturns in the past fifty years have been associated with either large changes in the size of the fish catch (such as occurred when the herring catch failed or when cod stocks dropped) or when there have been large drops in fish prices. This is why export revenue has been particularly prone to large swings. Indeed, previous *Surveys* illustrated the linkage between real export earnings, mainly from the fish sector, and subsequent economic growth.

... as well as labour market flexibility...

Significant real supply-side shocks require flexibility in real wages if large fluctuations in labour and product markets are to be avoided. The Icelandic economy has exhibited such a flexibility in the past. Over the period 1956 to 1985, statistical analysis indeed shows that real wages responded to unemployment to a considerably greater extent in Iceland than in other countries. A simple correlation of real wages and lagged output changes confirm this result. A number of factors can partially explain such a performance. *First*, in the fishing industry, sailors are not paid a salary but a proportion of the value of the catch. This has generated considerable changes in real wages in this industry and helped keep the share of labour income in valued added quite stable in the face of large fluctuations in the value of the catch. *Second*, a centralised wage bargaining system may have reduced the inertia generated by a large number of decentralised overlapping contracts.¹⁶ *Third*, a high proportion of wages is in the form of bonus and other payments that are above the basic pay-scale and can perhaps be reduced to a greater extent than such a scale. Finally, it may be that during the period of high inflation prior to 1990, downward real wage flexibility could be achieved without involving negative nominal wage adjustments of which there was only one example in 1959.

This last factor is now no longer possible, with the shift to a low inflation regime. While wages certainly still respond to booming activity in the upward direction, it remains to be seen how well they will adjust in a downturn. In this regard, the experience of the Faeroe Islands can be seen as an example of the problems that can emerge from the combination of nominal rigidity in wages, a fixed exchange rate and large external shocks to the economy. In this particular case, the exchange rate was fixed through a quasi-monetary union with Denmark and the economy had significant nominal rigidities in a low inflation environment. When the economy was faced with a major shock from the fisheries sector in 1988,¹⁷ GDP fell by 38 per cent in the next six years, and unemployment rose to 19 per cent, despite a cumulative drop in the population of 10 per cent in the same period.¹⁸

Geographical mobility of labour can, of course, help offset downward nominal rigidity of wages. A certain degree of external labour mobility does exist in Iceland. However, the extent of the migration is small. The net flow of migrants is dependent on economic conditions but only fluctuates between $\pm 1/2$ per cent of the population. It may be that inward mobility has increased during this upswing, but it remains insufficient to function as an equilibrating mechanism in the labour market.

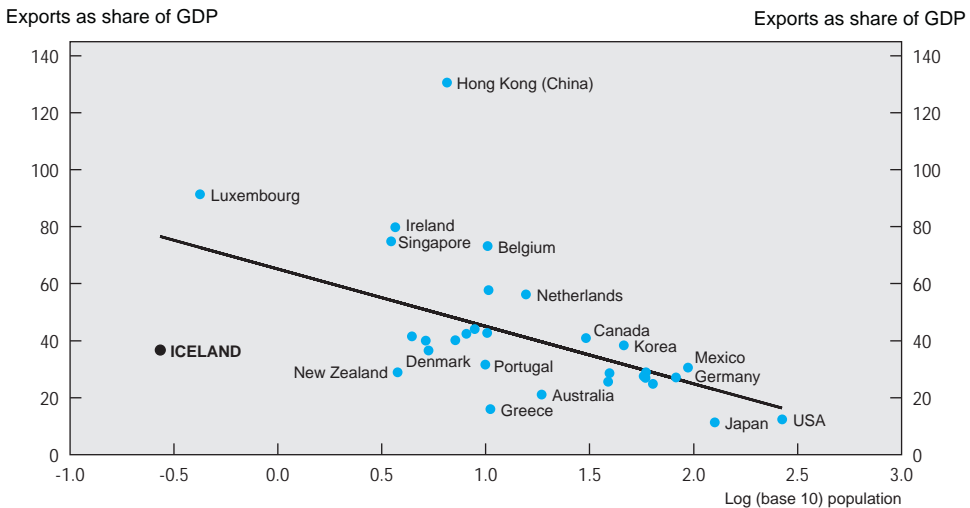
... and the openness of the economy

A country the size of Iceland would normally gain from having a fixed exchange rate and being part of a monetary union provided the economy is flexible domestically. Small open economies could be expected to obtain relatively large gains from reducing transaction costs and lessening future uncertainty that would be brought about by a currency union with major trading partners. Iceland, though, does not fit with this argument, as it is much less open than its size would suggest. Its exports are less than half as important a source of income as in Luxembourg, a country with a similar level of population. Iceland's dependence on trade is similar to that found in an OECD economy one hundred times larger (Figure 18). Such a divergence is explained both by the geographic position of the country and its export specialisation. Iceland does not participate to significant degree in the inter-industry integration that is occurring in many European countries and is particularly reliant on marine products and the export of power-intensive commodity products. Consequently the gains from reduced foreign currency transaction costs would be less than in other similar countries or areas.

Overall, more exchange rate flexibility would seem better for Iceland...

Because the benefits from real wage flexibility appear to dominate the transactions costs, a flexible exchange rate would appear to be best for Iceland currently. However, if the exchange rate is no longer used as an intermediate

Figure 18. Trade openness and population size
OECD and selected Asian countries



Source: OECD, based on Kougman (1991).

target, an alternative will be required in order to ensure that the Central Bank's objective of stable prices remains credible. Such an anchor could take the form either of a monetary target or an inflation objective.

... but would require the adoption of an alternative anchor for policy

In Iceland, the existence of a money demand function that has been stable over time raises the possibility that money targeting could be used as an alternative nominal anchor. Despite the extensive financial deregulation of the past decade, there has been apparently no deterioration in the relationship between money, income and interest rates.¹⁹ However, money has been found to have little incremental value for forecasting inflation and real variables and, statistically, the direction of causality appears to run from prices to money. Moreover, the continuing changes in the banking sector suggest that money demand, even if it has been stable in the recent past, might not remain so in the future.

Alternatively, the experience of other OECD countries suggests that it would be feasible for Iceland to base its monetary policy on an inflation objective. In many cases such a target has been adopted by countries prone to external shocks and subject to exchange rate pressures. These countries have seen inflation targets as a way to give priority to domestic stability without losing the credibility that was previously generated by an exchange rate peg.

The use of an inflation-targeting framework there would require a number of operational decisions to be taken. In line with experience elsewhere, the Central Bank would have to be given the power to change interest rates and other monetary variables on its own authority. This would have to be accompanied by transparent explanations of the reasons for changes in interest rates. Then, there would have to be a decision on the precise price variable to be targeted and the period over which the target should be met. One difficulty that Iceland would have with inflation targeting in the short term is that the price level, as measured by the CPI, depends significantly on the prices of imported goods. Trying to meet an overall inflation target in the face of exchange rate fluctuations could, thus, generate the need for substantial domestic offsets to the movements in import prices. Such fluctuations could be diminished by either looking at a domestic price index or by only attempting to meet the target over a two to three-year period. Either way, the Central Bank has a sound base for inflation targeting because it has a history of producing one-year-ahead inflation forecasts that could be extended to meet the needs of the new framework.

In any case, adopting such a framework could be transitory. Over the longer run the Icelandic economy could become more diversified. Trade could become more linked to the European area or more of its large trading partners might adopt a common currency. The share of trade turnover with the euro area was 35 per cent in 1998, but this rises to 60 per cent for the whole European Union. Such changes could make the case of linking with the European monetary union, in some way or another, more appropriate. But until then targeting inflation would offer the possibility for an exit from an exchange rate regime that other countries have found difficult to sustain in the face of full capital mobility. Iceland already has in place the technical aspects for a successful transition.²⁰

The fiscal stance

The 1998 budget outcome

The central government budget showed a significant deficit in 1998 on an accruals basis (Table 9). All of the deficit was due to a one-off accrual of pension liabilities, stemming from a comprehensive restructuring of the central government pay system. Without this special factor, which did not generate a cash outflow, the budget would have registered a surplus of around 1½ per cent of GDP. Receipts from capital transactions, such as privatisations and a rundown in government lending activities resulted in an even larger reduction of central government debt, of almost 5 per cent of GDP.

Table 9. **Central government revenue and budget balance**

	1998 Outcome	1999 Budget	1999 Estimate	1999 Budget overrun	2000 Budget	2000 Budget relative to 1999	2000 Budget	1999 Budget estimated outcome
	IKr million	IKr million		Per cent	IKr million	Per cent	Per cent of GDP	
Direct taxes	66 620	68 299	73 082	7.0	78 268	7.1	11.2	11.3
Personal incomes	43 377	43 787	47 497	8.5	50 491	6.3	7.2	7.3
Social security	16 088	17 100	17 243	0.8	18 227	5.7	2.6	2.7
Corporate	7 155	7 412	8 342	12.5	9 550	14.5	1.4	1.3
Indirect taxes	94 263	97 345	101 194	4.0	106 138	4.9	15.2	15.7
Value added	59 282	61 871	62 756	1.4	66 220	5.5	9.5	9.7
Other	34 981	35 474	38 438	8.4	39 918	3.9	5.7	5.9
Other taxes	336	350	380	8.6	395	3.9	0.1	0.1
Other revenue	19 626	18 823	20 105	6.8	20 199	0.5	2.9	3.1
Dividends and property income	2 406	2 947	2 873	-2.5	2 948	2.6	0.4	0.4
Interest	8 381	7 011	8 008	14.2	8 022	0.2	1.1	1.2
Services charges	4 272	3 736	4 103	9.8	3 951	-3.7	0.6	0.6
Other	521	635	627	-1.3	665	6.1	0.1	0.1
Capital revenue	2 471	3 716	3 716	0.0	3 766	1.3	0.5	0.6
Transfers	1 575	778	778	0.0	847	8.9	0.1	0.1
Total revenue	180 845	184 817	194 761	5.4	205 000	2.2	29.3	30.1
Budget surplus	-8 790	2 441	7 496	..	15 000	..	2.1	1.2
Financial transactions	25 604	n.a.	13 054	..	8 900	-31.8	1.3	2.0
Cash-accrual adjustment	17 544	n.a.	2 604	..	1 200	-53.9	0.2	0.4
Short-term credit	-2 425	n.a.	-400	..	-385	-3.8	-0.1	-0.1
Lending (net of repayment)	5 600	n.a.	2 850	..	2 085	-26.8	0.3	0.4
Equity	-1 265	n.a.	-300	..	-300	0.0	0.0	0.0
Sales of assets	6 150	n.a.	8 300	..	6 300	-24.1	0.9	1.3
Financial balance	16 814	n.a.	20 550	..	23 900	..	3.4	3.2

Source: Ministry of Finance.

The outcome for 1998 marked a pause in the downward trend in central government expenditure relative to potential GDP. Two factors explain this slow-down in fiscal consolidation. *First*, there was a surge in public investment that was related to large-scale projects in the private sector – a development which is likely to be temporary. *Second*, the public sector pay agreement lifted government wages by over 20 per cent, thus pushing corresponding outlays to a ten year high, relative to potential GDP, after allowing for the transfer of teachers' salaries from

the central to the local government budget. This increase in spending was only partly offset by reductions elsewhere in the budget notably due to the stabilisation in debt and lower long-term real interest rates.

Such a pause was the result of significant overruns in expenditure, amounting to over 7 per cent of total outlays, which occurred in 1998. The full impact of the pay settlement on spending was not foreseen. In particular, there was a large rise in pension liabilities following the consolidation of a large proportion of various premia into basic pay. Pensions in the plan now closed to new entrants are based on regular pay that was boosted significantly when it was raised to replace other premiums that were cut. Under accrual accounting, the government was obliged to show the present value of the cost of this boost to future pension payments (amounting to 3.6 per cent of GDP) as expenditure, although the cash outflows will occur in future. In addition to this factor, there also appears to be significant failure to control pay settlements concluded on top of the national agreement. Notably, doctors, nurses and teachers received substantial awards that led to an overrun of spending on wages amounting to 3 per cent. Finally, the decentralisation of budgetary control (see last Survey) also appears to have generated over-runs, largely in the health care area.

With the economy growing somewhat more rapidly than expected by the government, tax revenues also rose faster than planned. The strength of consumption boosted indirect tax receipts substantially, notably those from value-added tax. Nonetheless, the expansion of tax revenues was only in line with the growth of potential GDP, at around 9 per cent (excluding the profits from the privatisation of assets). The failure of tax revenues to reflect normal cyclical gains stemmed from the decision to lower the standard rate of income tax to 39 per cent, though this was partly offset by the introduction of a new tax on income from capital and a freezing of tax thresholds and benefits.

Budget outcomes for 1999

In October 1999, the government estimated that its financial position for the year would show a surplus of 1¼ per cent of GDP. Such an improvement from the deficit registered in 1998 stems exclusively from developments in a few items. The cost of exceptional pension liabilities generated by recent pay settlements is projected to decline, to 1.2 per cent of GDP on an accrual basis. At the same time, such accruals will only generate a very small cash outflow as actual payments will occur in the future. In addition, public finances will be further improved by a large cash inflow from privatisations, amounting in total to Ikr 8.3 billion (1¼ per cent of GDP). Consequently, there will be a large debt repayment, of 3¼ per cent of GDP.

For the second year, central government recurrent expenditure has been boosted by a large increase in the wage bill (Table 10). A significant pattern of this increase was unexpected with the result that expenditure for the year is projected

Table 10. **Central government expenditure**

	1998 Outcome	1999 Budget	1999 Estimate	1999 Budget overrun	2000 Budget	2000 Budget relative to 1999	2000 Budget	1999 Estimated
	Ikr million	Ikr million		Per cent	Ikr million	Per cent	Per cent of GDP	
Operating expenditure	84 255	76 744	79 914	4.1	81 783	2.3	11.7	12.4
Wages	49 887	52 436	53 814	2.6	55 996	4.1	8.0	8.3
Pension liability funding	20 811	7 200	7 910	9.9	6 600	-16.6	0.9	1.2
Other current expenditure	24 783	26 547	27 609	1.0	29 422	6.6	4.2	4.3
Services charges	-11 226	-9 439	-9 419	-0.2	-10 235	8.7	-1.5	-1.5
Transfer payments	71 750	72 054	72 963	1.3	76 224	4.5	10.9	11.3
Social security	29 152	31 470	32 205	2.3	33 430	3.8	4.8	5.0
Unemployment insurance	2 438	2 697	2 347	-13.0	2 385	1.6	0.3	0.4
Child benefits	4 167	3 950	3 860	-2.3	3 630	-6.0	0.5	0.6
Interest rebates	3 822	4 130	3 860	-6.5	4 480	16.1	0.6	0.6
Agricultural subsidies	5 395	5 601	5 801	3.6	5 830	0.5	0.8	0.9
Municipal equalisation	3 247	3 191	3 221	0.9	3 695	14.7	0.5	0.5
Student loans	1 727	1 810	1 810	0.0	2 010	11.0	0.3	0.3
Other transfers	21 802	19 205	19 859	3.4	20 764	4.6	2.7	3.1
Interest payments	15 964	15 000	14 520	-3.2	14 000	-3.6	2.0	2.2
Capital expenditures and maintenance	17 666	18 578	19 868	6.9	17 993	-9.4	2.6	3.1
Total expenditure	189 635	182 376	187 265	2.7	190 000	1.5	27.1	29.0
Total excluding pension liability funding	168 824	175 176	179 355	2.4	183 400	2.3	26.2	27.8

Source: Ministry of Finance.

by the government to be 4.1 per cent above the budgeted level. Investment spending also ran over budget. On the receipts side, a further one percentage point reduction in the standard marginal rate of central government income taxation to 26.41 per cent restrains the growth in tax revenues despite a buoyant tax base, though the local income tax rate was raised slightly (see below). The yield of the new capital income tax was substantially greater than expected. Overall, personal income and wealth taxes remained constant as a share of GDP. Relative to potential GDP, the income tax yields may drop almost half a percentage point.

The budget for 2000

The budget for 2000 marked a pronounced move to a more restrictive fiscal stance. The surplus is projected by the government to increase by 1 per cent of GDP, to reach 2.2 per cent of GDP. The principal element behind this tightening of policy is a postponement of investment projects (Table 10). In addition, a further reduction in the accrual of pension liabilities is expected to help increase the surplus. Elsewhere, the government is projecting a modest growth in outlays, especially for wages. On the taxation side, the government has decided to change the structure of the tax on gasoline as from October. An *ad valorem* tax will be replaced by a specific duty.

Local authorities finances

With relatively limited ability to raise taxation, local authorities have continued to limit their recourse to borrowing in framing their budgets. Over the past five years, they have generated saving sufficient to cover the bulk of their investment spending (Table 11). The outcome for 1998 conformed to this pattern, with the local authorities' overall financial deficit being around 1/2 per cent of GDP representing only a slight decline in their deficit, despite as buoyant economic activity – a much less favourable outcome than for central government. There are indications that their aggregate deficit should shrink somewhat in 1999 as investment spending slackens. Nonetheless, outlays have been rising considerably faster than potential GDP and much more rapidly than those of central government. In the past few years, this has reflected a structural bias towards relatively

Table 11. **Local government finances**

	Accrual basis						
	1993	1994	1995	1996	1997 ¹	1998	1999
	Per cent increase						
Current revenue	-1.5	3.0	9.4	14.6	20.5	8.0	6.9
Current expenditure	8.4	10.9	1.1	15.5	22.6	11.8	7.9
Gross investment	1.5	-3.7	-31.6	8.3	36.9	-16.0	-10.0
	Percentage of GDP						
Current revenue	7.5	7.3	7.7	8.2	9.1	9.0	8.8
Current expenditure	6.5	6.8	6.6	7.1	8.0	8.1	8.0
Current balance	1.0	0.5	1.1	1.1	1.1	0.9	0.8
Gross investment	2.4	2.2	1.4	1.4	1.8	1.4	1.1
Financial balance	-1.2	-1.6	-0.3	-0.1	-0.6	-0.4	-0.2

1. In 1997, education expenditure and compensating revenue was transferred from central to local government.

Source: National Economic Institute.

higher growth in revenues at the local government level. This is due to the fact that local authorities receive a fixed portion of the income tax base that, following decentralisation of education in 1997, amounts to 11.93 per cent of the total tax base. With the overall tax rate falling in the past five years, they now get almost 55 per cent of the overall yield of income tax, up from 45 per cent in 1994. In effect, changes to the income tax regime in the second half of the 1990s that have increased deductions from the tax base (by introducing the tax deductibility of pension contributions and lowering the general marginal tax rates from 40.9 per cent in 1997 to 38.3 per cent in 1999 applied to that base) have been paid for largely by central government.²¹

The general government fiscal position

Given the difference in treatment of pension liabilities and privatisation receipts in the national as opposed to budgetary accounts, the general government financial balance showed a surplus in 1998 rather than the deficit in the budget data (Table 12).²² By 1999, the Secretariat projects a surplus of just over 1¼ per cent of GDP. Due to the expected further improvement of central government finances, the general government surplus should rise to almost 1¾ per cent of GDP in 2000.

Table 12. **General government fiscal situation**

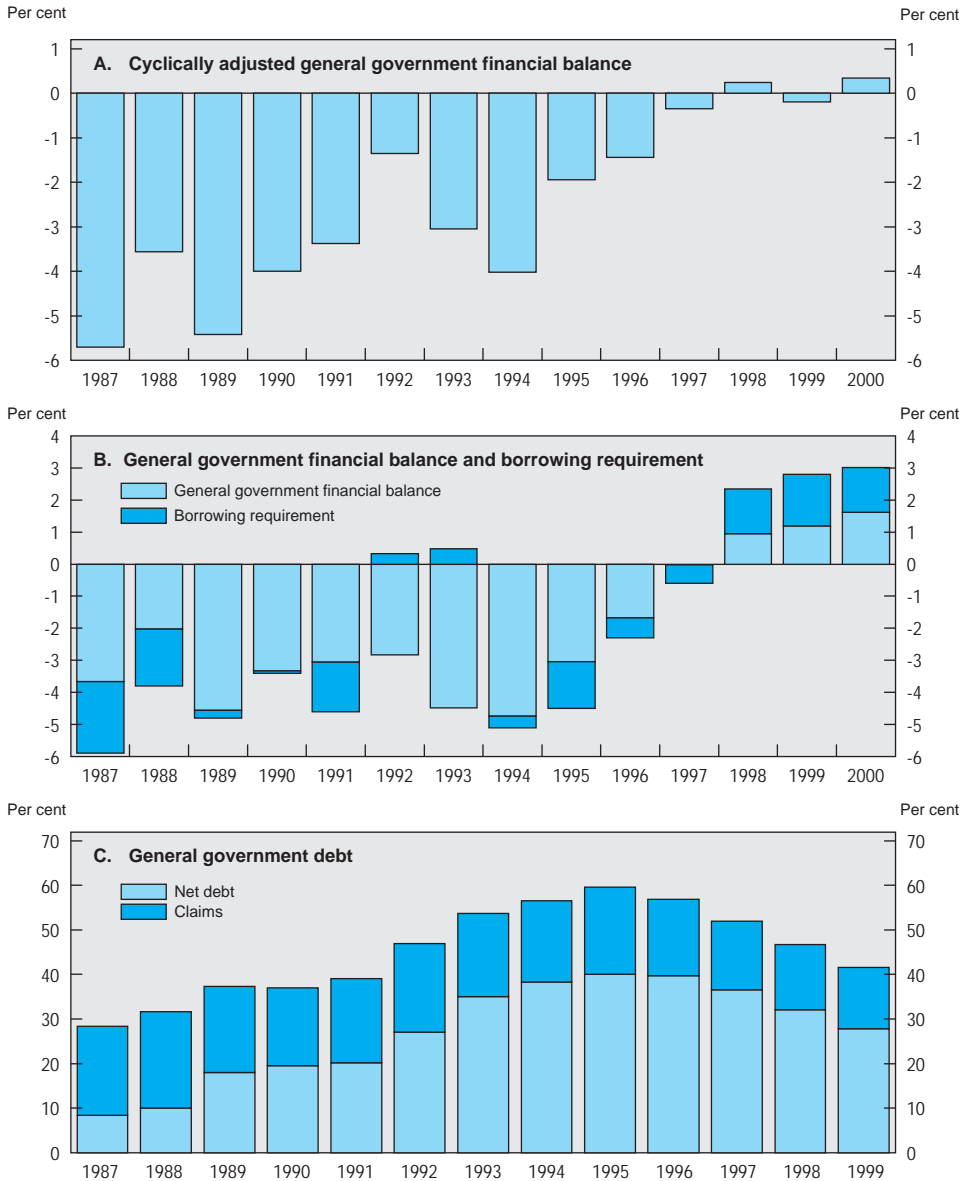
Per cent of GDP

	1994	1995	1996	1997	1998	1999	2000
Central government balance	-3.1	-2.6	-1.5	0.5	1.5	1.7	2.0
Local government balance	-1.6	-0.3	-0.1	-0.6	-0.4	-0.2	-0.2
General government balance	-4.7	-3.1	-1.7	0.0	0.9	1.3	1.6
Asset sales	0.0	0.0	0.0	0.1	1.1	1.0	0.9
Net debt	37.0	39.2	39.2	36.6	32.3	28.2	24.3

Source: Ministry of Finance, Central Bank of Iceland, National Economic Institute and OECD.

After being in balance in 1999, the structural (*i.e.* cyclically adjusted) budget position for the general government is now estimated by the OECD to show a surplus of about approaching ½ per cent of GDP in 2000 (Figure 19). This suggests that the thrust of fiscal policy will become restrictive so putting Iceland in a better fiscal position than the average of the Euro area countries and most other OECD economies. If maintained, over the business cycle, such a stance should allow a continued fall in general government net debt relative to GDP. There are, however, risks attached to this budget. In recent years, expenditure

Figure 19. Fiscal indicators
Per cent of GDP



Source: Statistical Yearbook of Iceland and OECD.

has grown faster than planned and for 2000, the budget only allows a 2¼ per cent increase in outlays at a time when inflation is projected by the government to run at 4 per cent.

Particular attention will therefore need to be paid to preventing overruns in spending, so as to avoid a deterioration of the structural public sector balance during an upswing, as it occurred in 1999. Previous studies have found that, in Iceland, estimates of the full employment budget deficit systematically move in a pro-cyclical fashion.²³ The origin of this appears to be the cyclical sensitivity of public expenditure, notably public consumption and transfers that have grown more than GDP over the past four decades. This seems to be related to the extent of the flexibility of private-sector real wage rates over the business cycle. Real wages rise in an upswing and fall in periods of low demand for labour – changes that are then transmitted to public sector spending through the close linkage of government salaries and transfer benefit rates to private sector wage developments. A further element of cyclicalities relates to the local government funding mechanism detailed above. Given the limited borrowing ability of local authorities, the fluctuations in their revenue are transmitted to their spending.

Public debt

With the general government account moving into surplus and large sales of public sector assets, the government has had a significant cash surplus that will reduce net debt. As a result of this and rapid economic growth, gross general government debt is projected to fall to 43 per cent of GDP by the end of 1999, down from 48 per cent in 1998. Government financial assets, mainly claims on Housing and Student Loan funds, have been declining in recent years as repayments of old loans have exceeded new disbursements. As a result, net debt fell somewhat less than gross debt, and is expected to reach 27 per cent of GDP by end-1999. The Treasury managed the reduction in debt differently for domestic and foreign liabilities in 1998. Domestically, new debt was issued in a quantity sufficient to finance maturing claims and to buy back IKr 6 billion of borrowings in order to build up a limited number of benchmark issues. For foreign debt, no new issues were made and all maturing debt was repaid. As a result, debt reduction was concentrated on foreign issues which fell by IKr 9.3 billion (1¼ per cent of GDP). In 1999, the government plans a smaller reduction in foreign debt leaving more room to reduce domestic debt that will continue to be restructured through an increase in buybacks.

Net debt appears to give a realistic reading of the state of the public finances. In the first place, the government financial assets that are deducted from gross debt are mostly related to housing finance and student loans, areas where defaults have not posed a problem, so that the cash flow from such assets can be used to finance gross debt. Moreover, in contrast to many other countries, taking

a wider measure of government assets and liabilities than is usual in the calculation of net debt, does not suggest a markedly worse position for public finances. *On the assets side*, the government still has large holdings of equity in state-owned companies (banks, utilities and other smaller firms) that are not deducted from gross liabilities when evaluating net debt. Judged by both by the current market prices for some of those enterprises that are quoted in Iceland and valuing those that are not quoted by comparison with the prices of similar enterprises in other small OECD countries, the market value of these holdings in companies could be as high as Ikr 120 billion (18 per cent of GDP). *On the liabilities side*, the government does have a large unfunded liability for the pensions of its employees. This has expanded rapidly in recent years in nominal terms (see above), though, relative to GDP, it has been stable at around 18 per cent. However, the present value of social security pensions is relatively low (given that most pension payments are made through private sector pension funds) as benefits are only likely to increase slightly faster than the expected growth of the tax revenues used to fund them (see Chapter IV). As the magnitude of assets and liabilities that are omitted from the calculation of net debt are similar, a wider measure of net debt would not appreciably change the financial position of the government.

In addition to its *direct* financial indebtedness, the government has substantial *indirect* liabilities through the guarantees that it has issued on third party borrowing. In total, the government has budgeted for an increase of almost one-quarter in the extent of these guarantees between the end of 1997 and 1999. By then, such guarantees will amount to 30 per cent of GDP. Over 85 per cent of them are on the borrowing of the Mortgage and Residential Housing Funds. These funds pay an annual premium of 0.35 per cent of outstanding borrowing to the Treasury to cover the expected cost of the guarantee. In recent years, this fee has exceeded costs, and the surplus has been used to increase the equity of the Housing Fund. Other borrowers benefiting from a direct guarantee pay a one-off fee of between 25 and 400 basis points, while those enterprises whose legal status generates a Treasury guarantee pay an annual fee of between 15 and 25 basis points.

Medium term objectives

The new government, when first elected in 1995, set as a target that government finances would be into balance by the end of its parliamentary term. This objective was successfully achieved. The general government deficit moved from 4.7 per cent of GDP in 1994 to a surplus of 0.9 per cent in 1998, though more than half of the increase was due to a marked upswing in the economy. As is normal, the improvement in government debt lagged somewhat the improvement in the fiscal balance. Nonetheless, between 1995 and 1999, net government debt fell by twelve percentage points of GDP. Following its re-election, in May 1999,

the new government has stated that it intends to improve on this result and systematically reduce government debt during its term of office.

With a structural surplus projected to reach $\frac{1}{2}$ per cent of GDP in 2000, Iceland's fiscal performance is better than that required of Euro area governments by the growth and stability pact. In addition, gross debt is already well below the pact's 60 per cent limit and falling. According to an OECD medium-term projection, if growth were to slow sufficiently to avoid inflation pressure by 2004, then, in the next five years, gross debt should fall to 30 per cent of GDP and net debt to around 20 per cent, and remain stable thereafter. (It must be noted that such a projection makes no allowance for future sales of holdings in state-owned companies or possible securitisation of government debt holdings.) However, the government has considerable liabilities for civil services pensions that amount to 18 per cent of GDP (see Chapter IV). Overall, therefore, it would appear reasonable to aim for some general government surplus, on a national-accounts basis, over the business cycle.

Achieving such a goal over the business cycle would also have the effect of raising public saving, even though, as discussed in detail in Chapter IV, the ageing of the population should not have major consequences for public finances. The budget surplus indeed is one of the components of national saving that has been relatively low in Iceland. Over the decade to 1997, net national saving averaged $3\frac{1}{2}$ per cent of GDP against an average of close to 5 per cent in other Nordic countries and close to 10 per cent in the OECD area as a whole. Such a relatively low saving position has translated into a significant current account deficit that may not be sustainable. The classic response to this situation would be to increase public saving and allow a fall in the real exchange rate. Indeed, the OECD's INTERLINK model suggests that if the structural general government surplus were increased through spending cuts amounting to 1 per cent of GDP, the current account deficit would be lowered by 0.6 per cent of GDP.

Moving in that direction would require giving a more medium-term orientation to fiscal policy. The adoption of an accruals base for compiling the budget accounts has been a first step in this direction, as the medium-term consequences of some expenditure decisions are now acknowledged, such as allowing for depreciation and the accumulation of pension liabilities. A further step would be to present the budget in a four year framework, clearly distinguishing revenues and expenditures that result from a particularly high (or eventually) low level of economic activity. In this way, it should be possible to lessen the risk that short-term cyclical gains in revenue are used to increase spending and consequently the structural budget deficit. In addition, if longer-term fiscal problems are to be avoided, reductions in tax rates would need to be rooted in a clear stabilisation programme of expenditure that would be more easily forged in a medium-term budget.

III. Structural policy developments

The role of the state in economic activity in Iceland has been traditionally high. This has been a necessity in the area of fishing which has always been a dominant activity, accounting for most of its export revenues. Government management over this common resource has evolved over time, often propelled by substantial declines in the stocks of certain species. Today, scientifically based total catch limits are backed by a system of individually tradable quota shares, which removes the incentive to over-invest in capital equipment in the fish industry. Along with enforcement provisions and other minor regulations to protect the stocks of fish, the industry now appears sustainable. Nonetheless, specific features of the quota system – notably the initial free, permanent distribution of fishing rights and the compensation of fishermen through a share of the catch – have proved to be controversial, threatening the political viability of the stock management regime.

The role of the state has not been limited to fisheries, but also covers a range of commercial activities. Since the election of a new government in 1995, however, the state involvement in the economy has started to fall. Indeed, its role in the financial system is to be quickly reduced and the system itself modernised. Moreover, the government policy programme points towards increased competition and privatisation in other markets, notably telecommunications and electricity. This chapter reviews these developments in more detail, as well as recent progress in structural reforms in other sectors of the economy. A final section assesses progress and makes recommendations for further improvements. Two boxes summarise new recommendations and the progress in implementing those made in previous *Surveys*.

The fish industry

The fish industry – both fishing *per se* and fish processing – is a significant employer in Iceland and constitutes a large fraction of output and exports (see Box 2 for an overview). Outside of the capital area, it plays an even larger economic role. It is also a significant driver in foreign policy, with negotiations

Box 2. Facts on the Icelandic fisheries

Fisheries share of economic activity, average 1996-98					
	Output	Merchandise exports	Real capital	Investment	Employment
Fisheries	14.2	72.4	7.1	8.3	10.1
Fishing	9.4	..	4.8	3.8	4.6
Processing	4.8	..	2.3	4.6	5.5

World share, 1996				
	Total marine production (tonnes)	Total marine exports (value)	Atlantic cod, hakes and haddocks (tonnes)	Pelagic oil and meal production (tonnes)
Percentage share	1.4	2.6	7.0	3.8
World rank	15	12	5	4

Average share of catch, 1995-1997					
	Value		Weight		
	Value	Weight	Value	Weight	
Cod species	38.3	15.9	Mollusks and crustaceans	19.7	5.2
Cod	26.5	10.5	Shrimp	18.5	4.4
Haddock	7.2	2.7	Lobster	0.6	0.1
Saithe	3.4	2.1	Scallop	0.5	0.5
Other cod species	1.1	0.6	Other	0.1	0.3
Flatfish	11.9	2.6	Pelagic	14.4	69.4
Greenland halibut	7.5	1.2	Capelin	10.7	54.8
Plaice	2.0	0.6	Herring	3.6	14.3
Other flatfish	2.3	0.9	Other	0.0	0.2
Oceanic and deep-sea redfish	13.8	6.0	Other	0.0	0.0
Other demersal	2.0	1.0			

Distribution of catch in Icelandic waters and Iceland's catch in foreign and international waters, by weight			
	Share of catch in Icelandic waters		Share of Iceland's catch
	Iceland	Foreign	In other waters
1972-74	57	43	7
1996-98	99	1	13

(continued on next page)

*(continued)***Management of major species of interest to Iceland in other waters**

Species	Area	EEZ	Countries involved	Status of agreements
Blue whiting	Northeast Atlantic	Iceland, International	European Union, Faroe Islands, Norway, Russia	Existing agreement does not include Iceland
Cod	Barents Sea	International	Norway, Russia	None, although landings have declined
Cod	Barents Sea	Norway, Russia	Norway, Russia	New agreement on quotas for Iceland
Capelin	Iceland, Greenland, Jan Mayen	International, Iceland, Greenland, Norway	Faroe Islands, Greenland, Norway	Iceland, Greenland and Norway recently negotiated a new quota. The Faroe Islands land much of Greenland's quota
Greenland halibut	Iceland, Faroe Islands, Greenland	International, Iceland, Greenland	Faroe Islands, Germany, Greenland, Norway, United Kingdom	None, although each country sets its own quota
Norwegian spring-spawning herring	Norwegian Sea	International, Norway (could return to Iceland)	European Union, Faroe Islands, Norway, Russia	Successful quota arrangement settled in 1997 and continued in 1998
Redfish	Reykjanes ridge	International (south-east of Iceland)	European Union, Faroe Islands, Greenland, Norway, Poland, Russia, St. Vincent	North East Atlantic Fisheries Community imposes quotas on its members (listed to the left, except last)
Shrimp	Flemish Cap	International (East of Newfoundland)	Canada, Estonia, European Union, Faroe Islands, Greenland, Lithuania, Norway, Poland, Russia	Effort and other controls imposed by North Atlantic Fisheries Organisation. Iceland unilaterally replaces effort controls with its own catch quota
Shrimp	Dohrn Bank	Straddling Iceland and Greenland	European Union, Greenland	None, although NEAFC has recently made some recommendations

Source: Bonfil *et al.* (1998) and OECD.

occurring over stocks that straddle Iceland's exclusive economic zone and those found in international waters or that migrate. All this explains why fisheries management has been a constant preoccupation of Icelandic governments. In

practice, management techniques have evolved over time, often driven by crises such as the collapse of the herring stock in the late 1960s and the depletion of the cod stocks in the mid-1970s and again in the early 1980s (see Annex I for a brief history).

Today, Iceland has a well functioning management system based on three pillars of regulation. *First*, the Ministry of Fisheries sets a total catch limit for the fishing year for a number of species, based on scientific advice from the Marine Research Institute. *Second*, the government divides this total quota amongst fishing enterprises that then can trade these rights. *Third*, the government operates licensing requirements and other regulations in order to ensure the orderly operation of the system. Together, these pillars are meant to achieve the goals of guaranteeing the long-run sustainability of the industry, while promoting efficiency and widespread benefits. Each of these pillars reviewed below together with their implications as to how well they have collectively met these three goals. The section then describes current developments in the industry and policy issues.

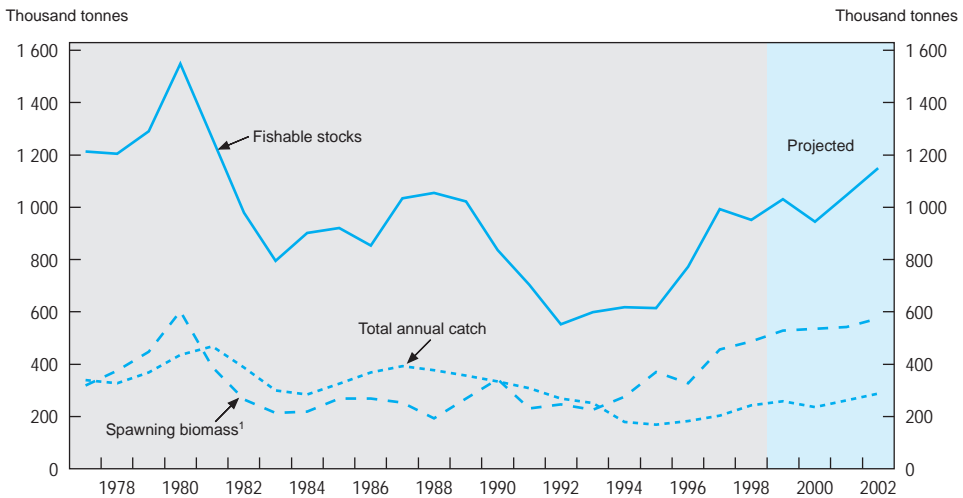
The regulatory system

Catch limits for cod are set differently than for other species. Since the 1995/96 fishing year, a government decision has limited the cod catch to the maximum of one-quarter of the average fishable stock and 155 000 tonnes, leaving no discretion to government (Figure 20). Economic analysis suggests that the rent-maximising strategy would have been to cease fishing completely until stocks recovered, but that was deemed too difficult, as it would have required large compensatory transfers to fishermen.²⁴ Adoption of this particular rule was thought likely to increase cod stocks to their maximal efficiency levels in an acceptable period of time, with a low probability of collapse.

The Marine Research Institute is in the process of developing similar rules for the herring and capelin stocks. Currently, catch limits for these and other species are fixed by the authorities for the various fishing years,²⁵ based on assessments by the Marine Research Institute, who conduct regular surveys of the stocks and monitors landed catch. On the basis of this information and its models that incorporate the “precautionary approach” of the International Council for the Exploration of the Sea and the FAO’s Fisheries Committee, the Institute recommends catch levels that, with a high probability, should prevent stocks from approaching dangerously low levels. Recently, it has been experimenting with more elaborate models that incorporate the interaction of species, especially among cod, shrimp, capelin and marine mammals.

Once the overall limit is set, the system divides the total catch limit among fishing vessels. Starting in 1984, individual vessels were allotted permanent quotas, expressed as a percentage of the total limit, that were based on their

Figure 20. Icelandic cod



1. The spawning biomass refers to the average number of newly born fish multiplied by their estimated weight at maturity.
Source: The Icelandic Marine Institute.

average share of the catch from 1980-83. Vessels can apply 20 per cent of their unused quota to the next fishing year, and because Iceland's grounds are of mixed stock, they can overfish each species other than cod up to 5 per cent, as long as an equivalent amount of quota in other species remains unused.²⁶ Originally, the system applied only to large boats, but over the decade, most of these various exemptions have been unwound (see Annex I). Now, only some small boats under 6 gross registered tonnes fishing with hook and line are excluded, being subject, instead, to a limit on fishing days or a maximum cod catch.

Quotas for the current fishing year can be traded, with some restrictions. Currently, only companies holding valid fishing licenses can purchase quotas, and only up to the capacity of the licensed vessels. Recently, the extent of trading has been reduced. As from 1998, vessels can only trade 50 per cent of their annual quota. In addition, there is a stipulation that required each vessel has to catch at least half of their quota every other year. Owners of small boats can also trade the fishing days that have been allocated to them. Regional authorities have the option of a first purchase on a proposed trade that involves quotas moving outside the region, although this option has rarely been invoked. Since 1991, quota holders can freely sell their permanent rights, while previously there were certain limits.

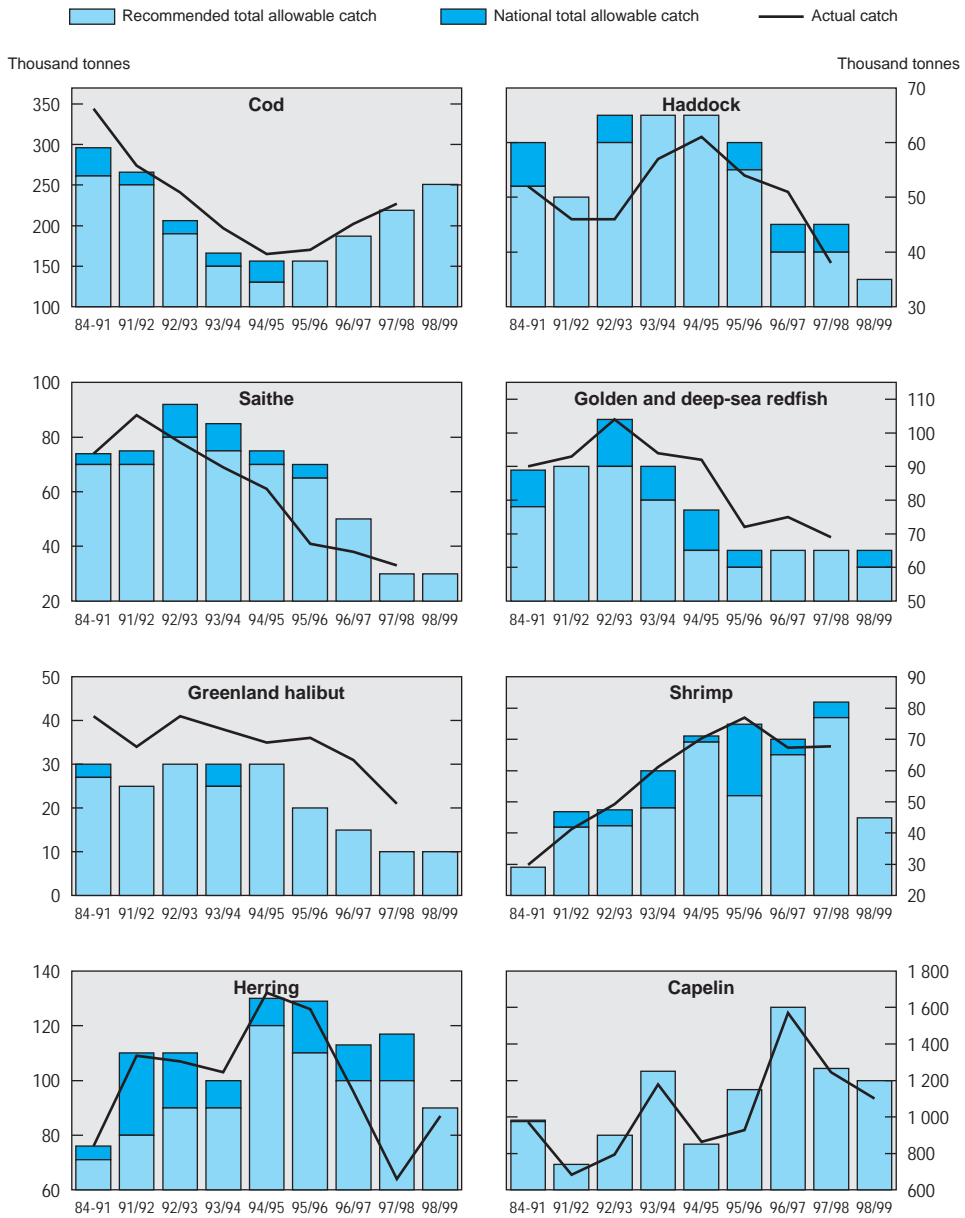
The last aspect of government control is the various licensing requirements, regulations and enforcement institutions. The government enforces the quota system by monitoring the catch at all landing sites, which are linked through a computer system. It also has inspectors on some boats to monitor the rate of discards.²⁷ Some additional regulations are intended to add further protection for the stocks. For instance, the Fisheries Ministry has various rules on permitted fishing gear, such as minimum mesh size for nets, and geographical restrictions such as banning trawling in large areas near the coast that serve as spawning and nursery areas. In addition, the Marine Research Institute can close certain areas temporarily if the number of small sized fish caught there becomes too great. Other rules are intended to stabilise capacity in the fishing fleet. Until a recent court decision (see below), a new vessel was licensed only if an equivalent tonnage was retired. Beginning in 1996, a new levy of one krona per kilogram of cod-equivalent quota, indexed to fish prices thereafter, was introduced to finance the Fisheries Development Fund, which was used to retire old vessels.

Implication for stocks efficiency and distribution

Fisheries management has brought cod back from the brink of collapse, but some improvement is needed with respect to other species. The introduction of the automatic rule for cod has led to a recovery in the stock and spawning biomass (Figure 20). As a result, based on recent trends, it is possible that the fishable stock will reach its long-term maximal efficient level of about 1.5 million tonnes in ten years. Nonetheless, there is some slippage in the system, and the stocks of some other species are currently at low levels. With cod, as well as some other species such as ocean redfish and Greenland halibut, landings have been above the total allowable catch (Figure 21). The Marine Research Institute believes that Greenland halibut is at dangerously low levels, although some of this is also due to fishing by foreign fleets, as the stocks straddle the Icelandic EEZ. Other species whose stocks are low or have fallen significantly include saithe, plaice and wolffish. Some of the problem with plaice may be due to the tendency of the government to implement quotas above recommended levels, which it has also done for haddock and herring.

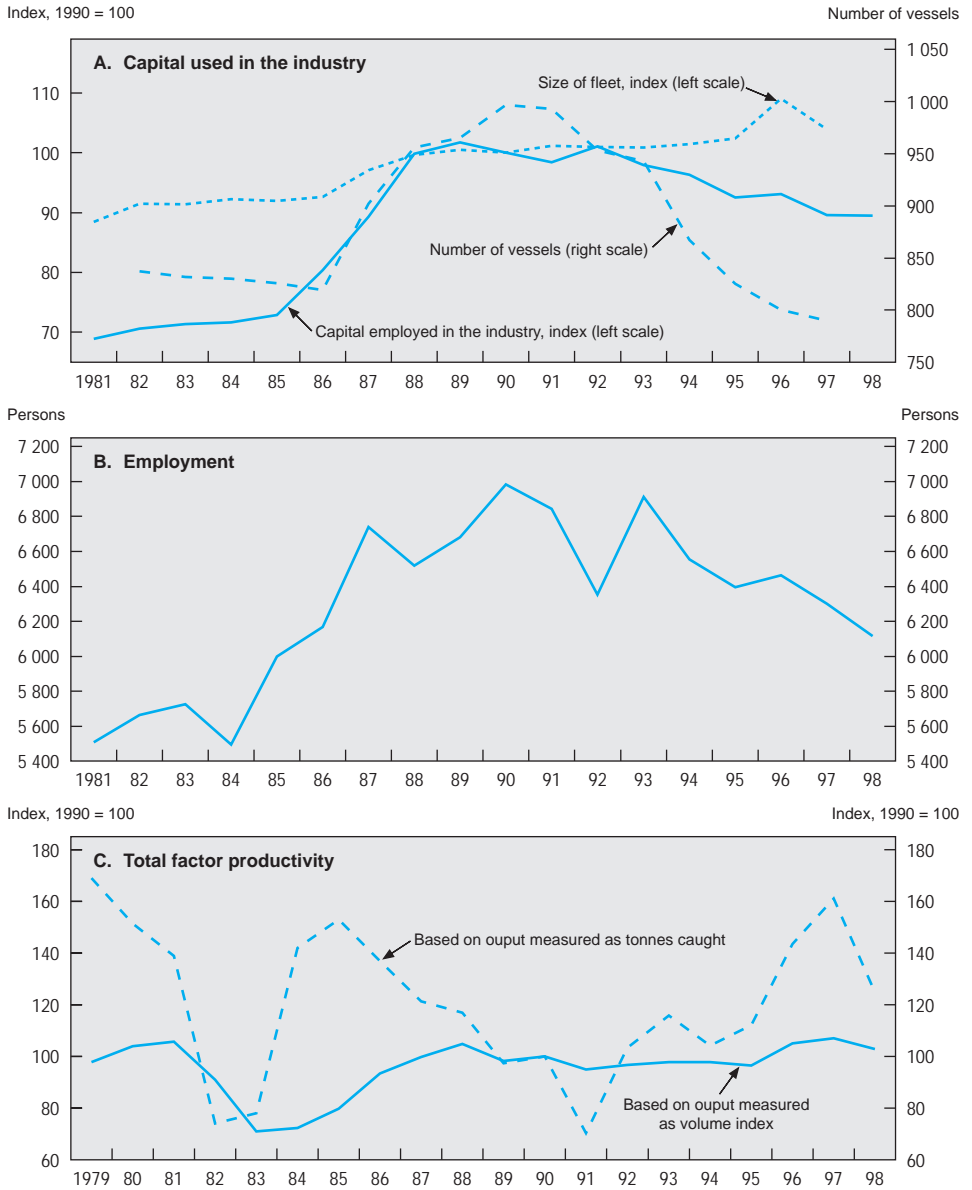
The present management system has led to rationalisation of the fishing sector. Since 1991, the number of fishing vessels has decreased dramatically (Figure 22, panel A). This is especially evident for small, decked boats under 10 GRT whose numbers have fallen by a quarter after running up in the last half of the 1980s when they had been exempt from the quota system and allowed free entry to the industry. The number of mid-range boats has also declined, but not at the same pace. Only the number of boats and trawlers over 500 GRT has moved up. As a result, the average size of fishing vessels, as measured by gross tonnage, has actually increased. Some of this is due to the increasing popularity of freezing

Figure 21. Management of fish stocks



Source: The Marine Research Institute.

Figure 22. Factor inputs and productivity in the fishing industry

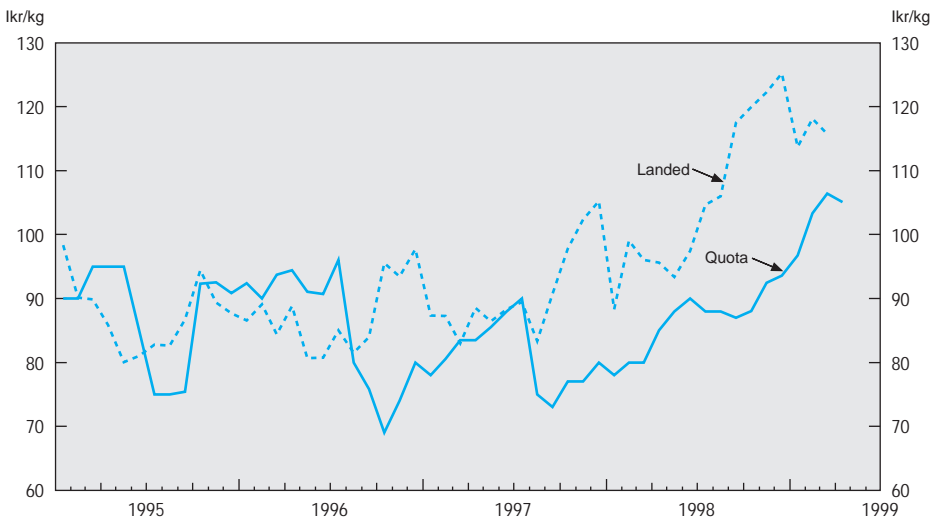


Source: The National Economic Institute, Central Bank of Iceland and the OECD.

operations at sea, which ensures better quality and extends the shelf-life of the fish. Nonetheless, the amount of capital employed in the industry has declined. Since 1991, employment in the fishing sector has also fallen, after rising along with the number of boats in the 1980s (Figure 22, panel B). Total factor productivity has been relatively flat when output is measured by volume indexes²⁸ (Figure 22, panel C), a reasonable performance given that the value-weighted total allowable catch of key species in Icelandic waters has declined over 20 per cent from 1991. As measured by tonnage caught, total factor productivity has moved with the share of the capelin catch, which over this period, peaked in 1997. The capelin catch can fluctuate considerably due to environmental changes and the biology of the species.

The growth in trading in quotas has tended to improve efficiency. As a result of the major reform in 1991, turnover in the quota market has surged. The bulk of trading has been in one-year rentals, with roughly lkr 10 billion traded last year, which is equivalent to 20 per cent of the output of the fishing industry. The market in permanent rights is thinner, although it too has picked up. Quota prices have been high relative to cod prices (Figure 23). In the short run they should fully absorb the profits of the industry, especially as there likely remains some over capacity. In the long run, one would expect them to come down, as they will also have to cover the marginal costs of capital. Recently, a gap has opened up

Figure 23. Price of cod and annual quota rights



Source: National Economic Institute.

between the quota price and the price of landed cod, consistent with upward sloping marginal costs in the industry. Nonetheless, the level of quota prices is puzzling as it is hard to see how they have allowed companies to cover even fuel and labour costs. It is still possible, though, that these prices for landed cod do not reflect the full value of the catch, something the unions have contended for some time as it relates to their compensation.²⁹

In terms of the distribution of fishing rights across regions and companies, the system of transferable quotas has not had large effects. The share of quotas held by vessels in the Southwest, including the capital region, has declined, with increases in the Northeast (Table 13). Landings, on the other hand, have increased in the Southwest, in part due to the introduction of the wetfish floor market and probably at the expense of the South. Only the Western Fjords and the East have seen declines in both quota holdings and processing, although changes in their shares appear to be small. Moreover, the concentration of quota holdings among firms has increased only slightly in the past decade. The top ten fisheries held 28 per cent of the quotas in the 1996/97 fishing year, up from 24 per cent five years earlier.³⁰ Over that period, the highest concentration in one firm in any year was 6.1 per cent. In contrast the top ten fisheries in New Zealand controlled two-thirds of the quotas, with the three largest firms holding 44 per cent in 1994/95.³¹

Current issues

In December 1998, the Supreme Court ruled that the regulation that limits fishing quotas to vessels with prior experience violates the constitutional right to

Table 13. **Regional distribution of the fisheries industry¹**

	South-west	West	Western fjords	North-west	North-east	East	South
	Share in quota holdings						
1984-86	28.9	9.2	13.7	6.2	14.9	13.4	13.6
1989-91	23.5	9.2	14.2	7.8	17.5	12.9	14.9
1994-96	25.3	10.1	11.9	7.1	19.0	12.4	14.3
	Share in groundfish landings						
1984-86	25.7	11.2	14.0	6.6	15.8	14.2	12.6
1989-91	29.1	9.6	13.0	7.3	19.8	11.8	9.4
1994-96	31.9	9.5	12.6	5.8	18.9	12.1	9.2

1. Expressed in cod-equivalent units.

Source: Runolfsson (1997).

equal access to employment. The government has interpreted the ruling as implying that the prohibition on *de novo* fishing licenses was unconstitutional. Consequently, it has amended the rule starting with the 1999/00 fishing year to allow any citizen to obtain a license to fish, but for those species protected by catch limits, operators still would have to obtain a quota. In the wake of the ruling, 1 600 persons applied for a license. More importantly, the basic requirement of a quota is also under challenge with a ruling expected in 1999. Indeed, one of the issues at the heart of the complaint is the decision to give away the permanent quotas to the operators, as opposed to other options such as an annual auction. A poll taken in the middle of 1998 found that two-thirds of the electorate favoured the imposition of some fees for the right to fish, although the government opposes resource taxes. Selling the quotas could have some implications for the industry beyond the mere transfer of rents (Box 3).

Developments in another area threaten the flexibility of the industry. In early 1998, fishermen staged a walkout over the issue of the valuation of the catch. Indeed, as they are paid a share of the catch, their compensation depends on its price. However, the same firms that own the processors control a majority of the fishing fleet, so that the problem of determining the transfer price to be paid between related enterprises occurs. The fact is that data on fish prices appear low relative to quota prices (Figure 23). It also has been alleged that buyers sometimes agree to purchase the catch ahead of time and pay for the quota. Thus, the posted price of the catch may be net of the quota costs, effectively lowering the compensation of fishermen. Other times, boat owners required their employees to purchase some of the quotas as a precondition of work, which is explicitly against national law. The unions demanded that all the catch be put up to public auctions, but this was refused, leading to the strike. Instead, the government mandated that all quotas – except for trades of equivalent value – be transferred through the Fishing Quota Exchange. It also set up a bureau to arbitrate fish prices, although similar legislation was passed in 1994 and 1995. This issue may resurface as the unions are not happy with all of the particulars of the current settlement; their wage contract expires in mid February 2000.

Given the nature of the fishing resources in the North Atlantic, Iceland is involved in negotiations with many countries. Talks have continued on a range of issues involving stocks that straddle economic jurisdictions and international waters, with some important agreements being reached. In March 1999, Iceland, Norway and Russia concluded an agreement over fishing rights in the Barents Sea. Iceland has a quota of 4 450 tonnes of cod in each of the economic zones of Norway and Russia, while capelin fishing is banned in that area. Talks were concluded when Iceland granted concessions to the two countries. According to the agreement, Norway can now fish 500 tonnes of ling, blue ling and tusk in Icelandic waters. Russian fishermen are allowed to catch 37½ per cent of the Icelandic quota in its waters, which it has agreed to sell to Icelandic firms at

Box 3. The economic effects of the distribution of fishing quotas

The starting point for any discussion on the economic implications of the distribution of fishing quotas is the Coase Theorem. According to the argument, as long as parties with well-defined property rights can costlessly trade, they will reach a pareto-optimal solution.¹ Under the usual regularity and competition conditions, profit-maximising firms will likely reach the cost-minimising outcome. As is well known, however, income effects can be important in determining a particular equilibrium, especially when profit maximisation is not the only goal of agents.² In the case of fishing in Iceland, it is possible that small, independent fishermen are less efficient than larger enterprises but choose to fish, in spite of the possibility of generating more income from selling their rights and working elsewhere, because their total utility is maximised through fishing. While a constrained pareto-optimal solution will still be reached through trading, the initial distribution of property rights can determine which equilibrium occurs. The free allocation of quotas gives independent fishermen an option that could be unavailable, or not chosen, if they had to purchase their rights on an open market. As a result, although the outcome when the quotas are given away is efficient in the sense that no one can be made better off without making someone else worse off, the situation may not be efficient in the more narrow sense of cost minimisation.

Two questions then emerge. First, because some persons are made better off at the expense of others in an alternative system, how should the government treat the free distribution of quotas in its books? Because there is a public market for the quotas, it would seem natural to treat them explicitly as capital transfers. In the interest of transparency, some accounting should be made, even if it were to be an off-budget item, as the revenue foregone is potentially large. Over the 1997/98 fishing year, the price of cod quotas for gutted fish times the catch was equal to about 15 per cent of direct taxes on households and businesses, or roughly $2\frac{3}{4}$ per cent of GDP. Including other species raises that figure by around one-half. However, the National Economic Institute estimates that fishing companies were only able to break-even on regular operations in 1997 although irregular income – mostly gains on the sales of quotas and other fixed capital – was 6 per cent of revenue. Some have argued that the benefits of the free distribution of quotas trickle down into the economy. That is simply a statement about the distribution of rents; giving away quotas does not increase economy-wide efficiency. It is possible that the rents benefit more people than the original quota owners, but the total number who do benefit is certainly smaller than would result if the government sold the rights instead.

The second question then arises: can the free distribution of quotas be regarded as a subsidy? This is an important issue given that Iceland's proposal to the WTO to end fishing subsidies does not include a call for quotas to be sold. Whether the free distribution would fall under the purview of the Agreement on Subsidies and Counter-vailing Measures has never been formally decided, although the history of the Uruguay Round hints at some controversy.³ From the narrow perspective of national accounting, fish stocks and fishing rights are respectively non-produced tangible and intangible assets. As such, they are not the result of production, and therefore, giving them away is not a subsidy *per se*. On the other hand, a working group in the FAO Fisheries Committee goes so far as to refer to such distributions as subsidies.⁴ The OECD Fisheries Committee considers that "assistance should be defined as government

(continued on next page)

(continued)

intervention, or lack of intervention, which distorts the allocation of resources in a country relative to an efficient allocation".⁵ Thus, the free distribution of quotas could fall under the term "assistance".

It is important to note, however, that the effects of the method of quota distribution have on third countries appear small compared to other countries. Regardless of how the quotas are distributed, the same amount of fish caught under quota would be placed on the world market. Thus, given that they are prohibited from fishing in Iceland's EEZ, regardless of how the quotas are distributed to Icelanders, the only effect on other countries is that the cost of capital to Icelandic firms receiving free quotas is lowered by the difference between borrowing and lending rates of interest times the increase in retained earnings from higher profits. This only matters to the extent that it enables firms to branch out into fishing outside of Iceland's EEZ, thereby increasing supply to the market and reducing stocks that could be caught by others. Only a fraction of Icelandic firms receiving free quotas engage in international fishing, however, and thus, this effect appears to be small compared with more direct subsidies.

1. Coase (1960) is the original definitive discussion, although earlier forms exist; see also De Meza (1998).
2. For example, see Mishan (1967).
3. See Stone (1997) for a discussion.
4. See FAO (1998).
5. (OECD, 1993*b*). In its study on economic assistance to the fishing industry, the document defines efficient allocation only in terms of income, noting that it does not necessarily imply a socially optimally allocation.

market prices. Ten months earlier, Iceland concluded a new capelin treaty with Greenland and Norway, involving the stocks in the area between Iceland, Greenland and Jan Mayen Island. Iceland's share of the existing quota has risen from 78 to 81 per cent, whereas Norway's share has declined by a like amount to 8 per cent. Various bilateral agreements granting fishing in the other's jurisdiction are included as well and an accord with Greenland to allow half of the ocean perch quota to be caught in each other's waters.

In other areas, outstanding issues remain. Recently, the Northeastern Atlantic Fisheries Committee agreed to a total quota of 44 000 tonnes of mackerel to be caught between Iceland, the Faeroe Islands and Norway. Of this share, Iceland receives 2 000 tonnes, which the authorities regarded as unfairly low. Although the mackerel migrates into Iceland's jurisdiction, the committee did not recognise Iceland as a coastal state in this regard. Moreover, although negotiations concluded with the Faeroe Islands, Norway, Russia and the European Union on herring, no consensus could be reached on the long-term management of the stocks for this species. Finally, in March 1999, Iceland made a joint proposal with

Australia, New Zealand, the Philippines and the United States to the WTO to end government subsidisation of the fishing industry among its members. At the same time, the parliament voted to resume whaling after a ten-year ban as soon as was feasible.³² The Marine Research Institute reports that Iceland could catch 200 fin whales and 250 minke whales without degrading their stocks. The Institute argues that, at some point, the whale population could seriously cut into the cod stocks, and it favours a balanced approach that utilises "all of the marine resources". Polls of the general population suggest that re-introducing whaling is popular. Nonetheless, exporters and tourism operators fear a backlash, and the government has announced that no plans will be implemented until its full ramifications are clear. Some have maintained that successful commercial whaling would require a catch that would exceed Iceland's consumption needs, and so far, no export markets exist.

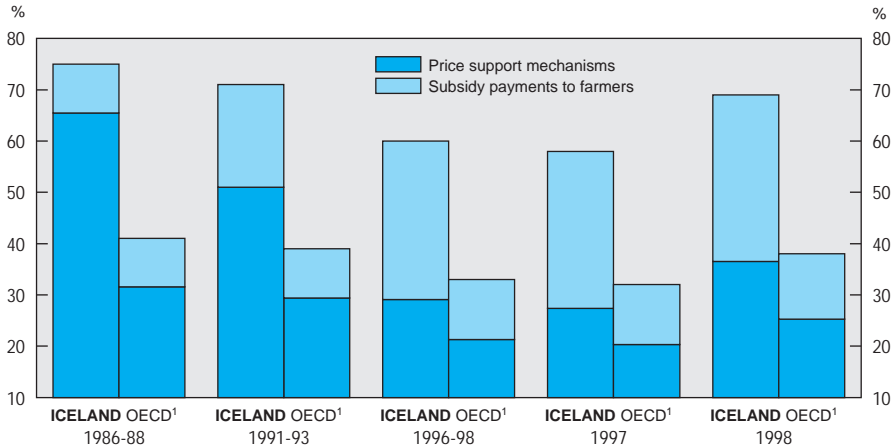
Progress in liberalising the economy

Agriculture

Compared to other OECD countries, Iceland heavily regulates its agricultural sector. In terms of the percentage producer support estimates (PSE), support to agriculture is 1.8 times that of the average in the OECD area (Figure 24). Total support to agriculture represented an estimated 2¼ per cent of GDP in 1998 while total agricultural output was only 2 per cent of GDP, though agriculture's share of employment, in man-years, was as high as 3½ per cent. The government administers prices at the producer level for milk. Milk production is subject to a quota that producers can trade, which has led to some restructuring in the sector. In 1998, producer prices for milk and lamb were more than double those in New Zealand, where markets are free of price support. Producers also benefit from substantial direct payments, and imports of commodities competing with Icelandic production are limited to volumes required under WTO minimum and current access provisions. As Icelandic agricultural production is limited in range and quantity, most commodities can enter freely.

Since 1992 there has been progress in moving away from market price supports towards direct payments, but over 50 per cent of support to milk producers is still linked to output. In September 1998, that part of the 1995 Sheepmeat Agreement that abolished administered prices was implemented. From 1996, direct payments also are no longer directly linked to production levels and instead depend on past quota levels. The government and the farmers' association negotiated a new dairy agreement, effective from September 1998. A committee will decide minimum milk and dairy prices at the producer and wholesale level, as opposed to a fixed price, with the proviso that wholesale prices will no

Figure 24. **Support to agriculture**
Levels of producer subsidy equivalents
Per cent of world market price



1. OECD excludes the most recent Members countries : Czech Republic, Hungary, Korea, Mexico and Poland.
Source: OECD.

longer be administered as from June 2001. Administered prices for poultry and eggs were terminated in 1997, and the government also stopped administering prices for wool in 1998. It should be noted, however, that overall there was some slippage in 1998, as in most other OECD countries, with the producer support estimate moving back up, in part because of lower world livestock prices. In particular, administered milk prices increased 8½ per cent, and budgetary payments to producers rose by nearly 6 per cent in 1998, compared to 1997.

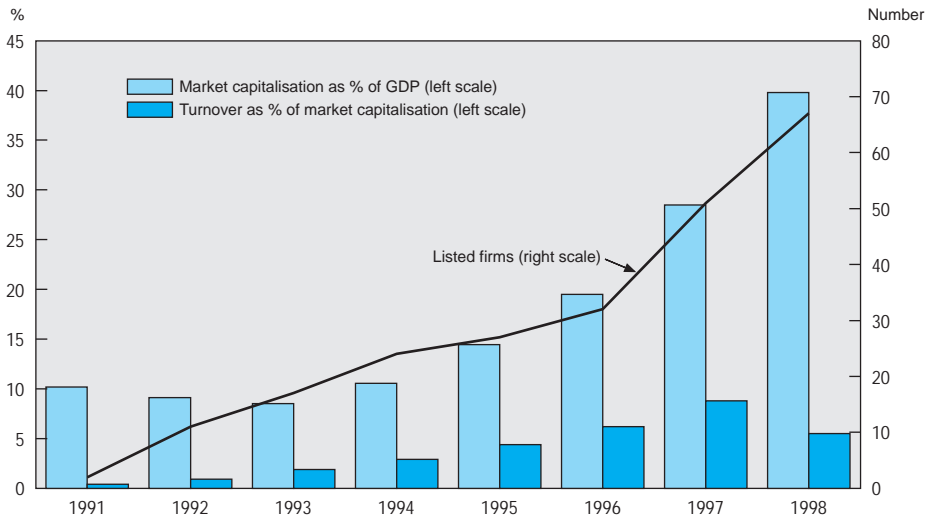
Financial markets

The past two years have seen considerable action in the financial area.³³ In 1998, the government converted the two publicly-owned commercial banks into limited liability companies and allowed a public flotation of new equity of up to 35 per cent of the existing base. In the event, it sold 15 per cent of each bank in a successful initial public offering (see below). It also followed through with plans to merge four investment credit funds into two entities, a relatively small new business venture fund and the much larger Icelandic Investment Bank (FBA), and sold 49 per cent of the latter. In the middle of 1998, new rules for the interbank market in krónur became effective where participants are now obliged to post bid and asked rates for short-term credit. As a result, transactions on this market have

grown sharply. In addition, a working group on the structure of the payments system has published its first set of recommendations, suggesting that the system be split into two: a limited liability company would operate retail clearance – such as electronic transactions, cheque clearance and settlements between parties – while a committee of participants would manage the operations of the wholesale system of clearance with Central Bank accounts. More generally, there has been considerable evolution in the payments system with the ratio of debit card transactions to cheque transactions rising from 4 to 44 per cent in the period 1992 to 1998. The government also merged the three housing funds, though keeping them under state control.

The securities market has also continued to grow and develop. In 1998, the government passed legislation that turned the Icelandic Stock Exchange into a limited liability company. It also revoked its monopoly on exchange trading, while relaxing some restrictions on its activities. The exchange can now branch out into trading electricity and fish quotas. Legislation created a new company to register securities electronically, which should start operation before the end of 1999. Over the past decade, the size of the stock market has grown substantially, with significant increases in market capitalisation and the number of listed firms (Figure 25). In 1998, market capitalisation as a percentage of GDP was almost

Figure 25. **The Icelandic stock market**



Source: Central Bank of Iceland.

40 per cent, roughly 15 percentage points below the OECD median but on par with Germany. At the time, turnover was extremely small; at 5½ per cent of market capitalisation, it was well below the median of some 60 per cent among OECD countries. Part of this shortfall is explained by enforced rules of the exchange that ban pre-negotiated trade passing through the system. Including this, however, only boosts turnover to a little over 20 per cent of market capitalisation.

In the past year, the government has also reorganised the regulatory institutions for financial markets. Because traditional distinctions among financial institutions have blurred, it took the banking inspectorate out of the Central Bank and merged it with the insurance inspectorate into a new agency under the Ministry of Commerce. The legislation contains provisions to ensure close communication between the Financial Supervisory Authority and the Central Bank, while the Bank has created a committee to monitor the overall stability of the financial system. Separate legislation allows the Central Bank to engage in transactions with credit institutions besides depository institutions. It also instructs the Bank to maintain a sound and efficient payments system. After the elections, the government announced its intention to move oversight of the Central Bank from the Minister of Commerce to the Prime Minister's office. The implications of this change for central bank independence are not clear.

The labour market

The labour market in Iceland has been one of those in the OECD area that are the most responsive to aggregate demand pressures. Nonetheless, the government felt that increased synchronisation of pay settlements and a faster negotiation process would improve the functioning of the market. To this end, in 1996, it passed the Industrial Relations Act, that sets down a timetable for negotiations and provides a mediator to speed the process along. The 1997 negotiations, however, did not close as quickly as expected, and upcoming talks may be protracted for four reasons. *First*, because of the drawn out process in 1997, contracts do not expire at the same time. While the first agreements with bank employees ended in September 1999 and has been extended to December 2000, those with the Icelandic Federation of Labour expire in February 2000, with some scattered throughout the year. This is a special problem for four unions in Reykjavik that merged but whose contracts have different expiration dates. Contracts in the public sector end during the fourth quarter of 2000. As a result, some unions want to negotiate short contracts of varying length to bring them together, but other unions may prefer to negotiate longer deals. *Second*, as noted in Chapter I, public employees negotiated larger wage increases in general, inducing private workers to demand greater pay raises. *Third*, there is a general disagreement among regional interests on negotiating tactics. Whereas at the rural level, unions want more centralised negotiations, those in the capital area prefer to negotiate

in part with individual firms, a practice that was started in the last round. *Finally*, there is some dissension among member unions of the Icelandic Federation of Labour, as some unions representing skilled workers are now trying to recruit unskilled people.

Privatisation

Iceland's *privatisation* programme accelerated in 1998 from the pace observed earlier in the decade, but it fell short of the government's plans. As noted, in October 1998, the government sold 49 per cent of its holdings in the Icelandic Investment Bank. The sale, which generated IKr 4.7 billion (Table 14,

Table 14. **Iceland's privatisation programme**

Panel A: Individual sales: 1998-99			
Firm	Contents	Proceeds millions IKr	
1998 Íslenska járnblendifélagið hf. (Ferro-silicon plant)	Sale of entire 26.5% Treasury holding	1 033	
1998 Íslenskur markaður hf. (Retail store)	Sale of 56.4% Treasury holding	90	
1998 Fjárfestingarbanki atvinnulífsins hf. (Icelandic Investment Bank)	Sale of 49% Treasury holding	4 664	
1998 Íslenskir aðalverktakar hf. (Icelandic Prime Contractors)	Sale of 12.1% Treasury holding	266	
1998 Landsbank Íslands hf. (Commercial bank)	Issue of new stock, 15% of capital	1 725	
1998 Búnaðarbanki Íslands (Commercial bank)	Issue of new stock, 15% of capital	1 067	
1999 Stofnfiskur hf. (Fish farming)	Sale of 19% Treasury holding	12	
1999 Áburðarverksmíjan hf. (Fertiliser plant)	Sale of entire 100% Treasury holding	1 257	

Source: Ministry of Finance.

Panel B: Cumulative value of sales		
	Revenue millions IKr	Per cent GDP ¹
Sum 1991-97	2 320	0.5
Financial firms	292	0.1
Non-financial firms	2 028	0.5
Sum 1998-99	10 115	1.7
Financial firms	7 456	1.3
Non-financial firms	2 659	0.4
Average OECD per year (1991-98)		0.6

1. Sum of per year percentages, except as noted.

Source: Calculations from Panel A and OECD (1999).

Panel A), was four times oversubscribed with 4 per cent of the population taking part in the initial public offering, and the value of the shares rose to a premium of 50 per cent over their offer price. In the same year, new equity, representing a 15 per cent increase, was offered to the public in the two publicly owned commercial banks, generating IKr 2.9 billion. Overall, in 1998, sales have generated revenues equal to $\frac{3}{4}$ per cent of GDP, equivalent to the proceeds received in the prior seven years (Table 14, Panel B). However, not all initial plans were met. Only a portion of Icelandic Prime Contractors and one fish-farming company was sold, while other firms, such as another fish breeding plant and a cement manufacturer, were not offered at all. In one case, an inopportune accident delayed plans.

Despite these delays, the government has announced its intention to expand its privatisation programme. In late 1998, parliament passed legislation allowing the complete privatisation of the Icelandic Investment Bank, and this process was completed by November 1999. The government will fully privatise the two publicly owned commercial banks and begin preparations for the sale of the national telephone company within the current four-year term of the government. In addition, the government plans to sell its interest in the two fish breeding plants, a recycling company and an Internet service provider, as well as one-quarter of its shares in the cement manufacturer. The city of Reykjavik is also considering selling some of their large real estate holdings such as schools and office buildings on a lease-back arrangement.

Competition policy

Since the early 1990s, Iceland has pursued a policy that promotes competition. More recently, antitrust enforcement was strengthened through an active Competition Authority. Moreover, legislation is in preparation to open up the electricity market in accordance with the EU directive. In contrast in the field of telecommunications, private-sector developments appear to be outpacing less ambitious efforts by the authorities to date to promote competition. While Iceland has officially opened up IT telecommunications market in accordance with WTO commitments, several competition issues remain.

Antitrust enforcement

The competition authorities have continued to pursue an active agenda in the area of antitrust enforcement. Unlike prior years, when the authorities have pursued cases against state-run enterprises, their attention since the beginning of 1996 has been more equally divided among public and private enterprises. With regard to a case involving a publicly owned firm, in spite of several previous precedents,³⁴ the national telephone company challenged the authorities' competence in matters involving the regulation of the industry. The appeals committee ruled that, unless sector-specific provisions explicitly indicate otherwise, the Competition Authority had jurisdiction in that industry.

One area that has vexed the Authority is the issue of competition where network effects are present.³⁵ In a case brought by the national postal company against the banks involved in credit cards, the Competition Council found that the credit card system was an essential facility and that access should be granted to competitors.³⁶ The Council did not impose specific terms on access, instead requiring the firms negotiate a settlement. In a similar case, this time brought against the postal company, a competitor in bulk mail wanted access to the delivery system in rural areas. In this instance, the parties negotiated an agreement. The banks and the credit card companies are also the subject of a wider investigation that involves co-operation in this market. (Other cases concerning the national telephone company are described below.)

The Icelandic authorities have also been confronted with issues involving mergers between several firms. The Competition Act of 1993 allows the authorities full discretion over mergers that result in a firm acquiring or strengthening a dominant position, including the power to reverse one that has already taken place. While the Act makes provisions for the timetable of rulings on mergers – six weeks for those that firms bring to the attention of the authorities and two months otherwise – unlike many OECD countries, there are no notification requirements. The importance of this void in the law became evident when the Appeals Committee overturned the Competition Council's annulment of a merger between two industrial bakeries that together controlled over 80 per cent of the market. There was confusion in the law as to when the clock started on the required timetable; the Appeals Committee ruled that it started when any public indication of the merger could be found. In this particular instance, such a finding meant that the Competition Council took two months and one day to issue its particular ruling. The authorities are now investigating a merger between two food retailers who together would control 60 per cent of the Reykjavik market, and over half of the national market. Besides the potential for monopoly power on the retailing side, the authorities are concerned over the potential of monopsony power over various wholesalers.

Furthermore, the authorities have also been involved in various other monopolistic practices. They brought a case against the credit card companies alleging that the prohibition on price discrimination between card users and cash was anti-competitive. While the Council and various appeals bodies upheld the anti-competitive finding, the Supreme Court in January 1998 reversed the decision on non-substantive grounds and argued that Iceland should wait for other countries to establish similar findings. In the domestic air travel market, the Competition Council and Appeals Committee found that Icelandair's addition of extra flights between Reykjavik and the eastern end of the island after a competitor introduced a flight was predatory.

Electricity and telecommunications

Electricity is one of the sectors where the government is pursuing efforts to strengthen competition, as described in the *1998 Survey*. A bill to be presented to parliament at the end of 1999 will formally require the separation of the accounts of the different parts of the National Power Company engaged in the generation, transmission, distribution and retailing of electricity, while mandating arms-length transactions among its divisions. The company has already begun part of this process. Ultimately, the legislation envisages separate limited liability companies operating in these distinct areas, with the Energy Institute supervising generation and the competition authorities overseeing competition issues in delivery and marketing. The final aim of the government is to allow competition in sales to large-scale electricity users (over 50 G watts) by 2003 and generally by 2008. Currently, all such large-scale users are locked in long-term contracts, but new consumers that may arise from future investment projects would not necessarily have to purchase their electricity from the National Power Company. Negotiations are currently under way with the European Union over implementation of the 1997 EU directive mandating competition in this field.³⁷ In addition, the legislation will require district heating and geothermal companies to formally separate their electricity accounts from the rest of their operations, although the monitoring system has not been worked out. Such a mandate is necessary in order to prevent these companies from using their regulated monopoly position in the provision of hot water to subsidise investment in an increasingly competitive and less regulated electricity sector. Reykjavik, for instance, recently merged its electric and hot water companies.

The *telecommunications sector* in Iceland is evolving rapidly, as in most OECD countries, under the pressures of technological change and the potential for increased international competition. In May 1998, the national telephone company, Iceland Telecom, began facing its first competitor when Tal hf. started offering mobile phone service. Competition has been fierce. Half of all Icelanders now own a mobile phone with Tal controlling one-sixth of the market. At the end of 1998 another company, Skíma Ltd. began offering international service *via* the Internet at rates 20-30 per cent less than those offered by Iceland Telecom. A third telephone company, Íslandssími, is to be launched soon, offering comprehensive telecommunications services. Such increased competition may already be showing up in prices. While the total CPI and the domestic price component have risen 3.9 and 6.1 per cent respectively from March 1997 to March 1999, telephone prices have fallen 7 per cent. In PPP terms, local calls in Iceland are the least expensive in the OECD area.

Besides adhering to WTO commitments to allow competition in telecommunications, regulatory agencies have not developed a plan to foster increased competition in this sector. Instead, this role has fallen to the Competition

Authority where almost twenty cases have been filed against Iceland Telecom. A pay-TV firm introduced a case involving access to Iceland Telecom's broadband network. In its finding, the Competition Council decided to separate the accounts of Iceland Telecom's broadband subsidiary, but declined to make a substantive ruling on the spinning off those assets. Instituting separate accounting for companies who control networks vital for new entrants is a good first step in nurturing competition because it facilitates regulatory review of prices charged by the vertically integrated incumbent firm. In another case, Tal wanted to enter the long-distance market and have the national phone company operate its billing system. Regulators imposed this duty on Iceland Telecom, which it has appealed successfully.³⁸ In a finding similar to other rulings, the Competition Council recommended in its report that the government place the cellular-phone division in an independent subsidiary. Tal has also complained of predatory behaviour, with the case before the Council pending. The Council also has ruled that Iceland Telecom's free provision of Internet services was illegal. In a separate case, the Competition Council recently ruled that when Iceland Telecom was incorporated, its assets were undervalued, yielding an effective subsidy of Ikr 11 billion, which violates EEA agreements. Nonetheless, these case rulings do not add up to a comprehensive competition policy.

The government has announced its intention to begin privatisation plans of Iceland Telecom. Unlike the banks, however, where one of the aims is to maximise receipts to the Treasury, various public issues such as universal access could circumscribe the sale of the telephone company. Beyond this policy statement there does not appear to be much work on a comprehensive competition plan that, at the same time, will uphold services in the rural areas. One measure that was taken was in November 1997 when the national telephone company abolished long-distance prices by making the whole country one local call zone. Ten years ago, the difference between a local and long distance call was a factor eight.

Other structural initiatives

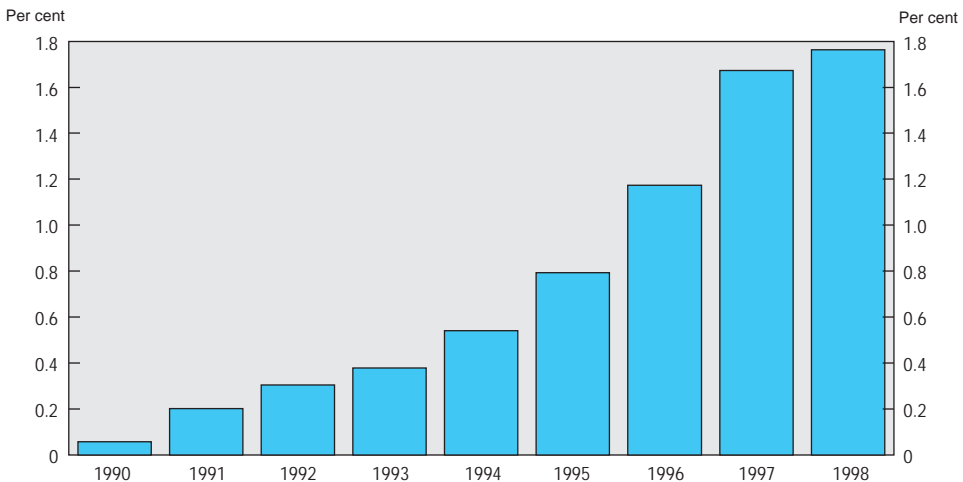
High-technology industries

Although fish products continue to dominate export revenue, the economy has diversified to some extent. Over the past several years, several high-tech firms have emerged in Iceland, carving out a niche in the world market, and in some instances, taking advantage of some special resources of the country. Promotion of the information technology sector has taken two forms. *First*, the government has embarked on its own programme to invest in that area through education, with plans to include instruction on the use of such technology at all grade

levels, and health care where action is under way to wire all health institutions and administrators in one “Health Net” and develop the infrastructure for “telemedicine”. In part, such action is designed to boost the quality of health services in the rural regions. *Second*, the government has begun a review of existing legislation to fix deficiencies in the law with respect to electronic commerce, some of which is being undertaken in the context of EEA directives. For instance, several laws currently contain clauses mandating paper documents and are being reformulated. There is a committee currently working on the issue of electronic signatures, while the Ministry of Justice is in the process of implementing the EU directive on privacy.

The software industry is the single most important high-tech industry in Iceland. According to a Central Bank survey of 55 Icelandic software firms, the real value of exports has risen sixfold in the past six years (Figure 26). A deceleration in exports was evident in 1998, however, in part due to increased focus on the domestic market with work on the Y2K computer problem (see below) and shortages of qualified personnel. The market has been dynamic with several mergers taking place and some purchases by larger foreign firms. Concentration is typical for a young industry; six companies accounted for 62 per cent of exports in 1998. Indicative of the increasing role of information technology, Internet

Figure 26. **Software exports**
Percentage of total goods exports, volume



Source: Central Bank of Iceland.

Table 15. **Indicators of Internet penetration**

	Iceland	OECD	Iceland's rank
Internet host per 1 000 inhabitants	75.5	32.5	4
Web servers per 1 000 inhabitants	2.9	0.6	7
Secure web servers for electronic commerce per 100 000 inhabitants	4.7	2.0	2
Peak-rate Internet access charges ¹	50.2	62.0	7
Off-peak rate Internet access charges ¹	38.1	54.1	4

1. Charges for 20 hours online per month in US\$ PPP. Ranks are such that the least expensive is number 1.
Source: *OECD Communications Outlook*, 1999.

penetration in Iceland is relatively high. Iceland ranks in the top quartile of OECD countries in Internet hosts and web servers, and Internet access charges are relatively low (Table 15).

In addition, the government has taken steps to aid the development of biotechnology that has emerged as a second, significant high-tech industry. One firm, DeCODE Genetics has already made important findings in genetic research on osteoarthritis, using a small database it developed. Prospects for more major breakthroughs were enhanced when the parliament passed legislation in December 1998 allowing the creation of a centralised, depersonalised database containing health and genetic information. The Ministry of Health is negotiating the terms of a license for DeCODE to establish and operate the database for twelve years after that company was successful in an open bidding process. The company was established in 1995 and in 1996 US investors put up \$12 million in venture capital. The company now has 290 employees up from 100 in January 1998, with health providers complaining that it is pushing up wages and attracting skilled labour. Other medical groups involved in heart and cancer research also carry out significant research. In particular, the Icelandic National Association for the Prevention of Heart Diseases has signed an agreement with the National Institute of Aging in the United States to conduct a five-year study.

Regional policy

In the past agricultural and fishing policies (see above) have been determined by a desire to support regions. Nonetheless, by 1997, some 60 per cent of the population lived within the capital region, which has seen a large inflow of persons from surrounding districts. From 1988 to 1997, Reykjavik has grown 1½ per cent per year, its suburbs expanding even faster. Areas further out, either south-east or south-west of Reykjavik but still within developing commuting

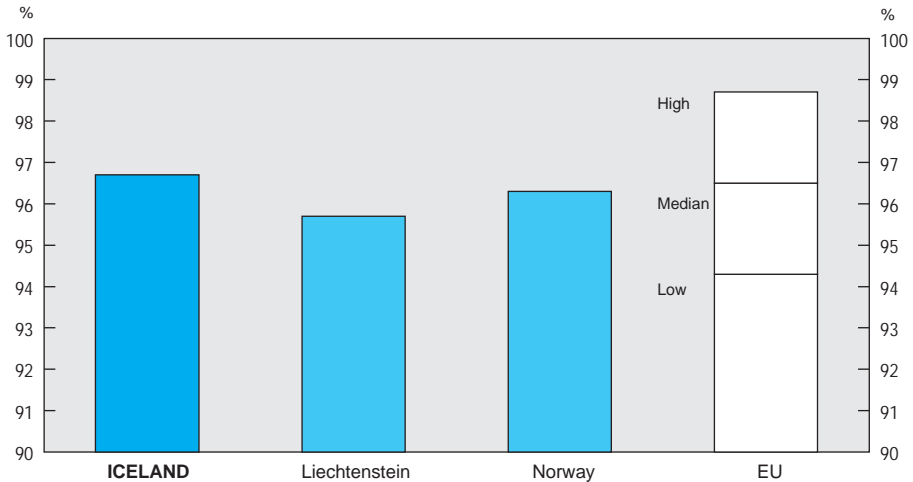
patterns, have grown about $\frac{3}{4}$ per cent per year. Elsewhere, the population has fallen almost $\frac{1}{2}$ per cent annually and even more if Akureyri, the largest municipality outside of the capital area, is excluded. These migrations have put pressures on resources in the capital where, currently, there is a boom under way in infrastructure projects to address shortages of school space and facilities for long-term care (see Chapter IV). While the city of Reykjavik has maintained a surplus in its current services budget, it has a large borrowing need to fund these projects. In the outlying regions, the situation is reversed, where some schools have closed, and fish processors are having difficulty filling vacancies domestically. Indeed, it is estimated that 11 per cent of the work force in the fish processing industry now come from outside the EEA area.

In order to promote growth in the outlying regions, the government has announced a policy of building up strong urban centres in these areas. As part of this process and as their responsibilities increased, the number of municipalities has fallen from 204 to 140. The government is also promoting large-scale investment outside of the capital area. The New Business Venture Fund, formed from the four merged investment funds (see above), will provide start-up and seed capital for smaller rural investment projects in the high-tech sector. The government has also promised to review business and personal property taxes so as to reflect differences in values among the regions. It recently passed legislation delimiting the authority of the regional governments over the uninhabited highlands. As already noted, it has also tried to help regional interests by consolidating the country into one telephone area, thereby reducing rural charges.

International trade and investment agreements

Since the beginning of 1998, Iceland has made significant progress in negotiations (through EFTA) to expand trade. Canada and EFTA completed two rounds of talks in 1998 over a free-trade agreement. For the first time, EFTA is considering including substantive provisions on services and investment in an agreement. Both sides have indicated that they would like to conclude negotiations in 1999 with implementation soon after. Having ratified the treaty establishing the European Economic Area (EEA), Iceland has obligations to implement a broad range of European Community legislation as filtered through the EEA Joint Committee. Surveillance of implementation of these directives within the three EFTA countries that are part of the EEA rests with the EFTA Surveillance Authority. As of May 1999, Iceland had fully implemented 96.7 per cent of the applicable directives, which compares favourably with the other EFTA states in the EEA (Figure 27). Eight EU countries also had lower completion rates than Iceland. Finally, at the end of 1998, Iceland and Russia signed a civil aviation agreement, allowing direct flights between the countries, as well as over flights and transit landings.

Figure 27. Implementation rate of EU and EEA directives
May 1999



Source: EU; *Single Market Scoreboard*, No. 4, June 1999.

Environment

Iceland decided not to sign the Kyoto Protocol to the United Nations Framework Convention on Climate Change, despite negotiating a 10 per cent increase from 1990 levels of greenhouse emissions in the 2008-12 period, but will reconsider its position once negotiations concerning single projects with a significant proportional impact are settled.³⁹ The government argues that large-scale, energy-intensive projects push up Iceland's emissions, although they serve to reduce those worldwide. While aluminium plants in the rest of the world produce significant amounts of carbon dioxide, mostly through electricity generation, Iceland's hydro-electric supply means that locating such a plant in Iceland would lead to a 70 to 90 per cent reduction in such emissions. Currently, negotiating parties to the Kyoto Protocol are considering a provision that would make allowances for small countries where single projects have a significant proportional impact on emissions.

In addition, the government argues that, by 1990, it had already made the feasible reductions in its emissions when it converted its heating systems to geothermal energy. A reduction in transport vehicle and fishing vessel emissions,

which dominate in Iceland,⁴⁰ is considered more difficult. To help reduce such emissions over the long term, the government is considering supporting the development of hydrogen power, which could be easily produced domestically. To this end, an Icelandic firm has a joint agreement with Daimler Chrysler, Norsk Hydro and Shell Oil to set up a firm to explore such uses in buses and fishing boats.

Year 2000 computer readiness

In May 1998, the Finance Ministry set up a committee to co-ordinate planning and communications in both the public and private sectors and to increase awareness of the problem associated with the year 2000 coding in computer programmes.⁴¹ Substantial progress on this issue has been made, with 91 per cent of the population having heard of it. The large power utilities, the Civil Aviation Authority and Iceland Telephone expect to have finished remedial action and testing by mid-year 1999 and contingency plans completed by then. The national radio and television firms expect to have finished work by September. Smaller hot and cold water utilities are less reliant on information technology and envisage to continue uninterrupted service unless their electricity supplies are disrupted. Over half of the testing work is completed among major financial institutions which expect to have finished this work as well as contingency plans by July 1999. While the central government reports that satisfactory progress has been made on its systems, municipal authorities are not as advanced, although implementation plans for key services appear sound according to the government. By March, 78 per cent of businesses surveyed reported that they had completed at least half of their conversion work, although one-fifth of firms with less than ten employees had not started remedial action.

The biggest threat now to Iceland from the computer-date problem appears to be one that originates overseas where conversion work is more uneven, and to a lesser extent from multiplier effects from disruptions among small domestic firms. Even the risks from overseas may not be that great. One consulting firm, the Gartner Group, ranked 87 countries at the end of 1998 according to the risks to their infrastructure from Y2K disruptions. Over 95 per cent of Iceland's 1998 goods exports, and 89 per cent of their imports were with countries ranked in the top two of four categories, with half of the trade in the countries in the highest category where disruptions are expected to be "isolated and minor".⁴²

Scope for further action

The three pillars of fisheries management in Iceland – scientific-based total catch limits, individually tradable quotas and regulatory oversight – has

served the country well. It has put the cod stocks on a sustainable footing and has prevented overfishing of most other species. But the organisation of the quota system evolved over time with several exceptions to its full application; as a result, over-investment had been a problem. Now, however, it is clear that for the most part the system aligns incentives to maximise efficiency. At present, the system is under legal challenge as some view its implementation – especially the free distribution of quota rights based on historical catches – as unconstitutional. Notwithstanding some possible changes in this regard, it is crucial that the core of the system be preserved by the authorities.

Certain aspects of the system could be improved, however. In particular, the authorities should implement, as quickly as possible, automatic catch rules for species other than those currently covered. This would remove the temptation to set total allowable catch levels above those recommended, as has happened in the past. In the meantime, the Ministry of Fisheries should continue to follow the recommendations of the Marine Research Institute closely. Although only a small part of the industry, the authorities should consider folding the effort and separate catch quotas for some small boats into the national system. Moreover, the restrictions on quota trading should be lessened: they appear to be unnecessary in preserving balanced activity across regions, while they may be slowing rationalisation of the sector. The introduction of the public quota exchange provides the necessary price information to make that market work. It would appear that a similar argument could be made to require a transparent system of valuing the catch, such as an open auction in landings. Such a system would remove a source of ongoing friction between vessel owners and hired fishermen.

Finally, the government should also consider introducing auctioning the fish quotas instead of their free distribution, when the Committee that is reviewing the quota system finally reports. As long as there is an open market for trading, selling the quotas would not harm the efficiency of the industry (Box 3). Moreover, charges for quotas could be used to reduce other distorting taxes in the economy. Such a move would also alleviate the concern some people have that the current distribution represents an unfair transfer to the fishing companies. It would have to be implemented gradually, however, as those who recently bought permanent quota rights, or shares in firms that own such rights, would deem such a change unfair.

Although Iceland has come a long way in the introduction of competitive markets, additional work is needed. Essential in this regard would be an acceleration of the privatisation programme. Most particularly, larger firms, such as the commercial banks and Icelandic Prime Contractors should be entirely sold off. Smaller firms should also be prepared and sold more quickly. The remaining investment funds and the newly created housing fund should be returned to the market as well, as the government still controls a lot of finance through these

institutions. While progress is occurring in the reform of the electricity sector, a similar effort for the hot water companies controlled by local governments would be welcomed. For the smooth operation of merger review, the competition law should be amended to require a simple pre-notification requirement for significant mergers, and perhaps increasing the time non-notified mergers can be amended. This need not be an onerous burden on businesses, for instance Canada allows three years for *ex post* review. Elsewhere, agricultural price supports have come down, with more decreases due in a few years. Import restrictions, however, are still high, and the government should consider reducing the high level of subsidies.

Privatising the national telephone company is also an important step towards developing competition. Before it is sold, however, the government needs to create an independent regulatory agency to develop a framework that fosters competition and efficiency. The current piecemeal approach from the Competition Council and the courts is inadequate. Such a framework would include developing mechanisms to ensure adequate access to the network on a non-discriminatory basis, including the pricing of unbundled services, as well as the treatment of other important matters, such as telephone numbering. Separating the accounts of Iceland Telecom's network assets from divisions engaged in more competitive sectors, such as mobile services, would be useful. Whether complete ownership separation – such as the Competition Council considered in a case involving access to the company's broadband network – is necessary needs to be considered on a case-by-case basis. Effective access and pricing provisions of unbundled services may be adequate. In addition, the government should consider licensing another mobile phone company, perhaps with UMTS technology, which may provide additional competition to the existing network. Currently, Iceland is one of only four OECD countries with a mobile phone duopoly. Regardless of the specifics of the competition framework, the government should make explicit decisions before offering equity in the company to the public. All the new policy recommendations made in this chapter have been consolidated and summarised in Box 4.

Elsewhere, the government has made some progress in implementing past recommendations of the EDRC, notably in the area of finance (Box 5). Government involvement in this area has been reduced by equity sales. However, little progress has been made in housing finance that is still dominated by a state-run organisation, while the legal structure of savings banks remains a barrier to consolidation in this area.

Past recommendations have also focused on education and the labour market. Although the latter has functioned well and has generated a low level of unemployment, with wages responding to market conditions, nonetheless, there are some areas where policy action is still lagging. For instance, the enhanced role

Box 4. A summary of new structural recommendations

Further recommendations in the area of ageing are to be found at the end of Chapter IV.

Maintain the strategy of fisheries management with some improvements

- Continue to set overall catch limits based on scientific advice with individually transferable quota shares. Other aspects of the system – such as the free transfer of quotas based on prior fishing levels – should bend to this imperative.
- Implement automatic catch rules for additional species. In the meantime, do not have catch limits above recommended levels from the Marine Research Institute.
- Phaseout effort and separate catch limits for small boats by folding them into the general system.
- Remove restrictions on quota trading.
- Mandate a transparent system of catch prices, such as an open exchange in the catch.
- Consider the gradual introduction of auctions in place of giving away quota rights.

Develop a plan to foster competition in the telecommunications sector before privatising the national phone company

- Create an independent regulatory agency who should:
 - Develop mechanisms to ensure effective access to current network systems, including the pricing of unbundled services.
 - Supervise the pricing of services not subject to competition.
 - Separate the divisions of Iceland Telecom already engaged in competition – such as mobile telephone service – into arms-length subsidiaries. A complete separation of ownership of some subsidiaries cannot be ruled out and needs investigation on a case-by-case basis.
 - Grant an additional license for mobile telephony, perhaps with UMTS technology.
- Privatisation of National Telecom after explicit decisions have been made concerning the development of competition in the telecommunications sector.

Introduce notification requirements for significant mergers and extend the period non-notified mergers can be reviewed.

Continue government oversight of preparedness involving year-2000 computer glitches.

of the public employment service could reduce inefficiencies from a generous unemployment compensation scheme, but progress needs to be monitored carefully. Also, the mediation and conciliation service should try to ensure a quick

Box 5. Status review of selected past OECD structural recommendations

Recommendation	Action taken	Assessment
Financial markets		
Central Bank		
Move market making in Treasury bills from Central Bank to private sector.	No action taken.	Being the only market maker can complicate monetary and exchange rate management.
Study how to increase turnover in equity market.	No action taken.	Turnover is low compared to market capitalisation.
Commercial banking		
Achieve a corporate structure that emphasises profit maximisation.	The state-owned banks have been made into limited liability corporations.	×
Speed up privatisation of the two banks that the government owns.	15 per cent of equity increased through private-sector offering with plans to sell existing equity later.	Completed. The government should eventually disengage from this sector.
Savings banks		
Speed up consolidation.	A government committee is considering these issues.	The banking system is inefficient.
Not allow local government representatives to sit on boards.		Local government representation hinders profit maximisation and consolidation.
Remove limitations on individual share ownership and allow shares to trade freely with a right to a dividend.		Lack of transparent ownership structure inhibits good corporate governance.
Investment credit funds		
Reduce government share below controlling shareholder in Icelandic Investment Bank and aim for complete privatisation as soon as possible.	Sold 1999.	+
Introduce privatisation plans for the considerable number of funds that are still government owned.	No action taken.	Government involvement in the financial sector is still heavy.
Housing sector		
Create a Housing Bank by merging the three funds and privatise it.	Three funds merged.	+
		Continued state control means substantial financial guarantees, but the bank now pays for the guarantees.
Civil service pensions		
Increase transparency of the system.	Accruals accounting introduced in Treasury budget.	×
		Move to accruals system illustrates cost changes, as illustrated by the revision of the 1998 budget.

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(continued)

Recommendation	Action taken		Assessment
Move to a fully funded system as quickly as is feasible.	New pension plan introduced for new workers.	+	The closed part of the government pension scheme is still underfunded and steps should be taken to reduce its deficit.
Labour market			
Withhold unemployment benefits from those who exploit the system.	Act allows benefits to be withheld.		Data are unavailable on the workings of the new system.
Integrate benefit management with public employment service.	Completed.	×	
Shorten the time that benefits are paid.	No action taken.		Benefit payments are unusually long, but the integration of the management system with the public employment service may offset these work disincentive effects.
Introduce experience ratings for unemployment insurance fund, and end the subsidisation of seasonal and temporary layoffs.	No action taken.		
Reduce non-daylight compensation.	Latest public sector contracts reduce the number of hour paid at this rate.	+	Need reductions in the private sector as costs are still high, but government instruments for achieving this goal are limited. This requires agreement between the unions and employers.
Decentralise industrial relations.	No action taken.		
Education			
Implement the plan to boost teaching hours, and lengthen the school year.	Law raises hours progressively through 2000.	+	Hours are still low compared to averages across OECD countries.
Increase focus on foreign languages, natural sciences and mathematics.	No action taken.		Performances on standardised tests are subpar in science and mathematics.
Reduce the time taken to complete post-compulsory schooling.	No action taken.		Time taken is well above OECD norms.
Boost fees, and use the revenue to alleviate overcrowding at universities. Offset the effects by increasing access to student loans.	No action taken.		Students pay only 1/6th as much in relation to GDP as the average in 17 other OECD countries with available data.
Privatisation programme			
Speed up programme generally.	Several firms planned for sale in 1998 were not privatised.	-	Firms should be completely privatised. Past asset sales were not extraordinary compared with averages across OECD countries.

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Recommendation	Action taken	Assessment	
Privatise Iceland telecom.	An overall competition plan is being prepared.	+	
Implement the electricity deregulation plan as quickly as the plan allows.	Act is being prepared for introduction in the fall.	+	
Include local government-owned district heating companies in a privatisation plan.	Draft electricity act requires the separation of generation accounts from the rest.	+	Local authorities should consider privatising their holdings.
Other areas			
Reduce agricultural price supports.	New milk agreement includes a removal of some price supports in the future	+	Trend from price supports to direct subsidies is more efficient and transparent. Several trade restrictions just within WTO rules still exist.
Open agriculture to foreign competition.			Reducing the growth in emissions apart from large-scale projects is challenging.
Implement additional measures to reduce greenhouse gas emissions.	Will not sign Kyoto protocol at this time.	-	
× Action completed. + Progress but more action needed. - Situation deteriorated.			

resolution to the upcoming wage negotiations, but the government should not sacrifice fiscal goals to this end. In addition, some attention should be paid to trying to reduce the premium for “non-daylight” work. Concerning education, current law provides for additional increases in hours taught in the compulsory school grades, and the Ministry of Education has some plans to improve the quality of teaching. Nonetheless, total hours would still remain towards the low end of OECD countries, and performance on standardised tests has not been outstanding. Additional increases in teaching hours would seem to be called for.

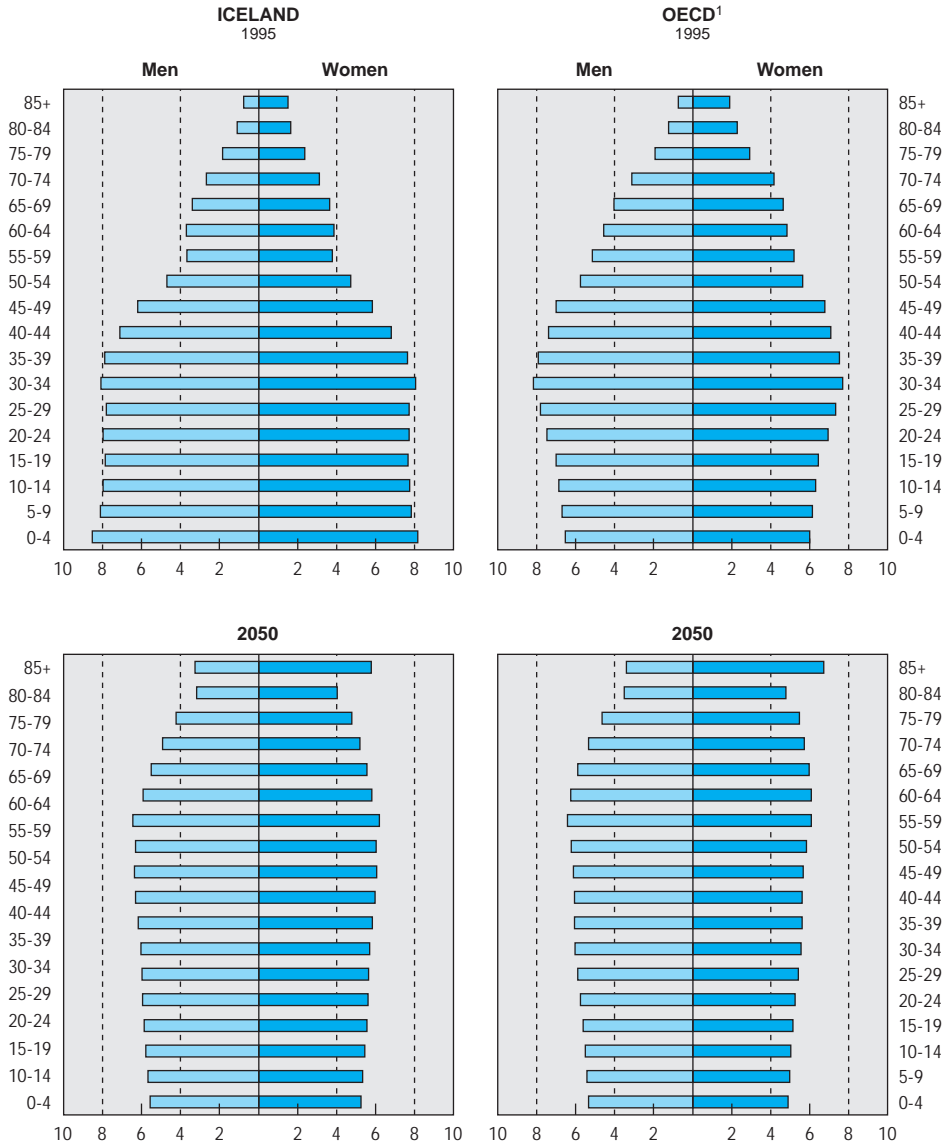
IV. Coping with ageing: the Icelandic model

Iceland is well placed to meet the demographic challenges of the next fifty years. In part this stems from continued, though slow, population growth, in marked contrast to many other countries in the OECD area. But it also arises from what might be called the “Icelandic model” for providing income for the elderly. Indeed, compared to many other European countries, in Iceland the government plays only a relatively small role in supporting the elderly. A two-tier pension system was introduced a generation ago, giving private sector saving a key role in providing for retirement; this was complimented more recently by a third-tier of voluntary tax-favoured saving. At the same time, the elderly have stayed economically active to a greater extent than in the rest of the OECD area, reflecting a normal retirement age of 67 for state pensions and the absence of incentives to take early retirement. Nonetheless, despite this favourable background, there are still several areas of concern. In order to avoid deterioration in its finances, the government must ensure that its current limited role in providing pensions be further reduced as private pensions mature. The currently very comprehensive, and expensive, range of government services provided for the elderly also needs to be reviewed. The regulatory framework for pension funds – which has recently been strengthened – could be adjusted somewhat as well.

The demographic problem

Iceland is expected to experience an ageing of its population of about the same magnitude as the OECD taken as a group (excluding Mexico and Turkey that both have very young populations), but it is starting at an initially better position. In 1995, the average age of the population in Iceland was about four years lower than that in the OECD area. This reflects the fact that the proportion of people in age categories below 40 was not then declining, in contrast to the position in other OECD countries (Figure 28). Nonetheless, the average age of the population should rise by almost ten years between 1995 and 2050, whereas in the remainder of the OECD area the increase is just under eight years, although, the average age of the population will still be lower in Iceland by 2050, according to the UN

Figure 28. **Population structure: Iceland and OECD area**
Per cent of total population by sex



1. Mexico and Turkey excluded.
Source: United Nations.

population projections. Moreover, by 2050, the proportion of the total population in each five-year age group from age 60 onwards will show a much more marked decline in Iceland than elsewhere.

Two factors are helping to moderate the demographic changes, however. First, the birth rate has remained at about its replacement level in recent years. Iceland has always had a fertility rate above that in other countries (Table 16). It has fallen in the past twenty years but is still at around two children per woman. If this is maintained, the population should continue to grow in the next half-decade, with a likely increase of 0.4 per cent annually in this period. A second factor, has been the relatively slow increase in life expectancy when measured both at birth and at age 60. In effect, the rest of the OECD area has been catching up to the high life expectancy already seen in Iceland (Table 17).

The favourable evolution of the age pyramid in Iceland will help to moderate the growth in the elderly relative to both the working age population and those actually working. As a result, the rise in the age dependency ratio will be less in Iceland than elsewhere (Figure 29, panel A). Moreover, while the total dependency ratio will increase in the period to 2050, it will only reach the level seen in 1970s, when the number of children was very high – a feature which contrasts markedly with developments in the rest of the OECD area. The old-age-to-employment ratio provides, however, a more accurate measure of the extent of the ageing problem. In Iceland, such a ratio will rise to just over 50 per cent by 2050 if current age-specific participation rates remain unchanged (Figure 29, panel B). In the remainder of the OECD area, that ratio will be over 65 per cent and as high as 85 per cent in the rest of Europe. The difference in the evolution of these ratios might be somewhat less extreme if the recent fall in the participation rate of the elderly in Iceland were to continue (Table 18), or if reforms in Europe were to boost activity rates of the elderly.

Table 16. **Fertility rates for selected OECD countries**

Number of children born per woman aged 15 to 44

	1960	1965	1970	1975	1980	1985	1990	1995	1996
Iceland	..	3.71	2.81	2.65	2.48	1.93	2.31	2.08	2.12
Denmark	2.54	2.61	1.95	1.92	1.55	1.45	1.67	1.79	1.75
France	2.73	2.83	2.48	1.93	1.95	1.82	1.80	1.66	1.72
Germany	2.37	2.51	2.02	1.45	1.44	1.28	1.45	1.25	1.26
Italy	2.41	2.67	2.43	2.21	1.69	1.41	1.31	1.22	1.22
Japan	2.00	2.14	2.13	1.91	1.75	1.76	1.54	1.43	1.41
Sweden	2.13	2.41	1.94	1.78	1.68	1.73	2.14	1.74	1.61
United Kingdom	2.69	2.86	2.44	1.81	1.89	1.80	1.84	1.73	1.70
United States	..	..	2.48	1.77	1.84	1.84	1.90	2.03	2.06

Source: OECD Health Data 1998.

Table 17. **Life expectancy in selected OECD countries**

	Years							
	Males				Females			
	1960	1975	1990	1996	1960	1975	1990	1996
A. At birth								
Iceland	70.7	73.0	75.7	76.2	75.0	79.2	80.3	80.6
Denmark	70.3	71.1	72.0	72.8	74.1	76.8	77.7	78.0
France	67.0	69.0	72.7	74.1	73.6	76.9	80.9	82.0
Germany	..	68.1	72.7	73.6	..	74.7	79.0	79.9
Japan	65.3	71.7	75.9	77.0	70.2	76.9	81.9	83.6
Sweden	71.2	72.1	74.8	76.5	74.9	77.9	80.4	81.5
United Kingdom	68.3	68.6 ¹	72.9	74.4	74.2	75.2 ¹	78.6	79.3
United States	66.6	68.8	71.8	72.7	73.1	76.6	78.8	79.4
Average ²	..	69.9	73.3	74.4	..	76.4	79.6	80.5
B. At 60								
Iceland	18.6	19.4	20.0	20.1	20.4	21.3	23.3	23.4
Denmark	17.2	17.1	17.5	17.6	19.1	21.1	21.7	21.4
France	15.6	16.5	19.0	19.7	19.5	21.3	24.2	25.0
Germany	..	15.5	17.8	18.5	..	19.6	22.2	22.8
Japan	14.8	17.4	20.0	20.8	17.8	20.7	24.4	25.9
Sweden	17.3	17.6	19.1	20.0	19.3	21.4	23.3	24.0
United Kingdom	15.3	15.2	17.6	18.4	19.3	19.9	21.8	22.4
United States	15.8	16.8	18.5	19.2	19.5	21.9	22.8	22.9
Average	..	16.6	18.5	19.2	..	20.8	22.9	23.5

1. 1970.

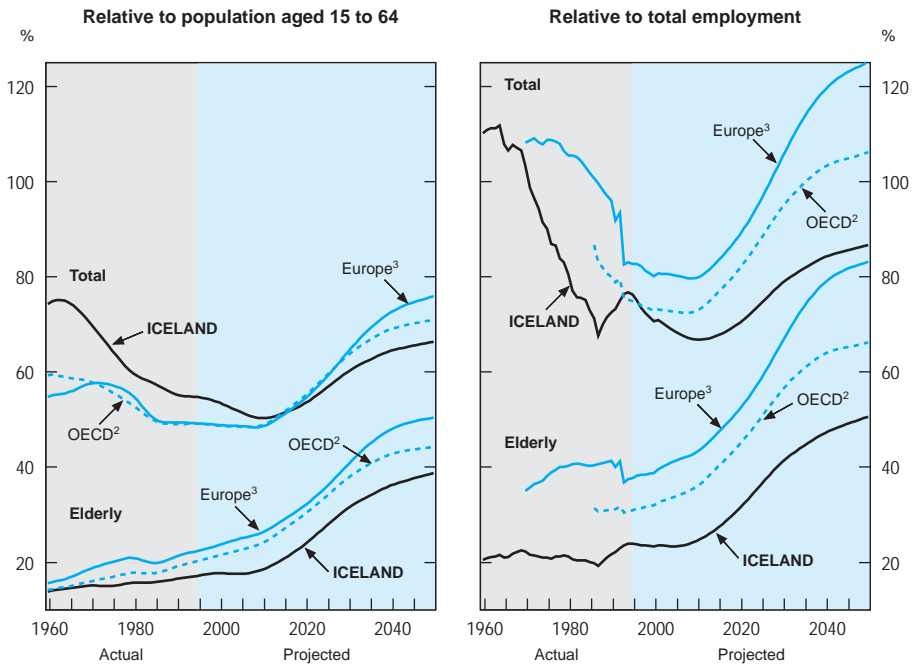
2. Simple average, excluding Iceland.

Source: OECD Health Data 1998.

The pension system, retirement income and the labour market

The pension system

The components of the Icelandic pension system were adjusted well in advance of the demographic changes likely to occur in the next fifty years. A key element has been the development of a three-pillar mechanism of income support for the elderly: *i.e.* a set of targeted state-provided income transfers, a system of funded occupational pensions, and tax-favoured arrangements for additional saving of a defined contribution nature. There are very limited opportunities to retire early through government programmes and little disincentive to work after the official retirement age. Payments of income-tested state age-related benefits

Figure 29. Total and old age dependency ratios¹

1. The total dependency ratio is defined as the number of people aged over 65 and under 15 to the population aged or 15 to 64 or to total employment. The elderly dependency ratio excludes people under 15 from the numerator.
2. Mexico and Turkey excluded.
3. Turkey excluded.

Source: United Nations and OECD estimates.

Table 18. Activity rates by age groups, 1992-1997

Per cent of population in age group

	1992	1993	1994	1995	1996	1997
16-24 years	67.3	64.6	65.4	69.6	67.3	67.7
25-64 years	90.0	90.3	90.8	91.9	91.0	90.2
65-74 years	50.5	46.3	43.4	43.6	42.7	40.8

Source: *Statistic Yearbook of Iceland*, 1998.

will fall as occupational pension benefits increase (see below), leaving a small basic pension available to persons 67 and over. Key details of the system are described in Boxes 6 and 7, respectively.

The first pillar: government transfers

The Icelandic social support scheme was modelled on those in the United Kingdom and New Zealand. Thus, there is greater income testing than in the social-insurance-based systems in other Nordic countries.⁴³ All components of the state pension system are income tested to varying degrees. A small basic pension is received by any individual aged 67 and over. This is income tested

Box 6. The State age-related pension system

The following describes the current transfer system. Benefit levels and thresholds are fixed in Krona; they have been expressed here as a per cent of estimated 1999 average earnings.

The basic pension: The basic pension is paid to all individuals aged 67 or older meeting the income test. For a couple, it is reduced by 10 per cent for each individual so that the total benefit equals 1.8 times the single person benefit. The benefit is withdrawn at a rate of 30 per cent above an income threshold equal to around 55 per cent of average income, permitting substantial part-time work without loss of the full benefit. The impact of the income test is further limited because the income definition used only includes earnings of the individual receiving the benefit, one half of the capital income of the household and excludes all occupational pensions.

Supplementary pension: A maximum benefit of 17 to 18 per cent of average earnings is paid to all individuals with average household income under the income test below a threshold equal to around 12 per cent of average earnings. The income test is based on the average income of the husband and wife. It includes all earnings of the household, one half of capital income and occupational pensions above of a threshold 5 to 6 per cent of average earnings. The benefit reduction rate is 45 per cent. It falls to zero when pension income rises to 56 per cent of average earnings. This benefit is received by 85 per cent of all basic pension beneficiaries.

Household and special household allowances: Two additional benefits are available for single individuals in order to compensate for the higher costs of living alone. The household allowance is a maximum of around 8 per cent of average earnings. It is zero at the same point as the supplementary pension and rises proportionately line with the supplementary pension benefit as income falls. The special household allowance is a maximum of around 4 per cent of average earnings but is withdrawn krona for krona as total household income rises. These two benefits are received by 32 and 6 per cent of all basic pension beneficiaries respectively.

The value of the income transfers are set at the discretion of the Minister of Finance, but it is now agreed that pension benefits and thresholds should, in general, rise in line with average wages or prices, whichever is the greater.

Box 7. Key features in the Occupational Pension system

Until 1997, the pension fund system operated without a comprehensive legislative framework enabling effective enforcement of the mandatory nature of the funded pension arrangements or government regulatory oversight of the funds and their operation. The 1997 legislation codified the principle of a mandatory payment of at least 10 per cent of wages and salaries in order to acquire pension rights. This is now to be overseen by the Tax Authority which will notify pension funds of a person who has made no contributions in order that the person be forced to make contributions to the appropriate fund. Occupational pension funds are fully funded, although, until recently, those guaranteed by the employer (the public and banking sectors) have been exempted from this obligation.

The new Act specifies that contributions can now be used to acquire two different types of pension rights. The first are rights to benefits under the existing funded occupational system. The Funds must provide a minimum retirement benefit until death that is equal to at least 56 per cent of life-time average earnings for a contribution period of 40 years (*i.e.* equivalent to 1.4 per cent of average lifetime earnings per year of contributions) as well as associated survivors and disability pension insurance. Pension rights are now of the order of 1.50 per cent of average lifetime earnings per year of contributions. In some funds they are now as high as 1.8 per cent, partly reflecting the high returns the funds have earned over the past one to two decades and the age-structure of fund members. Prior to 1997, full pension rights were only earned for the first 30 years' contributions thereafter, pension rights accumulated at half the normal pace.

The second type of pension rights can be purchased with the difference between the total 10 per cent contribution and the contribution rate necessary to meet the minimum pension set by each fund. Each pension fund must specify the portion of the contributions necessary to reach its minimum target given the current actuarial position of the fund. These additional contributions can be invested, at the individual's discretion, in individual defined-contribution accounts with competition between intermediaries to manage them. This will increase individual liquidity as the accounts can be drawn down in equal yearly amounts from the age of 60 or in a lump sum at the age of 67.

Survivors benefits vary between the funds but are, in general, equal to 50 per cent of the projected age pension that the deceased person would have obtained if he or she had continued to contribute for the rest of his or her working life. The benefit normally lasts for three years. There is no automatic provision for the partial reversion of a pension to a surviving spouse after retirement is taken.

The funds with employer guarantee have operated, up to now, on a different basis. Contributions have generally been limited to the employees component, and the absence of full employers contributions has meant these funds are in a substantial actuarial deficit and that, in many cases, the contribution rate necessary to cover promised benefits is well above the normal 10 per cent of earnings.* In such cases, the institution guaranteeing the benefits has to transfer sufficient cash, on a pay-as-you-go basis, to ensure payments. Such funds only cover public servants or the employees of state-owned companies such as banks.

* The old civil service scheme, for instance, allows full retirement at the age of 65 and actuarially-adjusted early retirement as early as 63.

against the individual's own earnings plus half the capital income of the household. The income level where income testing begins is high, allowing individuals to work part time and still receive the full pension. Partly reflecting the low level of this benefit, successive governments have introduced various pension supplements. Total benefits including supplements remain, nonetheless, modest.

Temporary anticipatory pensions are available for survivors and for the disabled below the official retirement age, with a benefit structure that is similar to those for age-related pensions.⁴⁴ The length of benefits for survivors is generally limited to one year for a widow or widower with children and is income tested. In exceptional circumstances the pension can be drawn for four years. Given their temporary nature and the fact that most women work, these arrangements are little used and less than one per cent of the female working-age population received a widow's pension in 1997.

The second pillar: the occupational pension system

The second pillar is made up of a mandatory mostly fully funded pension arrangements, providing age-related pensions and survivors and disability insurance (Box 7). This system is now governed by a new occupational Pensions Act, which was passed in 1997 and came into effect in 1998. While a few funds started operating as early as the 1950s, the system was significantly extended in 1969, made mandatory for all employees (see Box 8) in 1974 and for the self-employed in 1980 although the mandatory nature was never fully enforced. There are now 57 fully active occupational pension funds in Iceland.⁴⁵ Of these, 19 are of a defined benefit arrangements with employer guarantee, essentially covering state and municipal employees and the banking sector, and seven are private schemes of a defined contribution nature with individual accounts. The remaining 32 funds – which cover the bulk of private sector workers – are closer to defined benefit schemes backed by assets. Membership in the funds is usually based on union affiliation, although managers and some self-employed individuals have had greater choice in the funds they could join. Individuals switch to other funds when they change occupations.

Pension rights build up gradually over an individual's working lifetime. For each year worked, an employee earns the right to a pension based on a percentage of the income in that year. Until 1992, this pension right was revalued by changes in wages. Between 1992 and 1994, the credit cost index was used;⁴⁶ since then, it is revalued on the basis of prices. At the time of retirement, the actual pension paid may differ from expectations. It will depend not only on the accumulated rights but also on the actuarial balance of the pension fund – *i.e.* the net value of the existing assets of the fund, and the present value of future expected contributions and the pension benefits. These pension benefits are guaranteed by the fund members rather than the employers and in practice, this

Box 8. Civil service pensions

In 1997, the government reformed the civil service pension scheme. Since then, all new employees have been placed in a funded system. Existing staff were able to choose to stay in the existing scheme or move to the new system.

Under the old system, employees can retire with standard benefits at age 65. Benefits are equal to 2 percentage points of final daytime earnings (about two-thirds of annual earnings) for each year worked. Benefits are indexed to wage growth on retirement. Contributions to the system amount to 10 per cent of daytime earnings (6 per cent by the government and 4 per cent by the employee). Contributions cease at age 65 if the employee keeps working, but benefits continue to rise by 2 percentage points per year.

The new system has much higher contributions, 15.5 per cent of total earnings (the employee still pays 4 per cent), rather than just daytime earnings. Benefits will be based on average life-time total earnings adjusted for inflation. Pension rights will accrue at 1.9 percentage points of earnings per year. In addition, those who delay their retirement until after age 65 will boost rights by 6 percentage points per year, while those retiring early will have their rights cut in the same proportion.

The build-up of assets in the newly created pension fund will be slow – in the next twenty years assets should grow by 10 per cent of GDP – but by the time the fund is mature, in 2050, its assets could represent around 50 per cent of GDP.

In contrast to the position of the new fund, the scheme for existing civil servants had a net liability of IKr 108 billion or 18.5 per cent of GDP in 1998. Elsewhere in the general government sector some estimates suggest that there are further unfunded liabilities of around IKr 70 billion, bringing the total unfunded liability to IKr 180 billion or 30 per cent of GDP.

Changes in the wage agreement for the state employees over the past two years have increased these liabilities substantially. The existing contribution and pension income base had been limited to ordinary time earnings (in contrast to the private sector where all earnings have been used since 1990). Following the most recent agreement, overtime payments were collapsed into ordinary time earnings. As a consequence, this has effectively widened the base for calculating contributions and pension rights.

The government has recognised the accrual of the liability in its accounts. However, the cash counterpart to this increased liability has been used to reduce government debt rather than being transferred to the pension fund for pre-1997 civil servants.

means that benefits rates at retirement are indeed changed to maintain the balance of the fund. In some past cases, this has involved benefit reductions. However in recent years the rate of returns on assets has exceeded that used by actuaries to calculate the present value of future benefits and contributions and so there has been a trend towards increasing benefits. Occupational fund benefits are generally evaluated at age 67, but pensions can be taken as early as 65 in

most fund and as late as 70 with actuarial adjustments to allow for shorter or longer benefit periods. Benefits are paid until death and indexed on prices. Contributions are set at 10 per cent of pay. Normally employees pay 4 per cent and employers 6 per cent. Both sets of contributions are tax exempt, further details are provided in Box 7.

Pension funds are growing rapidly at present and yields on their assets are now higher than when they were initially set up. They have earned a real rate of return over 7 per cent between 1990 and 1997, rising to 8.1 per cent in 1997, mainly reflecting the high yields from indexed housing and government securities. In addition, their expense ratio has been kept low, recently averaging 0.3 per cent of assets under management or 4 per cent of contribution income. The future liabilities of the funds are valued using a 3 to 3½ per cent real discount rate, lower than both current market rates and returns in the recent past. Consequently, most funds have become actuarially solvent – in contrast to their position at the end of the 1970s when many had deficits. With yields high, pension payments low and membership increasing, the assets of the funds have steadily risen from 10 per cent of GDP in 1980 to 69 per cent in 1998.

The third pillar: individual defined-contribution accounts

In 1998, the Parliament further encouraged retirement savings by allowing an additional 2 per cent of workers' earnings to be placed in tax-sheltered defined-contribution accounts. If the employee saves the full 2 per cent, the employer adds an additional 0.2 per cent, with this amount recovered through lower social security charges. These funds can be established with a wide range of financial institutions competing for these accounts and broadly follow the same rules for withdrawal as for the optional second type of the occupational pension benefits (see Box 7).

The marginal tax on these savings (and on the individual account component of the occupational pension system) will depend on the timing of the withdrawal. If the third pillar funds are drawn on in the period between ages 60 and 67, then such withdrawals are subjected to normal income taxation, generally at the rate of 38.34 per cent. If these funds are re-invested and earn a return, the subsequent investment income will be taxed at 10 per cent but, depending on the wealth of the household, could be subject to a wealth tax. After age 67, withdrawals would be included in standard income taxation as well as being included in the income test for means-tested retirement benefits, thus increasing the marginal tax on those savings. The tax liability and the impact on supplementary state benefits will probably be minimised if the income is withdrawn before retirement. Take-up appears to have been limited in the first six months of the scheme.

Interaction between the three pillars and the tax system

Currently, and despite almost three decades of pension fund accumulation, about 17 per cent of those aged 65 and over received no occupational pensions in 1996, three quarters of these were women. These individuals were wholly dependent on the benefits of the state system but some of them may be part of households with other forms of income. At the same time, 85 per cent of those above the normal age for drawing the basic state pension (67) receive some part of the supplementary state pension even though most receive some occupational pensions. This is because:

- Some individuals failed to join a pension fund or have not yet accumulated enough rights to bring them above the supplementary pension thresholds.⁴⁷
- Occupational pensions that are indexed on prices, after retirement, tend to fall relative to state benefits as the pensioner ages, if the latter rise by more than prices.
- Most occupational pensions contain no provision for the continuing payment of a benefit to a surviving spouse, after the retirement.

Regulating the occupational pension system

The financial position of the funds has improved substantially in the past decade, largely reflecting the excellent investment performance. The funds covering private sector employees should continue to increase in size until 2025, peaking at around 100 per cent of GDP. The decision of the government to fully fund its pension scheme for all new State employees in 1997 should add to this process and may result in the assets of all pension funds approaching 150 per cent of GDP in 50 years time. Indeed, the process may go further since the new Occupational Act stipulates that all funds covered by an employee guarantee (in the local authority and banking sector mainly) should become fully funded. Pension rights will increasingly make up the bulk of household retirement wealth and contributors cannot withdraw these assets, so reinforcing the need for a good regulatory environment. Moreover the funds depend entirely on their assets to maintain benefits.

With the need to protect future benefits in mind, a new law – the 1997 Occupation Pensions Act – governing pension funds has been passed. The key objective of this law is to ensure that pension schemes remain solvent. To this end, funds whose estimated liabilities are 10 per cent greater than their assets in a given year, or 5 per cent greater for five consecutive years, will have to submit a plan to remedy the situation either by reducing benefits or increasing contributions. The Ministry of Finance will licence pension funds, so ensuring that funds offer the minimum benefit provision specified in the legislation. It will also set regulations governing their investment policy. The legislation contains a much

stricter framework for the financial operations of the funds. Moreover, those overseeing fund operations will have to comply with new regulations concerning their actions and behaviour. A new independent regulator will enforce the Act. It has been formed from the relevant regulatory departments of the Central Bank. This agency will oversee solvency and compliance with regulations. Despite these improvements, there are a number of uncertainties about the likely development of the pension system in the new environment.

A *first* concern is whether the future development of life expectancy is fully taken into account in the assumptions that independent auditors and actuaries are using in their five-yearly assessment of fund viability. Private markets in the United States appear to be incorporating a rapid increase in the average age of death into life and annuity premiums.⁴⁸ However, there is growing evidence that the estimates of life expectancy used in official population projections and in public pension fund evaluation generally underestimate how long people will live. Regulators may need to assess the risks that, despite regular updating of the life-tables, life expectancy might be underestimated, so leading to a consistently optimistic view of the actuarial balance of funds.⁴⁹

Second, there may also need to be greater pension fund consolidation than adumbrated in the Act. The number of pension funds declined from 88 at the end of 1991 to 66 to the end of 1997 and additional amalgamations occurred in the course of 1998. The new Act sets a minimum fund size of 800 active contributors and, to encourage fund amalgamation, requires those below this level to insure future pension payments, which would significantly drive up their costs. At the end of 1997, 32 (19) funds had less than 800 (400) contributing members and there were only 3 of the 57 active funds with more than 10 000 members. Even if all the smaller funds amalgamate, some 20 to 25 will remain, which appears too numerous for a country of less than 300 000 persons. While recognising that amalgamation is not always easy,⁵⁰ setting the minimum size of pension funds at, say, 2 000 members, would reduce the number of funds by about an additional ten and could provide scope for reducing pension fund operating costs.

Third, some of the remaining restrictions on the structure of pension funds assets may be inappropriate over the longer term.⁵¹ The new list of permissible financial instruments is wide enough to allow most investments. The major limitations on the pension funds are that investments in equities or similar instruments must not exceed 35 per cent of total assets and, no more than 40 per cent of assets can be invested abroad. In addition, any residential and commercial mortgages must be limited to 65 and 35 per cent, respectively, of the value of the collateral asset. These first two constraints have not yet been tested. At the end of 1997, most pension fund assets were invested in the domestic housing sector, mainly in the form of private placements with the State Housing Fund or holdings of Housing Bonds, both of which are state guaranteed (as is their lending to the remaining

industrial investment credit funds).⁵² To date, such guarantees have not posed a problem for public finances and, recently, the government has introduced charges for them (See Chapter II). Equity shareholdings (including open and closed-end mutual funds) represent around 15 per cent of their total asset portfolio.

In the future, such an emphasis on fixed-interest investment may eventually harm fund performance. With their focus on long-term investment, most private pension funds in other OECD countries find it prudent to place over half their assets in equities as these have generated a higher long-term yield even allowing for the higher apparent risk on this form of asset. The limit on foreign assets may also need to change. The pension funds are now amongst the largest financial institutions in Iceland. Given their expected size by the middle of the next century, it may be difficult to build a balanced portfolio with 60 per cent in domestic assets without driving down the return of such instruments. Indeed, given that a large part of the domestic equity market is linked either directly or indirectly to the fishing industry, these thresholds could lead to excessive reliance on one industry based on what is a potentially depletable resource.

Finally, the funds operations could face difficulties if there were an extension of individual accounts (see Box 8). As noted, the contributions beyond what is necessary to reach the minimum pension of 56 per cent of average lifetime earnings can be used, if the individual so wishes, to set up an individual account of a defined contribution nature. This can increase the liquidity individuals' financial assets (individuals may not wish to place all pension assets in an annuity) and increase competition in the pension market. These positive features need to be balanced against the higher operating costs generally associated with individual accounts which are difficult to avoid unless managers adopt passive investment strategies and keep selling costs low.

At present, the destabilising effect of allowing individual accounts is limited. Currently, a typical private pension fund would need to set contributions at below 9 per cent of earnings in order to generate the minimum pension of 1.4 per cent per year of average life time earnings. To the extent that young people contract out into individual accounts, the cost of providing this pension will rise. The 9 per cent contribution rate would have to be increased closer to the overall 10 per cent contribution rate. This would reduce the resources available for use in individual accounts, preventing a spiral of increasing contributions for those who do not take individual accounts. Moreover, some pension funds have chosen to raise minimum benefits above the floor set by the government. For instance, the largest fund has chosen to pay a benefit of 1.65 per cent per year (guaranteeing 66 per cent of average lifetime earnings when a pension is drawn at age 67 after 40 years' contributions). This increases contribution towards 10 per cent, consequently, little money will be left for individuals to place in their own accounts.

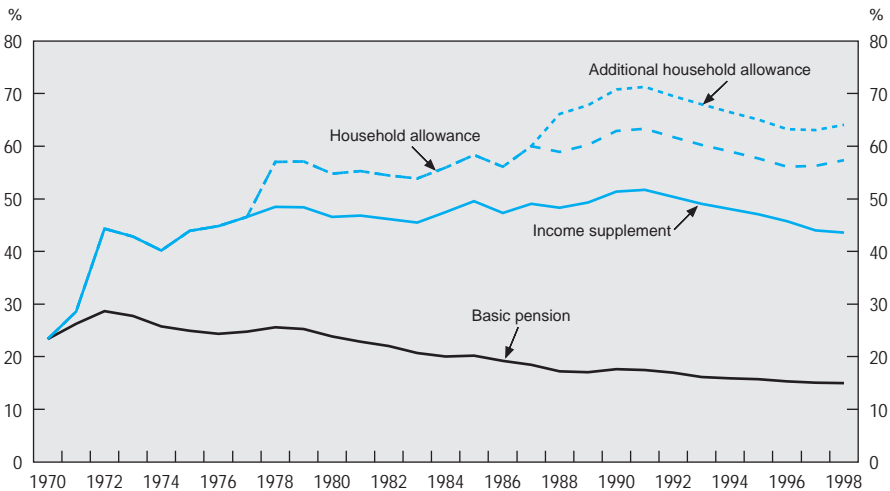
In the future if the portion of individual defined contribution accounts were to be increased the current system could be destabilised. Only younger people are likely to take up the individual account option. Indeed, they will have a long period to accumulate returns and, thus are likely to obtain a higher value in terms of future retirement income than with pension benefit rights earned under the existing pension fund rules (which do not vary with the timing of the contribution). In contrast, older workers will find that benefit rights earned under the existing system are greater than they could earn in an individual account because time to retirement is short, even on the assumption that individual accounts earn the same as the underlying pension fund assets. The individual account system makes explicit the transfer that occurs from young fund members that stay in a fund for a limited period, to new older members. Moreover, for younger workers, having chosen an individual account, there will be an incentive to switch back to the current occupational system sometime around the middle of their work career. This will occur because, as the period to retirement shortens, the value of pension rights earned under the current occupational system will be greater than what individuals can expect to accumulate in an individual account.

The structure of retirement income and wealth

The Icelandic state pension system is designed to be the first of a three-tier system, the other parts of which will eventually provide a significant pension income for the elderly. As such, it has no need to be overly generous. For the past three decades there has been little growth in real terms and now the basic pension is about 10 per cent of unskilled worker earnings compared with approximately 18 per cent of in the late 1960s (Figure 30). This decline has been more than compensated by the additional means-tested pension components, which were progressively increased, relative to average earnings, until around 1990. This was particularly the case for single persons who received additional benefits from 1978 and 1988. Overall, for households without any other income – a small minority in Iceland – the replacement rate would be a 40 per cent of average earnings for a single person and 53 per cent for a couple.

Occupational pensions compensate for the low level of the state system, while continued employment provides a further, significant source of income. The overall pension system is quite progressive, in that the extent to which income is replaced by benefits rises as income falls. Thus, for a single person newly retired at 67, replacement rates vary between 42 per cent, at twice average final earnings, and 67 per cent of the final average pay for an unskilled worker (Table 19, first panel, column 5). The replacement ratio increases due to the significant supplementary benefits paid to people who had earned average pay or less during their working life (Table 19, column 2). For a couple, with the same status per capita pre-retirement income as a single person, replacement rates are between six and

Figure 30. State pensions relative to unskilled workers earnings



Source: OECD.

eight percentage points lower than for a single person. In the case of retirement at age 70, replacement rates are significantly higher for those with above average earnings than at age 67 (Table 19, second panel column 5). There is, however, much less gain for those who had been earning average pay or less, as their supplementary benefits fall. As for employment, it is a particularly large source of income between ages 67 and 74. Around 30 per cent of 67 plus households received employment or self-employment income, with this component totalling one-fifth of total retirement income (Table 20). The share is higher for households just entering retirement, partly because the spouse or partner is often still below the age of 67.

As the pension funds mature, the increased benefits will lead to a fall in the income-tested components of the state pension arrangements (primarily, the supplementary pension, the single household allowance and the special household allowance). Government spending data suggests that this process is already under way and this trend should continue until middle of the century. Once the occupational pension system has matured, most individuals will receive the basic benefit or only a small amount of supplementary benefits (Table 19, third panel). Payment of supplementary benefits should be limited to a few household types. One example of such a household would be when one person earned an unskilled

Table 19. **Replacement rates: by family type, income and occupational pension rights**
Per cent of average earnings

Family type	Single person				Couple ¹			
	Basic pension	Supplementary pension	Occupational pension	Total pension	Basic pension	Supplementary pension	Occupational pension	Total pension
Total household earnings								
1. Retirement at 67²								
Twice average earnings ⁴	5	0	38	43	9	8	38	54
Average earnings ⁵	10	12	38	60	18	32	38	88
Unskilled worker earnings ⁶	12	18	38	67	21	39	38	98
Unskilled worker earnings (two earners) ⁷	..	..	..	..	10	11	38	59
Half time – average earnings ⁸	20	50	38	107	..	..	..	..
2. Retirement at 70²								
Twice average earnings ⁴	5	0	49	54	9	2	49	61
Average earnings ⁵	10	4	49	64	18	27	49	94
Unskilled worker earnings ⁶	12	10	49	71	21	34	49	104
Unskilled worker earnings (two earners) ⁷	..	..	..	..	10	6	49	66
Half time – average earnings ⁸	20	42	49	111	..	..	..	..
3. At maturity of occupational pension system³								
Twice average earnings ⁴	5	0	59	64	9	0	59	68
Average earnings ⁵	10	0	59	69	18	22	59	100
Unskilled worker earnings ⁶	12	3	59	74	21	30	59	110
Unskilled worker earnings (two earners) ⁷	..	..	..	..	10	2	59	71
Half time – average earnings ⁸	20	35	59	115	..	..	..	..

1. Assuming that both individuals have the same age and retire at the same time.

2. Assuming that individuals have contributed since 1970.

3. Assuming 47 years of contribution before retirement.

4. Single person: earns twice average earnings; couple: two individuals each earning average earnings.

5. Single person: earns average earnings; couple: one adult at average earnings and one adult with no earnings.

6. Single person: earns unskilled worker earnings; couple: one adult at unskilled worker earnings and one adult with no earnings.

7. Single person: this case does not exist; couple two adults both earning unskilled worker earnings.

8. Single person: works half time at average earnings.

Note: These calculations were made on the basis of a model of occupational pensions which assume for the first panel that the individuals have contributed from 1970 and allows for the widening in the contribution base between 1986 and 1990. They assume that a year of work earns 1.65 per cent of the income on which contributions were based. The occupational pensions for the first and second panel take into account the change in arrangements in 1992 which allow for increases in the base income in line with prices. The first panel assumes that an individual retires at 67 in 1999 and the second at 70 three years later. The third panel shows the results of the new system at maturity. All projections assume 1.25 per cent annual real wage growth and no age or experience related increases in pay over a lifetime.

Source: OECD and National Economic Institute.

Table 20. **Income sources of the elderly by age group and household type**
1996, per cent of total income

Age group	67-69	70-74	75-79	80-84	85-89	90+	All households
Wages	48.2	22.0	9.2	4.7	3.8	2.7	21.1
Other income	2.0	0.8	0.7	0.4	0.5	1.1	1.0
Social benefits	21.2	36.3	47.4	52.8	54.3	55.4	39.2
Pension	21.4	32.3	34.1	34.0	32.1	33.0	30.5
Capital income	7.2	8.6	8.7	8.0	9.3	7.7	8.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Relative income of different elderly age groups ¹	122.8	103.1	91.6	87.8	88.7	84.2	100.0
<i>Memorandum:</i>							
Percentage of households receiving only social transfers	2.3	2.4	4.1	4.9	7.9	10.5	3.8
Household type	Couples		Single		All households	Share of households receiving the income component	
	One person over 67	Both over 67	Men	Women			
Wages	58.3	22.8	16.3	9.6	27.1	29.3	
Other income	9.3	5.3	5.7	1.3	5.3	10.2	
Social benefits	10.7	33.4	38.2	47.8	32.3	96.1	
Pension	14.4	28.6	27.9	34.4	26.6	90.6	
Other income	1.9	1.0	1.2	0.8	1.2	8.4	
Capital income	5.4	8.9	10.6	6.2	7.6	60.1	
	100.0	100.0	100.0	100.0	100.0	-	
Relative income of different elderly age groups ¹	165.0	130.5	74.8	65.8	100.0	-	
Adjusted for household size	132.9	111.5	90.4	79.5	100.0	-	
<i>Memorandum:</i>							
Percentage of households receiving only social transfers	0.2	0.9	5.4	7.1	3.8	-	

1. Unadjusted for household size.

Source: National Economic Institute.

wage and the spouse had never worked. However, this type of household is relatively rare in Iceland. A more representative case of household that would remain dependent on supplementary benefits would be a widow who has only worked part-time. An average household, such as a couple where both men and women have worked, would receive little supplementary benefits. Moreover, hardly any single people who had worked full time would have any entitlement to supplementary benefits.

Retirement-age households have a high level of wealth, generating both actual cash income and an imputed income from owner-occupied housing. Beyond age 75, capital income rivals employment income. Indeed, for couples who are both over 67, capital income is equivalent to over 30 per cent of state benefits, without allowing for imputed incomes from housing. Average wealth amounts to 4½ years of average pre-tax retirement income (Table 21). The majority of this is housing, which is owned by 87 per cent of this age group. As average age increases, the average level of wealth drops while the structure of assets changes away from home ownership towards financial assets. This may be associated with the substantial share of the elderly in retirement homes. The distribution of wealth is skewed towards higher wealth levels, so that those in the bottom quintile of the distribution of wealth have, on average, only 20 per cent of the average and the bottom two quintiles less than 40 per cent. Nonetheless, 90 per cent of individuals have sufficient assets to exceed the threshold for the payment of the wealth tax. The liquidity of these assets is increasing, as more financial institutions offer reverse mortgages

Table 21. **Wealth of elderly by age group and household type**

Per cent of total income

Household type	Couples					Single people	
	One person over 67		Both over 67			Female	Male
Net wealth of those facing wealth tax							
Share of wealth tax taxpayers in 67+ age group	96.1		97.4			84.6	81.9
As share of average income of 67+	920		850			480	490
Net housing wealth for all households							
As a share of average income of 67+	650		640			300	340
Share of households owning housing	96.2		95.6			74.4	79.5
Share of these with mortgages	32.0		21.0			20.0	27.0
Age group	67-69	70-74	75-79	80-84	85-89	90+	Average
Net wealth of those facing wealth tax							
Share of wealth tax taxpayers in 67+ age group	92.6	93.2	91.1	86.9	78.7	68.6	90.0
As share of average income of 67+	480	480	440	410	400	390	450
Net housing wealth for all households							
As a share of average income of 67+ (ratio)	350	350	320	300	270	230	330
Share of households owning housing	90.6	91.1	87.1	82.9	73.0	61.7	86.7
Share of these with mortgages	29.1	25.5	20.5	18.0	14.6	8.6	22.9

Source: National Economic Institute.

Overall, the pension arrangements ensure that the poverty rate for the elderly – defined as 50 per cent of median income of the population adjusted for family size – is significantly lower than in the population as a whole. It is also lower than in many other OECD countries. (Table 22). Overall, poverty among the old has tended to decline by more than the rate for the total population over the past ten years or so, reflecting the increase in occupational pension. A much larger share of the elderly poor are women. Despite this relatively high average income, a substantial share of the elderly population lie towards the low range of the overall income distribution with just over half of the age group over 67 in the bottom quintile of that distribution.⁵³ Nonetheless, the disposable income of those over 65 is above that of individuals in the 20 to 44 age, though remaining below that of people in the 45 -64 age groups when many are saving for retirement (Table 23).

Ageing, pensions and the labour market

The labour force participation of the elderly is high in Iceland as the result of a number factors specific to the Icelandic pension system. Workers aged 55-64 have a participation rate over double than that in Europe (Table 24). It is notable that the participation rate of the 65 to 74 age group in Iceland is still higher than that of the 55 to 64 group for Europe. This reflects the payment of state pensions from age 67 only and the fact that occupational pensions can be increased by working for a further three years. As a result, the overall pension

Table 22. **Extent of poverty in selected OECD countries**

Percentage below poverty line

	All, 20 years and older	65/67 and older
Iceland 1997-98	6.8	4.3
Sweden	4.9	1.4
Norway	3.5	2.6
Finland	4.1	3.9
Netherlands	5.8	0.2
France	8.5	1.9
Canada	10.9	4.9
Australia	9.1	5.2
Germany	5.8	5.3
United Kingdom	13.2	9.2
Switzerland	7.4	11.9
United States	17.9	17.5
Average (unweighted)	8.2	5.7

Note: Poverty live = 50 per cent of median equivalent disposable earnings. Icelandic figures refer to 1997-98 but the other figures are from around 1990.

Source: W. Korpi og J. Palme (1998) and Social Research Institute, University of Iceland.

Table 23. **Average disposable income by age group**

	Iceland	Denmark	Finland	Sweden
Single people				
20-64	100	100	100	100
20-44	92	86	91	86
45-64	108	114	109	114
65 and older	85	81	85	85
Married or cohabiting couples				
20-64	100	100	100	100
20-44	86	88	90	83
45-64	114	112	110	117
65 and older	89	68	83	69

Source: Olafsson (1999).

Table 24. **The labour-market situation of older workers**

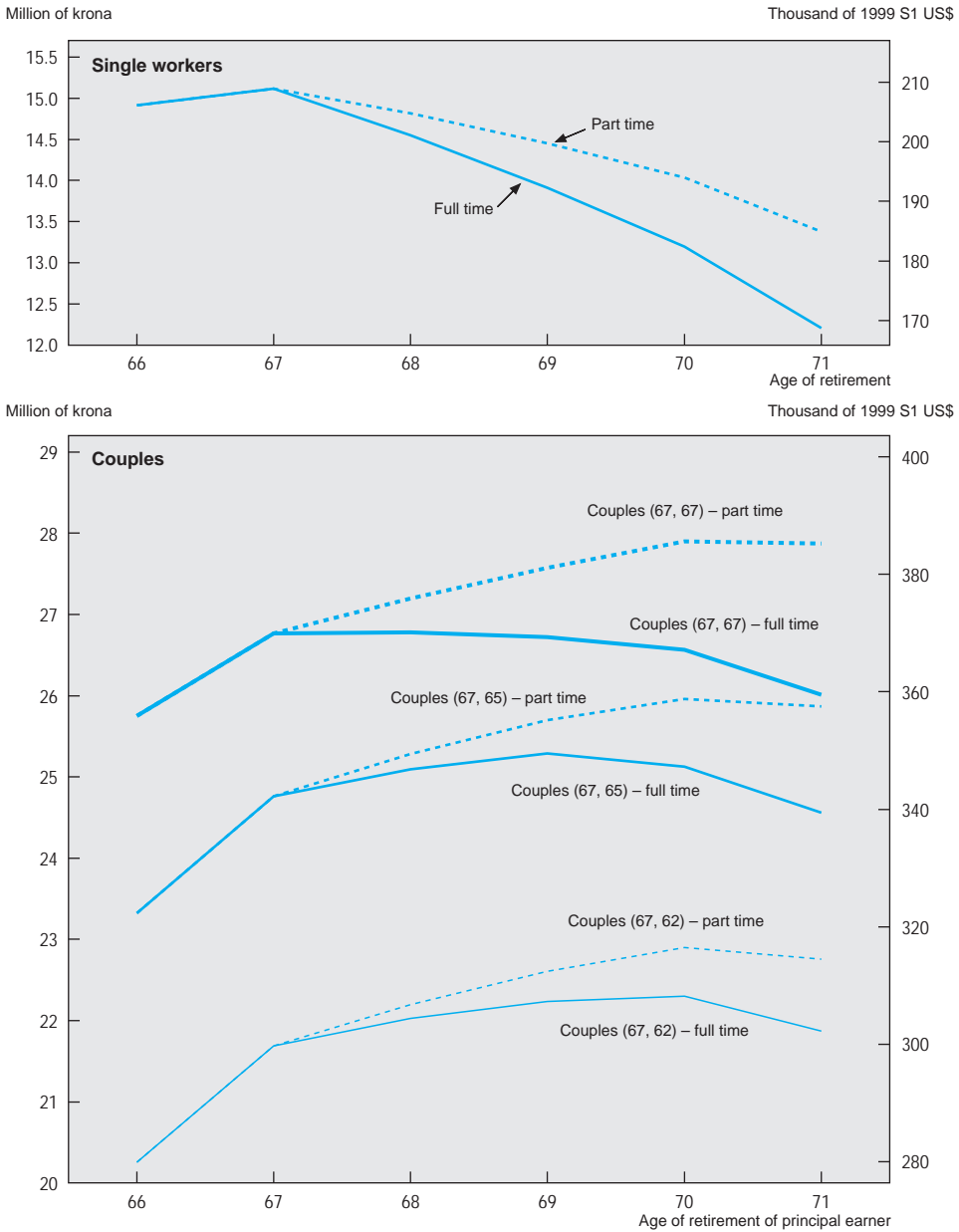
1997

	Iceland		European Union		OECD average	
	55-64	14-64	55-64	14-64	55-64	14-64
Unemployment rates	2.9	3.8	9.2	18.8	5.2	10.8
Labour force participation rates	86.6	83.2	40.4	67.7	50.2	69.7
Employment population rates	84.1	80.0	36.7	60.4	47.6	64.8

Source: OECD, *Employment Outlook*, June 1998.

system discourages individuals from retiring before 67 and, in some respects, encourages individuals to continue working up to 70. Indeed, the fall in income of those retiring at the age of 67 can be quite sharp, particularly for couples. For example, a household with twice average earnings would face a fall in its income to 54 per cent of previous earnings (Table 19, top panel). Continuing to work up to the age of 70 would increase the replacement rate by about one-fifth (Table 20, second panel). Estimates of pension wealth show falls after 70 because the occupational pensions are no longer actuarially adjusted (Figure 31). However, if an individual changes job at 70 and draws a pension from a previous employment such a large fall in wealth would not occur, and an individual would not have to contribute to a pension. A more detailed discussion of the variation of pension wealth with age can be found in Annex II.

Figure 31. Variation of pension wealth with age



Source: OECD.

Moreover, the overall structure of non-pension welfare benefits provides little scope for retiring early. Unemployment benefits are generally flat rate and set at relatively low levels, providing little incentive to use them as a pre-retirement support scheme, though means tested benefits are available. The disability benefits – which are at broadly the same level as retirement benefits – are not high in terms of labour income (except, possibly, for low earners) and the number of disability beneficiaries is lower than in other Nordic countries, particularly for older age groups.⁵⁴ However, the number of elderly disabled did increase rapidly between 1990 and 1995, from 13 to 22 per cent in the age group 65-66. Such growth led the government to tighten its rules and to pension funds ending the automatic eligibility for a private disability benefit once a government benefit was paid.

In addition to the above factors that operate on the supply of older workers, there are a number of elements that help keep the demand for elderly labour strong. Among these, there are virtually no restrictions to laying off employees in Iceland. Older workers do have longer periods of notice if they have worked for the same firm for ten years, but the maximum is only six months at age 63 and above. Moreover, wages do not rise markedly with age such that wage differentials are rarely more than 15 per cent and these may be shrinking as firms move to more performance-oriented pay systems. Finally, the cost to the firm of pensions for older workers is limited to their share of the overall contribution rate. This removes the bias against old workers associated with defined benefit schemes in countries like the United States and the United Kingdom, where the employer bears the marginal cost of hiring older workers.

Care for the elderly

The system of care

Iceland has an integrated policy of care for the old – governed by specific laws dating from 1983 and 1989. This policy has two main objectives: respect for autonomy of the elderly and entitlement to services they need at a level that is relevant and economic.⁵⁵ It aims at keeping the elderly in their own homes as long as possible while providing access to a retirement or nursing home when the need arises. In this regard, the government sets a range of services, namely (by order of increasing intensity of resources and costs):

- Home help, including housekeeping services and meals delivered to the home. This is the sole service financed directly by municipalities;
- Home nursing, which is provided free of charge by the Community Health Centres. Health Centres also make judgements about the need for access to retirement homes and nursing or geriatric care;

- Day care centres which provide care to the elderly remaining in their families during the daytime;
- Service apartments – small flats, often privately owned, with specialised service (nursing) staff on site;
- Retirement and nursing homes operated by the State, municipalities and the private sector;
- Geriatric hospital care and respite care – the latter referring to short stays in an institutional environment to take the pressure off families or hospitalisation to “top-up” the physical condition of the elderly.

Over 90 per cent of these services are financed by the State budget. Health care services are provided free but there are user charges for the other services. At present, user charges only cover a small proportion of the cost of these services.

Factors affecting the costs of care to the frail elderly

A relatively high proportion of the elderly live in an institutional setting, either in residential or nursing homes. International comparisons are difficult due to differences in definition. Nonetheless, one such study puts Iceland as having the second highest share of the elderly in institutions, of one form or another⁵⁶ (Table 25). Similar studies put most other Nordic countries and the Netherlands as having a smaller ratio than Iceland in the early 1990s.⁵⁷ A number of factors have led to the adoption of this costly solution to the problem of long-term care:

- Because municipalities have financing and supply responsibility for home care, it is more advantageous to have residents enter retirement homes, which are paid by the state. This may be one factor explaining why individuals in retirement homes outside of Reykjavik tend to be younger and the negative correlation between the average age of residents and the supply of beds per capita across municipalities;
- A low population density may mean that services for home care and home nursing may be more difficult to organise in outlying areas such that, in some cases, residential or nursing care may be the cost-effective solution;
- Because most retirement and nursing homes are paid on a per diem basis, management has an incentive to fill as many beds as possible. Indeed, rates of capacity utilisation in the early 1990s were lower in institutions that were financed on a fixed budget than for institutions paid on a bed-day basis.

There is considerable variation in costs per patient across retirement and nursing homes. The level of funding for the institutions supplying care was initially fixed on the basis of historical costs in institutions. The budgets for individual institutions then varied over time using special cost index, with different

Table 25. **Accommodation of elderly people by degree of care**

Per cent of population over 65; different years in the early 1990s

	Own home with or without care	Residential homes low level of care	Nursing homes high level of care	Hospitals intensive medical care
Iceland¹	87.0	5.0	8.0	..
Sweden	94.0	3.0	2.0	< 1.0
Denmark	85.0	10.5 ²	4.0	< 1.0
Netherlands	90.0	6.5	2.5	< 1.0
United Kingdom	93.0	3.5 ³	2.0	1.5
France	94.0	4.0	2.0 ⁵	..
Italy	96.0	1.0	< 2.0	1.0
Japan	94.0	0.5	1.5	4.0
United States	..	1.5 ⁴	5.0	..

1. Including only elderly over 67 years.

2. Including some sheltered housing and other special dwellings for elderly.

3. Including some young disabled.

4. Including only residential care homes and not group facilities such as board and care homes.

5. No facilities described as nursing homes; figures refer to the elderly reside in nursing-home-like facilities.

Source: Ribbe *et al.*, 1997.

weights for labour costs to differentiate between nursing and residential homes. The outcome of this process is that payments by the government per patient/resident vary by a factor of 2.5 across institutions for both nursing and residential care.

Cost differences may also reflect whether the retirement and nursing home are financed directly on budget – for the units owned by the state – or indirectly through the budget of the Social Security Institute on a bed-day or per diem basis for those owned by the municipalities or the private sector. The institutions financed directly out of the state budget are about 35 per cent more expensive than those paid on a bed-day basis. Moreover, institutions providing both residential and nursing services can have beds reclassified as nursing beds as the individual grows older and his or her care needs rise. Since the per-diem payment from the state for nursing beds is about twice as high as for residential beds, there is an incentive to reclassify individuals as needing nursing care as early as possible. While overall cost differentials may reflect initial variance in the intensity of care, the present system cannot adequately take account of the changing mix of patients over time. In addition, there is no benchmark to judge the level of costs and there are no incentives to search for cost savings.

There is a significant regional imbalance in the supply of nursing beds with over supply outside the Reykjavik area and under-supply therein (Table 26).⁵⁸ Sixty per cent of those of retirement age are concentrated in that area, compared to 55 per cent of the total population possibly reflecting the

Table 26. **Geographic distribution of the population and facilities for care of the elderly**

	Distribution of elderly population	Distribution of beds		
		Residential	Nursing	All
Reykjavik	46.4	30.3	34.6	33.0
Reykjavik suburbs	14.3	–	–	–
Remainder of country	39.3	69.7	65.4	67.0
Whole country	100	100	100	100
	Elderly per thousand population	Beds per thousand elderly		
		Residential	Nursing	Total
Reykjavik	117	3.1	5.9	8.9
Reykjavik suburbs	69	–	–	–
Remainder of country	92	8.3	13.2	21.5
Whole country	97	4.7	7.9	12.6

Source: Ministry of Social Affairs, 1995.

attraction of more extensive health care services in the capital city area. Despite this, the supply of beds per thousand persons of retirement age is roughly half that of the rest of the country. Although the numbers vary, the waiting list for residential and nursing beds represented, in late 1997 and early 1998, around 20 per cent of the total number of available beds in the country with between two-thirds and three-quarters in the Reykjavik area. This imbalance has had consequences for the hospital system there: the share of patients in geriatric hospitals who are waiting for nursing care beds has increased and this has limited both the availability of geriatric and acute care beds.⁵⁹ Those in geriatric wards do not receive priority for nursing care beds even though they are increasing overall costs of the old age care system and both services are organised through the State administration. With excess demand for beds in the Reykjavik area, there is some evidence that institutions are avoiding taking patients demanding the most care, partly reflecting the fact that per-diem payments poorly reflect the cost associated with these individuals.

Better management of the health care sector

Health care spending is also likely to increase as the population ages because the elderly tend to spend more on health care costs than either children or adults below retirement age. The health care system has been extensively described in the 1993 OECD Survey. Prior that date, Iceland had experienced rapid growth of health care spending and reforms in the form of tighter budget ceilings were being put into place. These appear to have had the desired effect:

the share of overall and general government health care spending in GDP has stabilised at just over 8 and 6.7 per cent of GDP respectively although this stability also reflects the rapid pace of GDP growth over the period. Budget ceilings are likely to be broken next year following the most recent wage and salary negotiations, which exceeded those assumed in the budget estimates.

More far-reaching micro reforms have been slower to put into place. One of the three Reykjavik hospitals has been converted to a geriatric long-stay service but only limited progress has been made in rationalising the services in the remaining two hospitals or in shifting from high-cost hospital care to less expensive ambulatory and outpatient care. The numbers of older people blocking hospital beds suggests that a better structure of bed supply in the Reykjavik area could increase overall hospital efficiency.

The impact of ageing on public expenditure and economic growth

Current and future age-related spending

At present, public sector expenditure in Iceland on age-related spending appeared to be amongst the lowest in the OECD area and has been relatively stable during the 1990s. The most recent internationally comparable data (for around 1995) suggest that this is particularly the case for age-related public pensions, where spending is in the range of 2.4 per cent, compared to 7.5 per cent for the European countries taken together (Table 27). This low level of spending on pensions reflects two factors. *First*, the share of the population that is eligible for government age-related transfers is smaller than in other countries because of the later retirement age and, as just noted, the relatively youthful population structure.⁶⁰ *Second*, as is emphasised below, government benefits are modest and are income tested to varying degrees. But two other elements partially offset low pension spending. On the one hand, civil servant pensions are included in the occupational pension system in this data set rather than public spending, despite being partly financed by transfers from the government budget.⁶¹ On the other hand, spending on non-medical services to the elderly does appear somewhat higher than elsewhere (except for the other Nordic countries) even though, data on services to the elderly are not available for most countries.⁶² Nonetheless, these two elements are insufficient to override the conclusion that non-medical age-related public spending is amongst the lowest in the OECD area. Such a favourable ranking does not seem to have changed in the second half of the 1990s, as age-related pension spending in Iceland stabilised as a share of GDP in this period, after having increased somewhat in the early 1990s. The key factor has been the increase in the funded occupational pensions, which have partly replaced the income-tested components of the public pension system.

Table 27. **Age-related expenditure in OECD countries**
1995 (per cent of GDP)

	Public				Private mandatory
	Old-age cash benefits	Residential care	Home-help services	Day care and rehabilitation services	Old-age cash benefits
Iceland	2.36	1.33	0.13	0.37	1.24
Australia	3.08	0.11	0.08	0.03	–
Austria	10.40	0.15	–	–	–
Belgium	7.62	0.12 ¹	–	–	0.93
Canada	4.34	–	–	–	–
Czech Republic	5.53	0.35	0.12	0.08	–
Denmark	7.73	1.24	1.47	0.10	–
Finland	7.95	0.67	0.33	–	0.12
France	10.36	0.62	0.11	–	–
Germany	10.29	0.34	0.08	0.09	–
Ireland	3.42	0.07	0.14	0.04	–
Italy	10.99	–	–	–	–
Japan	5.49	–	0.06	0	0.26
Korea	1.19	0.03	0	0.01	–
Luxembourg	7.04	–	–	–	–
Mexico	0.24	–	–	–	–
Netherlands	6.75	0.51	0	–	–
New Zealand	5.69	–	0	0	–
Norway	5.82	–	3.12	0.39	–
Portugal	6.29	0.11	0.02	–	–
Spain	8.32	0.14	0.04	0.06	–
Sweden	8.17	–	–	0.13	–
Switzerland	6.71	–	–	0.08	3.39
Turkey	2.89	–	–	–	–
United Kingdom	6.46	–	–	–	0.27
United States	5.36	–	–	0.05	–

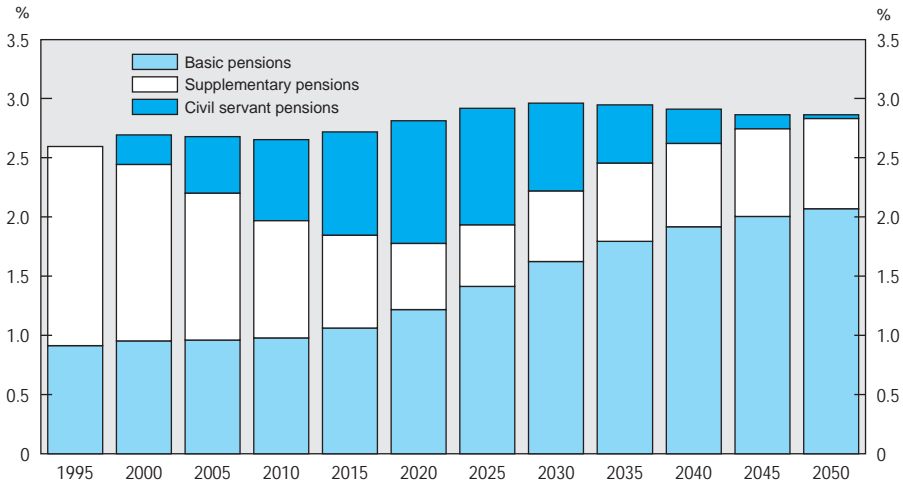
1. 1994.

Source: SOXS.

There is no easy way of allocating Icelandic health spending between age groups. However, health care spending (particularly for public health care) is in the upper range of OECD countries and it would probably rank even higher if the expenditure data were also corrected for the relatively youthful age structure.

The current arrangements for income support for the elderly suggests that public pension spending could rise by only about half a percentage point of GDP over the next half century, although it may rise above this during certain periods

Figure 32. **Projections of government spending up to 2050**
Per cent of GDP



Source: OECD.

(Figure 32). Three factors are likely to be particularly important in the level and timing of spending:

- The number of those receiving the basic pension will increase and, in 2050, this will be the dominant component of government pension spending.
- This should be partly offset as occupational pension payments increase and the income-tested supplementary benefits are clawed back. These simulations assume that 20 per cent of the elderly population receive benefits by 2050. If the dispersion of earnings distribution were to become wider in the future, and this share rose to 30 per cent, then public spending would rise by 0.4 per cent of GDP.⁶³ If the government chose not to fully index to wages income thresholds for supplementary benefits, then the increase in spending would be less.
- Cash payments by the state to civil servant pension funds will increase as the current unfunded liabilities are called, accelerating after 2010 but falling to zero by 2050 as the new scheme comes fully into effect.

There are risks of increased spending on health and for care for the frail elderly. Projections – made in the mid-1990s by the OECD – suggest that, in Iceland, the extent of increased health care spending might be 1½ percentage points of GDP over the period to 2030. However, if such spending is proportional

to mortality rather than population size, then its increase would be much less (OECD, 1999a). In the Reykjavik area, the speed of diffusion of new costly technologies may prove to be a factor pushing up spending, unless costs and benefits are carefully weighed. As regards care for the frail elderly, the government has estimated that the change in population structure might lead to a slight rise in the share of this spending in GDP over the same period (Ministry of Social Affairs, 1995). Here too spending implications depend on the precise assumptions made about the intensity of spending at different ages. Evidence from the United States suggests that longer lives are not associated with longer periods in disability,⁶⁴ arguing for a relatively modest increase in health care expenditure. Such a development also seems to be occurring in other OECD countries.⁶⁵ Indeed, a recent OECD report concluded that if the recent downward trends in disability were to continue for the next twenty years, then in many countries the pure demographic effects of population ageing would be largely offset by this improvement in health.⁶⁶ Moreover, progress in medicine could lead to a reduction in the time spent in nursing homes.⁶⁷

Consequences for growth

With respect to economic activity, faster population growth should more than offset the fact that the increase in productivity has tended to be slightly below the OECD average (Table 28). On the basis of these two factors, real GDP might grow in the range of 1½ to 2 per cent per year on average. This picture would not be greatly changed if there were a small fall in the retirement age. A reduction in the average retirement age of men by one year could reduce the growth in potential labour supply by, a negligible amount (0.05 per cent per year) over the next 50 years, with only a small impact on government spending. The increase in the share of older persons in the population (Table 28) will imply more sluggish growth in GDP per capita (compared to GDP).

Scope for further action

In view of the recommendations contained in the OECD report “Maintaining Prosperity in an Ageing Society”, Iceland’s policies in this area appear in a favourable light. (Box 9). Earlier institutional choices – in particular the establishment of a fully funded occupational pension system – should help to avoid difficulties facing many other countries. In addition, the degree of labour market participation is surprisingly high even above 67, the official age for drawing a state pension. While sociological factors and flexible labour markets are undoubtedly important in explaining this phenomenon, the late official retirement age, the system of income transfers and the rules of the occupational pension schemes currently do not discourage those drawing pensions from working later in life.

Table 28. **Factors underlying the long-run growth of consumption**

Per cent, annual average

Panel A: The growth of different age groups in the population							
	1990- 2000	2000- 2010	2010- 2020	2020- 2030	2030- 2040	2040- 2050	Average 2000- 2050
Working age population (15 to 64)							
Iceland	1.16	0.98	0.49	0.00	0.14	0.19	0.48
United States	0.97	0.94	0.22	-0.07	0.13	0.06	0.37
OECD Europe	0.28	-0.02	-0.45	-0.86	-0.96	-0.65	-0.44
Japan							
OECD Total	0.80	0.51	0.03	-0.25	-0.34	-0.26	0.08
Elderly population (65 to 80+)							
Iceland	2.03	1.15	3.06	2.50	1.32	0.66	1.78
United States	0.93	1.18	3.05	2.57	0.55	0.31	1.43
OECD Europe	1.32	1.00	1.31	1.57	0.90	-0.30	0.96
Japan							
OECD Total	1.72	1.45	2.20	1.95	1.11	0.41	1.47
Total population							
Iceland	1.09	0.75	0.70	0.45	0.32	0.25	0.59
United States	0.90	0.73	0.76	0.46	0.17	0.13	0.52
OECD Europe	0.27	0.01	-0.11	-0.22	-0.37	-0.46	-0.15
Japan							
OECD Total	0.67	0.47	0.36	0.19	0.03	-0.05	0.28

Source: UN Projections.

Panel B: Labour productivity growth			
	1978-1988	1988-1998	1978-1998
Iceland	1.28	1.60	1.44
United States	0.85	1.19	1.02
OECD Europe ¹	1.83	1.87	1.85
Japan	2.74	1.23	1.98
OECD Total ¹	1.39	1.47	1.43

1. Definition of area changes in 1991 and 1993.

Source: OECD.

This, accompanied by the relative youth of the population, has reduced the current cost of income support for the elderly, widened the tax base and limited the scope for increases in spending in the future. Nonetheless, as discussed below, there are areas where some changes are needed. These are summarised in Box 9.

Public pensions

The current state pension system is complex, particularly for single persons and some simplification would be desirable. Indeed, there are four different transfers each with their own withdrawal rates and thresholds (see Box 6). Variation in the latter may create undesirable incentives. Income from capital is treated differently from other income in the income tests (reflecting the presence of the wealth tax) and occupational pensions are also treated differently from other income. Undesirable incentives can be created to delay drawing occupational pensions, and incentives to work may be adversely affected.

The government also needs to be careful to ensure that the indexing procedure does not lead to state benefits rising too rapidly. Notably, the new indexation rule for the basic pension will ensure that, over time, it increases faster than real wages, as pensions will rise by the greater of the growth in wages or prices. If the relatively large downward flexibility of real wages in Iceland were maintained in the future, this rule would lead to a gap opening up between the growth of pensions and wages.⁶⁸ In addition, the authorities need to ensure that the thresholds for the payment targeted benefits only grow in line with wages and not with the incomes of the retired, as these will be substantially boosted by the increase in second-tier occupational pensions. In this way, expenditure on targeted benefits will continue to fall as the occupational system matures.

Moreover, many individuals face combined tax and benefit withdrawal rates of 80 per cent or above. The benefits of those receiving the special household allowance are reduced as fast as their other income increases. The combined tax rate remains as high as 80 per cent over a much wider range (Figure 33). These high rates will decline over time as occupational pensions increase. Such high tax rates, nevertheless, make for political pressures for change and induce behavioural responses that need to be taken into account in programme design. For example, an individual can currently increase total public and occupational pension wealth by delaying receipt of occupational pension until 70 so as to receive more supplementary benefits. It is important to use legislature provisions that provide for the imputation of pension in such a case. By drawing down assets during this period, wealth taxes can also be reduced. At the present degree of occupational pension fund maturity, the incentive to save is reduced significantly and this may partly explain why the take-up of the third tier system has not been as widespread as expected.

Box 9. **Maintaining prosperity in an ageing society: recommendations for Iceland**

The reforms necessary for Iceland to deal with its ageing problem are summarised here according to the six main areas for reform identified in a recent OECD report.

Fiscal consolidation should be pursued

Already debt is falling relative to GDP and the budget in surplus. Nonetheless reform is needed:

- State pension benefits should be indexed to wages rather than the higher of wages or prices.
- The government needs to ensure that means-tested benefits gradually decline as occupational pensions increase.
- The current system of means-tested benefits should be simplified.
- Existing rules should be strictly enforced to prevent individuals from benefiting from supplementary benefits by delaying receipt of an occupational pension.
- The government should start to reduce its liabilities for unfunded civil service pensions.

Retirement income should come from diverse sources

This is already the case with many individuals receiving private pension schemes, employment and capital income. However,

- Any widening of the arrangements for partial "opting-out" from private schemes should be designed to avoid destabilising the system.
- New common rules for the accumulation of benefits for all private funds may be needed.

Explicit policies for providing care to frail older people should be developed

A comprehensive package of care is available for the frail elderly, but:

- User charges, including those on wealth as well as income, should be increased in order to limit public spending.
- Co-ordination between the various service providers needs to be improved.
- Central government funding of local services should be placed on a block grant basis.
- The new information system consolidating details on care needs of elderly people should be fully exploited to reduce costs.

Pension funds should have a modern and effective regulatory framework

New legislation was introduced in 1997, nonetheless

- The lower limit on the number of members of a pension fund should be raised.
- The authorities should consider easing the limits on both foreign and equity investment by pension funds.
- Regulators need to ensure that the occupational system is, indeed, mandatory and to be vigilant about the extent to which life expectancy is increasing.

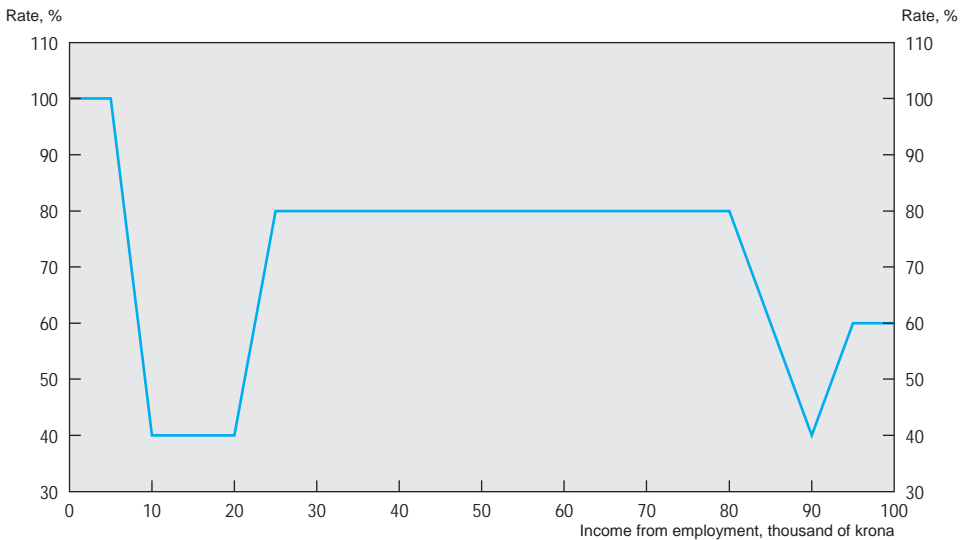
Public pension systems should remove disincentives to later retirement

There is an absence of disincentives to retire and so no new initiatives are needed.

Job opportunities should be improved for older workers

The proportion the elderly is sufficiently high that no new initiatives are needed.

Figure 33. Marginal tax-transfer rate



Source: National Economic Institute.

Finally, the high marginal tax-transfer ratios encourage individuals to avoid joining private pensions schemes, and indeed to avoid saving for retirement at all. It is, thus, important that the government enforce the mandatory nature of the system using the powers given it in the 1997 Act to ensure that there is scope for reducing public pensions spending.

Private pensions

As noted above, the new legislation governing pensions introduces a degree of competition between private funds by giving individuals the possibility of diverting part of their contributions into individual accounts of a defined contribution nature. The government is mandated by the 1997 legislation to prepare, by 2001, a report on the extension of competition in the pension fund industry. In considering a future extension of individual accounts, the government needs to take into account that it might put pressure on the existing approach as people could adapt their behaviour to maximise their pension wealth. As a consequence, pension funds may have to make their benefit accumulation policies age-related, so that marginal contributions are brought closer to the marginal benefits that are accumulated in the fund. However, this may raise a difficult problem of transition, as such a move would result in some redistribution of

expected benefits. Some alternative solutions that would improve the choice available to individuals, while moderating the destabilising effects of any extension of individual accounts, are:

- Limit the access to individual accounts to new entrants, and partition the pension system between existing and new members. New members would have a system in which the pension annuity earned for a given years contribution declines with age, so making the choice between a collective pension and individual accounts neutral. Existing members would not be able to choose individual accounts and would retain the existing system for allocating pension points.
- Remove the option of opting back into the occupational pension fund system in mid career for those choosing to invest part of their pension contributions in individual accounts.
- Base the attribution of benefit rights under the current occupational fund system on an age related scale. The pension annuity earned for a given year's contributions would then be higher for young than for old people – though of course over a lifetime the average would be the same.⁶⁹ Alternatively, funds could do away with calculated benefit rights entirely by accumulating contributions and investment returns in individual accounts with compulsory purchase of an annuity on retirement.

The *first option* would minimise any possible losses to older workers and make the choice between pension funds and individual accounts more neutral. But it would take the longest to phase in and would reduce the benefits to the fund of the contributions from new fund members. The *second option* would limit the cost to older workers, but the choice between more or less liquidity would remain distorted at the margin. Ideally, policies should aim extending individual choice but in a way that ensures that individuals are faced with the true costs of their actions. The *third option* would, indeed, appear to make the choice between the two pension segments more neutral.

Whatever the choice, all funds should accept the same rules so as to create as level a playing field as possible. Failing this, individuals may shift between funds to benefit from differences in fund rules. For example, if only one fund takes the third of the options just described, its members can benefit from the system by changing jobs to affiliate with a fund having maintained the current equal-yearly-point system. Since funds operate in an independent manner, competition between them should eventually ensure that rules are changed in such a way that marginal benefits are set equal to marginal contributions at each point in time. However, given the non-profit environment in which these funds operate, government regulation may be needed to limit co-ordination failure and this could help speed up the transition.

Provision of long-term care

As noted, the extent of provision of services to the elderly is high by international standards and costly. Structural inefficiencies in the geographical distribution of facilities and the organisation of the budget suggest that these costs could be reduced. Some recent policy developments in this area could help the government improve resource allocation and set the stage for further improvements in cost-efficiency:

- The medical requirements of all individuals requiring institutional care – as well as those already in institutions – are now evaluated annually with the information included in their medical record. The cost of servicing each individual can thus be better measured and payments aligned to costs. Funding should then be made to vary in line with the patient mix. In addition, the actual care required could be matched to needs. The application of such needs-based evaluation of nursing home care is, however, in its infancy in most OECD countries.⁷⁰
- Using the results of the calls for tender for private-sector provision of additional long-term care beds in the Reykjavik area may provide a benchmark against which the costs of existing beds can be judged.
- The government is engaging in a three year experiment with two municipalities where the latter take on responsibility for all care for the elderly, and are financed by a block grant from the State, which would remove the adverse incentives to profit from per diem payments. This removes the incentives to shift spending from one level of government to another and may help produce to a more cost-effective mix of services.⁷¹ If this experiment in devolution proves successful in containing costs and improving local accountability, it should be generalised.

It may be necessary to go further by introducing a greater measure of user charging. At the moment, such charges vary considerably depending on the service provided and, in the area of home services, across municipalities:

- Home nursing services – and health care services more generally – are free of charge as they are provided by the state under the health care budget.
- Charges for home help services provided by the municipalities vary. In Reykjavik, they are free for those individuals under a certain minimum income, while for those over the minimum the charges they cannot be more than 75 per cent of their income.
- User charges for day care do not exceed the value of the basic state pension.
- For residential and nursing care user charges are income related. In practice, the thresholds are such that most pensioners do not have use their occupational pensions to pay charges.⁷²

The scope for cost recovery will increase with the growth in occupational pensions, the more so if the current thresholds for income that is not taken into account when setting charges were reduced somewhat. At maturity, the pension of the typical individual would cover about all of costs of residential care, but only about half that of nursing care and less than a third of hospital care.⁷³ A more realistic cost recovery for these programmes would, perhaps, lead people to choose more home-help where costs are much lower than for other forms of care.⁷⁴ This fits with the objective of keeping people independent for as long as possible, something that other Nordic countries have been increasing putting place.⁷⁵

There is also scope for additional cost recovery of nursing or hospital care by calling on the assets of those requiring care. These assets can be substantial and, although they are not distributed evenly across the population, they could go a long way to defraying the costs of care. (Table 22) However, this is a difficult area for policy as individuals have an incentive to run down assets as rapidly as possible or transfer them to their children. It may also make families reluctant to encourage parents to enter a nursing or retirement home for fear of the cost in terms of their own inheritance. In addition, in countries where asset tests exist, housing assets are often excluded (partly because these assets are illiquid) thus limiting the scope of such policies. However, with some financial institutions providing reverse mortgages, these assets can now be tapped to a greater degree. Alternatively, individuals could be allowed to build up liabilities with the State, which could be paid off at the time of the succession.

Notes

1. Annual fish quotas and the annual comparisons of fish catches are expressed in cod-equivalent units to make them comparable across species (see Chapter III). These equivalent units are based on relative prices and are changed annually, although their variation is not that great.
2. Annualised rates for 1999 are calculated by annualising the rate of wage drifts but not the increase in contracted rates that took place in the first quarter.
3. See for example, Berg and Patillo (1998) who analyse three models in the literature, as well as their own variations, that try to forecast currency crises. They test to see how well each would have predicted the crises in East Asia. They conclude:

All three approaches demonstrate that the probability of a currency crisis increases when domestic credit growth is high, the bilateral exchange rate is overvalued relative to trend, and the ratio of M2 to reserves is high. All but [one] also suggest that a large current account deficit is an important risk factor. Some evidence is also found for the importance of other variables, such as export growth, the size of the government budget deficit, and the share of FDI in external debt.
4. Krugman (1998), for instance, argues that in the East-Asian crises “financial intermediaries seem to have been central players”.
5. See OECD (1998*b*) and references therein for a review of financial reform in Iceland over the past ten years.
6. Miskin (1999).
7. Krugman (1999) emphasises balance sheet problems in East Asia.
8. In contrast, Radelet and Sachs (1998) argue that the potential for a change in governments in Korea, Thailand, the Philippines and Indonesia could have been a triggering event for their problems.
9. First-generation models of financial crises emphasise problems of financing government debt. See, for example, Krugman (1979) and Flood and Garber (1984).
10. Second-generation models of financial crises emphasise the role of expectations especially with respect to monetary and exchange rate policy. See for instance, Obstfeld (1994). Krugman (1999) argues that the expectation that Russia was going to print more money, in the first instance, explains the collapse of the rouble in 1998.
11. Demirguc *et al.*, 1998.
12. Mishkin, 1999.
13. Central Bank of Iceland, 1998.
14. Gudmundsson *et al.*, (1999).
15. Gudmundsson *op. cit.*
16. Krugman, (1991).
17. Herbertsson, (1994).

18. Agnarsson, (1999).
19. Central Bank submission to the OECD.
20. The replacement of an exchange rate target with a domestic target generally requires gradually widening fluctuation bands, consolidating the government budget, and introducing measures that would make it easier technically to control the money aggregates and interest rates (OECD EO, 1999). Iceland has made good progress in nearly all of these: exchange rate bands were widened in 1995, the government budget is in surplus and is calculated in a transparent fashion, and most of the necessary instruments of monetary control have been introduced culminating in a thorough overhaul in March 1998.
21. The cost of reducing the income tax rate has fallen solely on central government. Both levels of government have shared the cost of increased deduction from the tax base.
22. In effect, the accrual of pension liabilities is shown in a satellite account that deals with the revaluation of liabilities.
23. B. Gudmundsson, 1999.
24. See Baldursson, Danielsson and Stefansson (1996). Originally, the proposal was to fish 22 per cent of the stock.
25. Starting April for capelin and September for other species.
26. While permanent quotas are expressed as shares of the total allowable catch, annual quotas are expressed in kilograms of cod-equivalent units. Essentially, the weight of the species is multiplied by the relative price of cod to that species. These weights are updated annually. Such a system facilitates trades of different species as well as slight overfishing of a particular species. Updating the weights annually ensures that a particular stock is not regularly overfished.
27. A 1993 government review estimated that this rate was 1-6 per cent, depending on the species, and it did not find any evidence of a significant increase since the introduction of the quota system. (Runolfsson and Arnason, 1997).
28. When developing the profile for total factor productivity, one may want to adjust for capital utilisation (Beaulieu and Matthey, 1998). Based on what data are available, days at sea apparently declined between 1991 and 1996 before jumping inexplicably in 1997. As a result, total factor productivity as measured by the volume index and excluding such effects rose between 1990 and 1996, before dropping sharply in 1997.
29. The years 1995 and 1996 are even more puzzling since they were very profitable for the demersal fishing industry. Because cod landings were above the total allowable catch in these years, it is unlikely that the reason for the discrepancy between quota and fish prices was that the enterprises bought quotas to hold for the next year in the anticipation that prices would improve.
30. See Runolfsson (1997).
31. See McClurg (1997).
32. In 1986, the International Whaling Commission's resolution came into effect calling for a pause in commercial whaling. In accordance with an international convention, the government issued special permits for hunting fin and sei whales from 1986-89. Over that period, that catch was roughly a third of its level in the previous four years. No minke whales were caught.
33. See OECD (1998*b*) for detail on financial market developments prior to 1998.
34. See OECD (1998*b*) for a further development.

35. Network effects arise in a market when a customer's demand for a product is positively related to the consumption of others. For example, one may want to belong to the same telephone network as others because it makes calling easier. See OECD (1999b) for a further discussion of this issue and its effects on regulation in the United States.
36. Readers interested in access to essential facilities are referred to the published proceedings of an OECD Competition Law and Policy Roundtable discussion (OECD, 1996dp).
37. See IEA (1997) for a description of the directive.
38. The issue of the provision of unbundled services by the monopoly telephone company has plagued other countries as well. So far, regulators have not issued comprehensive guidelines on these services, and the Competition Authority have declined to get involved apart from ordering firms to work it out among themselves. This is in contrast to US regulators who have issued explicit, detailed guidelines on pricing unbundled services and have prohibited local phone carriers from providing long-distance services until they have significantly opened up their markets. Even with such regulations, progress has been slow (OECD, 1999 usa; and OECD 1999 reg).
39. See the Policy Statement issued by the Office of the Prime Minister (1999).
40. See OECD (1998b).
41. Iceland's Y2K Internet page address is <http://2000.stjr.is>.
42. See Marcoccio (1999). Important countries in category 3 include Poland, Austria and the Czech Republic. Countries in category 4, where some disruptions could be severe and government service disruptions widespread, include Russia and China.
43. (Olafsson, 1999, forthcoming).
44. By an Act of Parliament in 1995, permanent widows pensions were abolished.
45. Nine other funds are closed to new members and contributions. These are funds that are not actuarially sound and the benefits have, in many cases, been written down to bring assets in line with liabilities but they cover only a small share of the population.
46. At the time, this index was the result of an equal weighting of the wage index, the consumer price index and the building cost index, with the latter also having a significant wage component.
47. The contribution base only included ordinary time earnings until 1996, which reduced rights by a third before this and, on average, by one-sixth between 1986 and 1990; and, those working part-time or who left the labour force temporarily to care for children will have built up fewer rights.
48. However, in the United States, empirical examination of life insurance and annuities contracts suggests that private markets expect the average age of death to increase further at a quite rapid rate (Mullin and Philipson, 1997)
49. Jacobzone, 1998; Jacobzone *et al.*, 1998; Lutz *et al.*, 1996.
50. Funds with a young age structure and rapidly increasing assets may be reluctant to merge with those where the members are rapidly approaching retirement and their contributions will have had little time to earn a return. Furthermore the Act states that the amalgamation must not result in losses to the rights of the members of either fund.
51. In contrast, there are no limits on the proportion of total assets that can be invested in any given security.
52. Sedlabanki Islands, 1998.

53. Olafsson *et al.*, 1999.
54. In 1995, only 5.4 per cent of the 15-64 age group received such pensions, although this share had risen to 17 and 21.8 per cent respective for the 60-64 and 65-66 age groups by 1996. Compared to other Nordic countries, where official retirement ages are also often in the late 60s, the overall rate of disability pensions appears to be about the same rate as Denmark and below those of Norway and Sweden but significantly lower at older age groups (Nososco, 1999).
55. Ministry of Social Affairs, 1995.
56. Ribbe *et al.*, 1997, NOSOSCO, 1998.
57. Jacobzone (1997).
58. On the basis of the population structure alone. Estimates on the basis of assessed need in the mid-1990s show the same picture of higher levels of demand in the Reykjavik area but rough balance in the rest of the country (Ministry of Social Affairs, 1995).
59. At the end of March 1988, there were 67 geriatric beds blocked by lack of available nursing care beds. This in turn blocked the 27 acute care beds and has meant a waiting list for geriatric care of 84 outside the hospital system.
60. Although this is partly offset by the fact that the life expectancy at retirement is one of the longest in the OECD areas.
61. However, the government now enters the accrual of civil service pension rights in its budget. In a normal year, these amount to about 0.4 per cent of GDP.
62. Comparison in this area made difficult by the practice, in some countries of including nursing care with health care.
63. These projections do not take into account the fact that for a certain period, average pensions will move above their eventual long-run equilibrium. This will tend to reduce supplementary pension quicker in the next 20 years, because of the delayed effect of the change in indexation practices in 1992.
64. OECD, 1999*b*.
65. Jacobzone, 1998.
66. *Op. cit.*
67. Currently, individuals are in an institutional environment for two to three years before death in Iceland. The costs related to shorter stays would, however, be partly offset by higher spending on home nursing and home services.
68. Such a development occurred when a similar rule was first used in the United Kingdom State Earning Related Pension before being abandoned due to its cost.
69. However, the appropriate discount rates for contributions by age of the contributor would still need to be worked out.
70. Scherer and Mira d'Ercole (1998).
71. Similar reforms have already been introduced in Sweden and Denmark.
72. However, individuals with no income other than the state pension receive a small monthly stipend.
73. On the basis of 1992 costs.
74. The average cost in 1992 of home help for all households receiving help was around 10 per cent of the average cost of residential care and 5 to 6 per cent of nursing care.
75. Szehebely (1998).

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*Annex I***A chronology of fisheries management***

- 1965 Restrictions on catches and effort for inshore shrimp and scallop are introduced.**
- 1967 Herring fishery collapses.** From an average of 522 000 tonnes caught in 1964-66, the catch drops to 94 000 in 1967 and only 28 000 tonnes in 1968. In 1969 a herring quota is imposed, and in 1972 a three-year moratorium on fishing is introduced. The collapse of the stock colours Iceland's view of fisheries management from then on.
- 1972 Iceland extends its fishing limits from 12 to 50 miles.** In 1973 Iceland and Great Britain sign an agreement that limits British fishing effort within the zone and imposes an annual catch limit. The agreement expires in November 1975.
- 1975 Herring fishing resumes with individual vessel quotas.** With a resumption of herring fishing, the government issues quotas to individual vessels as a share of the total recommended catch. Unlike the present system, where there are permanent rights, the quotas are issued annually to eligible fishery concerns that apply. They are not transferable, although the fisheries circumvent this somewhat.
- 1975 Iceland extends economic jurisdiction to 200 miles, setting off the "Cod Wars" with Great Britain.** In spite of increased technology, cod landings continue to decline, as do the size and age of the cod caught. With discussions in the United Nations pointing to general recognition of a 200-mile limit, Iceland imposes its jurisdiction when an agreement with Great Britain expires. Conflicts erupt as the Icelandic Coast Guard cuts British nets, and several boats are rammed. NATO mediates the dispute, and the two sides reach an agreement in June 1976 that recognises Iceland's 200-mile zone, while providing for limited British fishing for six months.
- 1977 Individual effort restrictions in the major demersal fisheries are introduced.** With the introduction of the 200-mile jurisdiction and tighter overall catch limits, the government introduces restrictions on the number of fishing days. Free entry is allowed, however, and the fleet grows considerably in the next few years. As a

* The material is based heavily on Danielsson (1997) and Runolfsson and Arnason (1997). See also Kassebaum (1997) and references therein, as well as OECD *Economic Surveys of Iceland*, years 1988 and 1991-98.

result, allowable days at sea are progressively lowered from 323 days a year for deep-sea trawlers fishing for cod in 1977 to 215 days in 1981. From 1981-84 the industry sustains heavy profit losses.

- 1979 Herring vessel quotas are made transferable**
- 1980 Individual vessel quotas for capelin are introduced.** Landings have increased over sixfold in the 1970s, threatening a problem of overfishing. Owners of large boats designed for capelin fishing meet and request that the Ministry of Fisheries limit entry and allot shares of the total allowable catch. Licenses with individual catch limits are subsequently restricted to 52 vessels, where 68 were fishing the year before.
- 1984 Individual transferable quotas are introduced for demersal fishing.** With a sharp decline in demersal stocks and landings, the parliament amends the Fisheries Act in December to allow for individual vessel quotas for large boats. The ministry issues regulations that are in effect for one year.
- 1985 An effort quota is introduced.** Because the system introduced in late 1984 proved to be successful, it is continued for boats 10 GRT and over. Annual shares can be traded, but the permanent share adheres to the original vessel. The vessels are given the option to opt out of the system, however, and instead agree to a limit on the number of days at sea, as well as an individual catch limit for cod. These boats can then re-enter the system later with a higher track record and thus a higher quota in demersal species other than cod. Entry of new large boats is restricted to replacing existing vessels. Boats under 10 GRT are allowed free access and no entry restrictions apply to them.
- 1986 Capelin quotas are made partly transferable.** Permission is still needed, however, to transfer quotas to a vessel that already does not own some.
- 1988 Vessel quotas are made transferable in all fisheries and the system is extended.** The parliament enacts general-purpose legislation on individual vessel quotas. At the same time, it extends the system to other important species such as offshore shrimp so that coverage is about 90 per cent in value. The system is also applied to boats between 6 and 10 GRT, and the effort quota option is made less attractive. The moratorium on additions to the stock of vessels is applied to all boats.
- 1990 A new Fisheries Equalisation Fund is introduced.** Fish processing companies are required to pay into interest-bearing accounts when fish export prices exceed their average over the most recent five-year period by 3-5 per cent. Withdrawals are allowed when prices fall by a comparable amount. The fund replaces a similar programme; the main innovation is that withdrawals are limited to past contributions to prevent subsidisation, as occurred in 1984. Payments to the fund were suspended in December 1991 as although world prices were high, profits were poor.
- 1991 The present, uniform system of transferable quotas for boats 6 GRT and higher is applied.** The effort quota option is abolished. Permanent quota shares can now be traded, while restrictions on trading annual quotas are relaxed, and trading subsequently surges. The authorities emphasise that this regime is permanent. An exception to the system, however, is included where only half of the November-February catch of longliners is subject to the quota. As a result, use of this

technique increases. Boats under 6 GRT are not included in the system. Originally intended as a transition period, an effort quota system for some of these boats remains in place today.

- 1991 The Fisheries Rationalisation Fund is introduced.** A fund paid for by large boat owners is set up to subsidise retirement of the fleet. Although the original amount paid, 30 per cent of the vessel's insured value is generous, little headway occurs. The Ministry of Fisheries raises the subsidy in subsequent years.
- 1995 The automatic catch rule for cod comes into effect for the 1995/96 fishing year.** Instead of the Ministry of Fisheries setting the quota based on advice from the Marine Research Institute, the quota is automatically one-quarter of the estimated fishable stock, with a minimum set at 155 000 tonnes, which happens to be equal to the total allowable catch in the previous fishing year. This minimum applies in the first year, but subsequently the stock grows sufficiently, so that the total allowable catch remains above the floor ever since.
- 1996 The Fisheries Development Fund is introduced along with a small quota tax.** This fund takes over for the Fisheries Rationalisation Fund. A new levy of one kronur per kilogram of cod-equivalent quota, indexed for further changes in fish prices is introduced, the first such resource tax in Iceland.
- 1996 The longline exemption is abolished, and the small-boat system is modified.** Boats under 6 GRT are allowed to join the regular system or compete in an "Olympic" system to fill an aggregate quota. About 250 boats currently remain in the effort system and are restricted to about 23 fishing days.
- 1998 A price commission is set up, and quota trading is restricted to an exchange.** In response to an on-going complaint by fishermen that fishing firms and processors are manipulating landed prices to the detriment of their compensation, the government sets up a commission to arbitrate disputes. It also restricts quota trading to an organised exchange, except for trades of equivalent value. It also prohibits the selling of more than 50 per cent of a vessel's quota. Previously, boats were required to fish at least half of their quota every other year.
- 1998 Licensing preconditions are ruled unconstitutional.** The Supreme Court rules in December that licensing requirements for prior experience are illegal. The government interprets the ruling as saying that licenses should be granted to all applicants but that quotas are still needed to fish.

Annex II

Pension wealth accrual simulations

Many countries have experienced declining labour market participation among older workers, partly reflecting the incentives in age-pension arrangements (Blondal and Scarpetta, 1998). One method of assessing the impact of pension rules on the retirement decision is to calculate the value of the benefits a person will over the rest of his or her life at different retirement ages, taking account of additional contributions if the individual continues to work. An individual reaching retirement age will have an incentive to continue working if cumulated net pension benefits rise with an additional year of work. In this case the individual will obtain a higher annual income from retiring one year later because of *a*) the effect of the additional year of contributions on pension rights and *b*) the increase in the yearly benefit because the pension is being received over a shorter period. Similarly, early retirement becomes attractive if net cumulated benefits increase by working one year less than the retirement age – for example if the pensions are only partly adjusted actuarially.

Following Blondal and Scarpetta (1998), pension wealth was calculated for Iceland using a more detailed model for calculating state pension benefits (see Box 7 in Chapter IV) and occupational pensions (see Box 8 in Chapter IV). Briefly, an individual retiring at 67 is entitled to the basic pension and a supplementary pension (and household allowances if single), and, depending on his contribution record, an occupational pension. State benefits cannot be received before 67, but occupational pension can be drawn from 65 or as late as 70 with an actuarial adjustment. The expected flow of pension income was calculated for different income levels and household types. This flow was then discounted (at 3.5 per cent) and summed to obtain the net present discounted value. This calculation was repeated for different retirement ages, taking into account: the additional pension contributions and pension rights earned and the actuarial adjustment to the pension benefits to correct for the fact that benefits are received over a longer or shorter period. Key assumptions are: wages grew at an average rate of 1½ per cent over the contribution beginning in 1970 all individuals are assumed to die at 83 (the average age at death for individuals of age 65); the actuarial adjustment for delaying taking the pension for one year is 1/14 of the expected flow of occupational pensions; occupational pension contributions are 10 per cent of his salary leading to an increase in pension rights equal to 1.5 per cent of average lifetime earnings per additional year of work.

Pension outcomes depend on the family type (single or couple) and, in the case of a couple, whether both individuals have reached retirement age. Three cases are considered: the household head is 67, the spouse is five years younger and she or he works until reaching retirement age; the head of household is 67, the spouse is two years younger and works to retirement; both are 67 and have worked to retirement. These distinctions are important because working spouses under 67 does not obtain the basic pension and, more

important, their work income is included in the means test for the supplementary benefit of the retired individual. This significantly lowers the State pension benefit of persons older than 67.

In assessing the change in pension wealth from delaying retirement, two cases were considered: the individual above the age of 67 decides to work another year full time; and, the individual works an additional year at half time. This distinction assesses the importance of the income test of the basic pension; those working half time would continue to receive the unreduced basic pension and part of the supplementary benefit.

The simulations suggest that when an individual delays retirement by an additional year or years:

- Pension wealth increases at 67 in all cases because state pension benefits become available.
- Thereafter pension benefits decline for single persons, suggesting that they should retire at 67. The annual decline in wealth decline over the following three years is 4.5 per cent for a full-time worker and 2.4 per cent for a part-time worker. This reflects the impact of the withdrawal rates of the supplementary state pension and the household allowance. This reduction is substantial but the incentives to retire may be partly offset by higher consumption associated with the continued stream of earnings, particularly if pension benefits are low.
- For two earner households with one person less than 67, an additional year of work for the person reaching retirement age leads to an increase in pension income up to the time when the spouse reaches 67. There are two main reasons for this. First, the earnings of the spouse lifts the overall income of the household above the supplementary pension thresholds. Thus, an additional year of work by the person over 67 on the state pension only affects the (small) basic pension. And in the case of half-time work, even the basic pension is unaffected. Second, the occupational pension rights earned by working one more year after 67 are worth more than the corresponding contributions. Pension rights have the same value irrespective of when they are earned over a person's lifetime. The current age structure of the funds is young and recent return to fund assets have been high. These two factors have pushed up estimated actuarial returns and the value of the pension rights of those entering retirement. Thus, the pensions they receive are greater than what they would obtain if the additional contributions they pay were invested in an annuity.
- For a couple both aged 67 with one person retiring, there is a very modest decline in pension wealth if the spouse continues to work full time. This reflects the fact that the spouse would lose his or her basic pension. However this loss disappears if the second earner works part time. Pension wealth for a couple falls by less than for single individuals because: *a*) only the basic pension of the working spouse is lost (in the case of a full time worker) and *b*) decline in the other components of the state benefits is proportionately greater (couples do not receive the household allowance).
- Pension wealth declines after 70 because occupational pensions are not actuarially adjusted thereafter leading to some fall in pension wealth.

These effects are transitional and will fade as occupational pensions increase and push incomes over the thresholds for receipt of supplementary benefits. Once pension systems are mature the current system of actuarial adjustment should make the pension system broadly neutral with regard to employment decisions from age 67 to 70.

*Annex III***Calendar of main economic events****1998****April**

Parliament passes new legislation on stock exchanges and organised financial markets, including abolishing the Iceland Stock Exchange's monopoly.

May

The Ministry of Finance announces a consolidation of treasury bill issues.

The Ministry of Fisheries announces the quota for the 1998/99 fishing year.

Tal hf. begins operations in competition with Iceland Telecom in mobile-phone services.

June

Parliament establishes the State Housing Fund, which replaces the existing state-owned housing funds.

Currency basket weights that make up the official exchange rate are updated, giving greater weight to the US dollar at the expense of the Japanese yen.

The law creating Financial Supervisory Authority was passed. The Authority will start functioning in January 1999. It was created by merging the bank and insurance inspectorates.

Parliament modifies the Central Bank Act to allow the Bank to engage in transactions with credit institutions besides deposit money banks and issue regulations governing such transactions.

July

Íslandsbanki starts dealing in derivatives based on the ICEX-15 index of the Iceland stock exchange.

September

The agreement with farmers over milk production through 2005 comes into effect.

The Central Bank raises its repo rate by 30 basis points to 7.5 per cent.

New equity shares in Landsbanki are offered to the public.

Three Reykjavik unions merge, making it the second largest union in Iceland.

October

The government sells 49 per cent of its stake in the Icelandic Investment Bank.

November

Based on existing contracts, the National Power company restricts cheap electricity to the ferrosilicon plant due to low water levels.

The Ministry of Finance issues new regulations concerning retirement saving. Workers can set aside an additional 2 per cent of wages, which are tax deductible, and employers can match it with an additional 0.2 percentage point that otherwise would be paid as payroll taxes.

Parliament passes legislation confirming the tax deduction for share purchases, but the required holding period is lengthened.

December

The Supreme Court strikes down as unconstitutional a provision of fisheries management that limits quotas to vessels with prior experience. The government interprets the ruling as requiring it to allow any sea-worthy boat the right to a license, though it maintains that fishermen still need to hold quotas.

New equity shares in Búnaðarbanki are offered to the public.

Income thresholds for means-tested old-age pensions are modified.

Parliament passes legislation authorising the sale of the rest of the government's stake in the Icelandic Investment Bank.

Parliament passes legislation authorising the creation of the health database. An exclusive license is awarded to deCode Genetics in May.

1999**February**

The Central Bank raises its repo rate by 40 basis points to 7.9 per cent.

Following a substantial increase in short-term net foreign liabilities of deposit banks, the Central Bank introduces new liquidity requirements. Shortly thereafter, the Bank issues a timetable, requiring institutions to come into compliance by July.

The government announces that it will not sign the Kyoto agreement on greenhouse gas emissions.

March

Parliament votes to resume whaling, although the government subsequently announces its intention not to start until its full ramifications are clear.

May

The governing alliance maintains control of the government in parliament elections.

Iceland, Norway and Russia sign a treaty on fishing rights in the Barents Sea.

The Ministry of Fisheries announces the quota for the 1999/00 fishing year, which are slightly lower than the previous year's quotas.

Reykjavik teachers resign in mass, protesting work conditions and pay. The city negotiates a pay raise in July.

June

The Central Bank raises its repo rate by 50 basis points to 8.4 per cent.

Currency basket weights that make up the official exchange rate are updated, giving greater weight to the US dollar and to the euro.

July

The new telecommunications company Íslandssími signs a contract for the construction of a communications cable network in the capital area.

September

The cabinet decides to put forth a bill to parliament in October to lower and restructure petrol taxes moving to a specific rather than percentage tax, after raising them earlier in the year.

The Central Bank raises its repo rate 60 basis points to 9 per cent.

October

The government introduces its budget for 2000. The revenue surplus is expected to rise to 2.2 per cent of GDP, while the financial surplus will be 3.5 per cent of GDP.

STATISTICAL ANNEX AND STRUCTURAL INDICATORS

Table A. **Supply and use of resources**

IKr million, current prices

	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹	1999 ²
Private consumption	223 176	248 366	248 339	248 182	256 949	272 708	296 840	320 314	361 593	394 693
Public consumption	69 989	78 157	80 375	84 818	89 424	94 080	100 358	107 810	123 181	135 633
Gross fixed asset formation	70 103	76 173	69 589	64 177	65 876	65 950	87 322	98 818	125 365	122 243
Expenditure on final domestic use	363 268	402 696	398 303	397 177	412 249	432 738	484 520	526 942	610 139	652 569
Change in stocks	-4 247	-891	-486	1 016	-26	2 285	-1 202	-222	1 143	0
National expenditure	359 021	401 805	397 817	398 193	412 223	435 023	483 318	526 720	611 282	652 569
Exports of goods and services	124 936	125 671	121 597	135 694	157 436	161 250	176 863	190 945	204 659	218 664
Imports of goods and services	119 556	130 491	121 782	122 466	134 631	144 725	173 727	187 716	230 207	240 149
Gross domestic product (market prices)	364 401	396 985	397 632	411 421	435 028	451 548	486 454	529 949	585 734	631 084
Net income from abroad	-12 849	-10 644	-8 915	-9 750	-13 677	-12 302	-10 661	-10 611	-6 933	-9 173
Gross national product	351 552	386 341	388 717	401 671	421 351	439 246	475 793	519 338	578 801	621 911
Consumption of fixed capital	43 692	47 933	50 881	54 144	56 452	57 702	59 911	62 987	66 938	72 365
Net national product (market prices)	307 860	338 408	337 836	347 527	364 899	381 544	415 882	456 351	511 863	549 546
Indirect taxes	79 167	83 943	83 714	77 009	79 004	82 373	89 811	94 976	106 091	113 099
Subsidies	12 953	12 319	13 225	10 504	9 607	9 492	10 054	10 127	10 682	10 824
Net national income	241 646	266 784	267 347	281 022	295 502	308 663	336 125	371 502	416 454	447 271

1. Provisional.

2. Forecast.

Source: National Economic Institute and Central Bank of Iceland.

Table B. **Supply and use of resources**

IKr million, constant 1990 prices

	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹
Private consumption	223 176	232 402	222 060	212 017	215 959	225 185	239 468	253 751	281 648
Public consumption	69 989	72 159	71 579	73 240	75 936	76 923	77 688	80 067	82 517
Gross fixed asset formation	70 103	71 534	63 513	56 230	55 638	54 061	68 841	76 062	93 798
Expenditure on final domestic use	363 268	376 095	357 152	341 487	347 533	356 169	385 997	409 880	457 963
Change in stocks	-4 247	1 121	-86	1 016	272	2 338	15	9	1 198
National expenditure	359 021	377 215	357 066	342 503	347 805	358 507	386 012	409 890	459 161
Exports of goods and services	124 936	117 565	115 316	123 437	135 805	132 932	146 175	154 546	159 168
Imports of goods and services	119 556	126 371	116 362	106 303	110 828	115 013	134 261	145 739	178 497
Gross domestic product (market prices)	364 401	368 409	356 020	359 636	372 782	376 426	397 926	418 697	439 832
Gross national product (market prices)	351 552	356 825	344 873	348 036	358 583	363 505	387 059	406 746	426 433
Effect of changes in terms of trade	262	6 247	2 368	-3 610	-5 362	-3 247	-9 562	-5 677	1 725
Gross national income	351 814	363 072	347 241	344 426	353 221	360 258	377 497	401 068	428 158

Note: Estimates of real income coincide with output in real terms on the assumption of unchanged terms of trade. Due to particularly strong fluctuations in Icelandic terms of trade national expenditure in real terms may deviate substantially from real gross national product without adverse effects on the balance of payments. This is explicitly introduced in the Icelandic national accounts, as shown above. The item "Effect of changes in the terms of trade" equals the external purchasing power of export earnings (nominal exports deflated by a price index for imports) minus the volume of exports of goods and services.

1. Preliminary.

Source: National Economic Institute.

Table C. **Production and employment**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹
Fisheries and fish processing										
Output (volume change over previous year)	-2.4	-1.1	-2.2	-1.9	5.9	5.2	-4.9	9.0	-3.3	n.a.
Export production, value (IKr million)	55 662	67 692	73 236	69 881	74 571	84 837	83 873	92 582	93 648	99 280
Fishing fleet: ²										
Trawlers (GRT)	56 241	55 612	55 952	56 756	59 189	62 427	67 165	73 100	66 061	n.a.
Motor boats (GRT)	64 505	64 544	65 678	63 640	62 040	59 360	55 819	57 843	60 165	n.a.
Total (GRT)	120 746	120 156	121 630	120 396	121 229	121 787	122 984	130 943	126 226	n.a.
Employment (man-years)	14 893	14 539	14 303	13 023	13 744	13 739	13 735	13 945	13 257	12 795
Agriculture										
Output (volume change over previous year)	1.7	-1.8	0.7	-5.2	3.5	2.5	-2.2	4.1	-0.5	1.3
Export production, value (IKr million)	1 288	1 765	1 622	1 632	1 620	2 132	2 055	2 550	2 105	1 967
Employment (man-years)	6 399	6 873	6 709	6 514	5 859	5 621	5 596	5 349	5 210	5 160
Electricity generation										
Installed capacity (MW)	928.5	912.8	936.9	1 039.0	1 043.6	1 050.3	1 048.9	1 048.9	n.a.	n.a.
Output (GWh)	4 475.2	4 447.2	4 426.7	4 540.5	4 720.8	4 773.9	4 976.8	5 113	5 500	n.a.
Manufacturing (excluding fish processing)										
Output (volume change over previous year)	-3.7	-2.7	1.7	-3.5	-1.2	3.2	1.4	8.6	0.5	3.2
Export production, value (IKr million)	19 460	18 742	15 924	15 125	16 524	21 040	25 000	25 039	28 757	31 455
<i>of which:</i>										
Aluminium	10 146	9 629	8 076	8 054	8 259	10 833	12 303	12 104	15 197	18 417
Diatomite	416	522	420	391	414	541	637	596	572	548
Ferro-silicon	2 899	2 180	1 765	1 656	2 361	2 689	3 212	3 813	3 709	3 212
Employment (man-years)	16 195	15 903	15 586	14 776	13 849	13 611	14 022	14 816	15 502	16 029

1. Provisional.

2. Including whale catchers, excluding open boat; stock at end of year.

Source: National Economic Institute and Central Bank of Iceland.

Table D. **Gross fixed asset formation and national wealth**

IKr million, current prices

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹
Gross fixed asset formation, total	58 698	70 103	76 173	69 589	64 177	65 876	65 950	87 322	98 818	125 365
Classification by end-use:										
Industrial asset formation	32 470	38 612	42 294	36 109	28 932	30 578	33 576	52 927	63 185	86 785
Agriculture	1 584	1 537	1 943	1 618	1 884	1 804	1 606	2 542	2 922	2 950
Fishing	4 216	2 711	2 911	5 950	2 146	3 471	1 546	5 174	1 764	4 500
Fish processing	1 265	1 730	1 413	1 408	1 679	2 429	3 166	4 659	4 181	5 200
Manufacturing other than fish processing	5 865	5 387	6 642	5 432	5 419	5 347	6 114	13 857	19 783	20 550
Electricity, heating and water supply	5 443	6 526	7 101	3 857	3 513	3 044	3 497	5 137	9 502	16 875
Various machinery and equipment for construction	1 377	1 744	2 473	1 562	1 528	1 274	1 749	2 624	3 246	4 000
Trade, restaurants and hotels	4 700	4 721	4 330	4 397	3 884	3 548	3 850	4 698	6 948	8 300
Transport and storage	5 280	10 941	11 348	7 387	3 952	2 825	4 642	5 465	6 015	12 510
Communications	905	1 003	1 466	1 854	2 036	2 909	2 659	2 718	2 816	4 700
Computers and office equipment	1 835	2 312	2 668	2 646	2 892	3 925	4 747	6 053	6 009	7 200
Residential construction	15 936	18 666	19 104	18 912	18 212	18 667	17 338	19 505	19 115	20 780
Public works and buildings	10 293	12 825	14 775	14 568	17 033	16 630	15 036	14 890	16 517	17 800
Public buildings	6 344	7 970	8 800	8 770	9 300	9 100	8 800	8 735	9 280	10 000
National wealth	934 774	1 114 927	1 220 992	1 271 110	1 326 673	1 381 074	1 428 440	1 507 231	1 592 817	1 703 675
Industrial sector	441 675	504 474	547 700	566 357	589 688	609 967	621 455	653 541	689 716	753 165
Private sector ²	334 786	403 167	442 068	460 342	476 819	495 127	514 883	546 685	575 606	601 792
Public works and buildings	158 313	207 286	231 224	244 411	260 166	275 980	292 102	307 005	327 495	348 718

1. Provisional data.

2. Residential housing.

Source: National Economic Institute.

Table E. **Gross fixed asset formation and national wealth**

Volume indices, 1990 = 100

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹
Gross fixed asset formation, total	97.1	100.0	102.0	90.7	80.3	79.5	77.2	98.4	108.7	134.2
Classification by end-use:										
Industrial asset formation	94.3	100.0	103.6	85.8	64.6	64.9	69.7	106.6	125.6	168.6
Agriculture	113.5	100.0	120.7	94.8	106.6	97.2	81.7	133.3	145.6	144.8
Fishing	182.1	100.0	101.5	201.8	66.4	100.1	44.7	141.8	48.8	122.8
Fish processing	82.8	100.0	77.7	74.5	83.6	115.5	147.4	211.6	187.0	225.9
Manufacturing other than fish processing	125.3	100.0	120.7	104.4	86.7	88.7	99.4	130.8	147.8	160.4
Electricity and heating	96.4	100.0	101.1	50.8	44.0	37.6	41.7	62.5	115.1	205.1
Water supply	77.4	100.0	110.6	82.3	82.8	66.2	76.0	68.1	89.5	88.0
Various machinery and equipment for construction	80.2	100.0	135.9	82.5	72.5	56.2	76.4	111.2	137.6	169.5
Trade, restaurants and hotels	106.7	100.0	85.2	84.5	73.1	65.1	68.5	81.0	116.6	133.7
Transport and storage	56.3	100.0	98.8	61.8	31.3	22.0	34.3	39.8	42.5	85.3
Postal and telecommunications	101.3	100.0	135.8	167.7	173.9	236.3	211.7	209.8	214.5	350.6
Computers and office equipment	80.6	100.0	110.6	105.5	103.5	130.6	156.4	193.5	192.1	230.1
Residential construction	100.6	100.0	95.1	91.9	86.7	86.7	78.1	83.7	78.5	82.5
Public works and buildings	101.4	100.0	107.3	103.4	118.3	112.7	98.7	95.1	101.4	105.13
Public buildings	100.6	100.0	102.6	99.9	103.6	98.9	92.7	89.2	92.3	95.41
National wealth	97.7	100.0	102.4	103.9	104.7	105.6	106.3	108.2	110.1	114.03
Industrial sector	98.0	100.0	102.1	102.7	101.6	100.7	100.3	102.6	106.2	112.73
Private sector ²	97.8	100.0	101.9	103.6	105.0	106.4	107.4	108.5	109.5	110.56
Public works and buildings	96.4	100.0	103.9	107.5	111.8	115.8	118.7	121.3	120.7	123.95

1. Preliminary data.

2. Residential housing.

Source: National Economic Institute.

Table F. **Central government and social security income and expenditure**
 Kr million, accruals basis

	1990	1991	1992	1993	1994	1995	1996	1997	1998 ¹
Current revenue	106 143	119 375	121 734	119 048	124 974	130 530	143 643	150 091	166 252
Direct taxes	29 267	38 199	39 345	39 763	42 778	46 871	53 237	54 286	59 467
Indirect taxes	69 562	72 601	72 143	70 105	71 816	74 115	81 149	86 187	96 773
Other	7 314	8 575	10 246	9 180	10 380	9 544	9 257	9 618	10 012
Current expenditure	103 880	113 545	116 743	119 301	123 304	131 188	136 479	136 480	146 731
Public consumption	54 864	60 537	60 696	63 445	65 925	70 005	72 304	72 129	83 004
Interest expenditure	11 370	12 962	12 875	13 678	14 795	16 499	15 812	15 606	14 298
Current transfers and subsidies	37 646	40 046	43 172	42 178	42 584	44 684	48 363	48 745	49 429
Current balance	2 263	5 830	4 991	-253	1 670	-658	7 164	13 611	19 521
Capital revenue	1976	2 346	2 330	2 448	2 669	2 825	3 071	3 203	3 341
Capital transfers	468	610	517	531	688	729	817	815	800
Consumption of fixed capital	1 508	1 736	1 813	1 917	1 981	2 096	2 254	2 388	2 541
Capital expenditure	16 540	19 186	16 828	15 891	18 144	14 117	17 538	13 934	16 555
Gross fixed investment	6 338	7 100	6 434	8 025	8 290	7 316	8 486	6 336	8 688
Capital transfers	10 202	12 086	10 394	7 866	9 854	6 801	9 052	7 598	7 867
Capital balance	-14 564	-16 840	-14 498	-13 443	-15 475	-11 292	-14 467	-10 731	-13 214
Financial balance	-12 301	-11 010	-9 507	-13 696	-13 805	-11 950	-7 303	2 880	6 307
Net increase in claims	-1 053	5 827	-1 934	-780	1 603	3 582	2 935	419	..
Borrowing requirement	11 248	16 837	7 573	12 916	15 408	15 532	10 238	-2 461	..

1. Provisional.

Source: National Economic Institute.

Table G. **Fish catch, wages and prices**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fish catch (thousand of metric tons)										
Total	1 495	1 505	1 049	1 575	1 716	1 555	1 609	2 059	2 199	1 690
Demersal species	692	673	655	585	585	558	511	502	477	518
Herring	97	90	79	123	117	130	110	100	71	77
Capelin	653	694	260	798	941	754	716	1 179	1 319	752
Crustaceans	40	44	50	61	70	85	93	101	94	75
Wages and prices (indices 1990 = 100)										
Hourly wages	92.9	100.0	108.2	114.4	115.8	116.7	121.7	129.2	..	..
Consumer price index	87.1	100.0	106.8	110.8	115.3	117.0	119.0	121.7	123.9	126.0
Credit term index	86.6	100.0	107.5	111.5	114.3	116.4	118.2	120.9	123.0	125.2
Building cost	83.9	100.0	108.0	111.0	113.2	116.2	119.8	125.2	131.1	135.8
Export price of fish products (1986 = 100) ¹										
Groundfish: frozen on shore	108.2	125.2	142.2	134.4	118.4	113.2	112.7	111.4	116.9	129.2
frozen at sea	133.4	155.5	179.2	178.6	159.5	150.8	158.5	167.3	163.3	176.2
salted	103.9	128.0	142.4	135.7	106.6	109.1	113.5	118.1	115.8	131.5
Fishmeal and oils	130.6	113.7	123.5	121.2	104.7	103.8	122.6	137.7	163.8	196.5

1. The index shows the development of export prices (fob) in terms of SDR's.

Source: National Economic Institute and Central Bank of Iceland, Economic Statistics.

Table H. **Foreign trade, total and by area**
 US\$ million, monthly rates

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total imports, cif	116.7	138.7	143.0	140.4	112.4	122.7	146.3	169.5	173.6	207.8
OECD countries	107.1	126.5	132.0	130.0	103.3	113.0	133.3	155.7	158.6	188.2
EU	72.5	83.4	89.4	81.2	65.2	71.5	87.3	95.8	100.6	116.9
Other Europe	11.4	10.4	10.7	22.8	16.9	20.2	19.4	29.2	26.2	26.6
United States	13.0	19.7	14.8	11.6	10.5	10.9	12.3	16.1	17.1	22.9
Eastern Europe	0.0	0.1	0.1	0.1	0.2	0.4	1.2	0.9	1.2	2.0
Non-oil developing countries	9.5	12.0	10.9	10.1	8.7	9.1	11.5	12.4	13.4	16.2
Total exports, fob	116.7	132.6	129.1	127.3	116.4	135.3	151.3	158.0	154.7	159.8
OECD countries	106.2	123.6	123.6	121.5	110.6	130.4	143.3	145.2	142.1	150.6
EU	69.6	93.8	89.0	90.7	71.9	83.2	94.8	97.9	94.1	103.7
Other Europe	11.2	8.1	7.5	6.1	8.3	6.4	8.5	9.6	13.3	15.4
United States	16.4	13.1	16.1	14.4	18.5	19.6	18.6	19.2	22.7	21.0
Eastern Europe	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	1.2	1.2
Non-oil developing countries	10.0	8.0	4.3	4.6	4.6	3.8	7.0	11.5	9.9	6.4

Source: OECD, *Foreign Trade Statistics, Series A*.

Table I. **Foreign trade by commodity group**

US\$ million

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Imports										
Total	1 395.2	1 654.8	1 739.0	1 682.0	1 407.0	1 472.4	1 757.6	2 041.5	2 018.8	2 544.2
Transport equipment, SITC 78-79	183.8	260.8	220.7	246.3	124.1	151.1	187.1	260.8	239.3	363.9
Other imports	1 211.4	1 394.0	1 518.3	1 435.7	1 282.9	1 321.3	1 570.5	1 780.7	1 779.5	2 180.4
Food and live animals, SITC 0	110.7	122.6	126.8	127.5	132.3	137.8	168.9	178.0	166.5	212.9
Manufactured goods, SITC 6	254.2	275.5	304.7	278.6	249.5	251.5	298.3	342.0	332.9	391.2
Machinery and apparatus, SITC 71-77	269.9	320.0	371.9	332.2	285.1	313.4	381.8	471.1	516.1	674.3
Other goods	576.6	676.0	714.9	697.4	616.0	618.6	721.5	789.5	764.0	902.0
Exports										
Total	1 400.9	1 590.7	1 571.4	1 527.8	1 456.2	1 613.8	1 802.0	1 887.9	1 854.0	1 919.2
Fish products, total	994.3	1 197.7	1 239.5	1 213.0	1 105.2	1 213.1	1 296.2	1 390.6	1 323.2	1 394.9
Frozen fish fillets	398.2	522.5	589.9	569.8	521.6	508.4	504.8	464.8	438.8	517.6
Herring and capelin salted	21.8	26.0	14.8	11.1	8.8	11.9	12.0	15.8	10.7	11.2
Herring and capelin meal	63.1	53.9	20.4	72.8	72.9	63.3	72.6	120.7	121.2	133.1
Agricultural products	23.9	30.5	27.5	28.3	24.0	30.5	31.8	38.3	29.7	27.6
Aluminium products	180.1	164.3	136.7	139.8	122.4	154.9	190.1	181.8	214.7	258.8
Other manufactured products	164.8	159.8	133.3	122.7	122.5	145.9	196.2	194.3	191.6	183.2

Source: Central Bank of Iceland and OECD, *Foreign Trade Statistics, Series C*.

Table J. **Money and credit**

IKr million, end of period

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Central Bank										
REPO yield	..	17.7	20.4	12.5	8.4	5.3	6.9	6.6	6.9	7.3
Net position of government	8 237	3 594	8 748	1 551	4 444	13 849	12 299	3 680	6 413	-8 171
Money supply										
M1 ¹	19 725	24 644	29 553	29 942	31 564	34 955	38 321	41 558	48 357	56 879
M2 ²	92 545	105 731	116 697	124 391	129 905	113 725	111 121	113 417	116 655	130 112
M3 ³	112 998	129 802	148 436	154 101	164 127	167 918	171 663	183 406	199 335	229 498
Deposit money banks										
Required reserves and other funds with Central Bank	14 711	11 223	10 418	9 255	7 185	7 070	6 852	7 728	8 646	10 683
Demand deposits	16 750	21 586	26 314	26 350	27 658	30 315	33 152	36 083	42 606	50 556
Net liquid foreign assets	2 943	2 379	3 506	3 413	5 851	6 182	2 143	2 893	-1 298	-5 375
Lending (excl. foreign funds relent) of deposit money banks										
Total	118 130	136 539	152 927	159 640	172 020	181 542	193 578	211 453	245 043	..
<i>of which to:</i>										
Agriculture	9 254	10 589	10 768	8 891	8 252	7 805	7 491	6 830	7 253	..
Fishery and fish processing	19 261	17 938	19 306	19 545	20 254	19 981	26 279	31 446	33 815	..
Manufacturing and commerce	34 518	36 038	40 854	41 929	41 371	41 628	41 642	44 864	46 893	..
Dwellings	11 325	12 915	14 051	14 771	14 409	14 036	13 869	16 419	17 606	..
Foreign exchange										
Central Bank net foreign assets	20 005	23 412	24 066	31 053	28 662	14 956	13 987	31 124	27 867	26 066
Deposit money banks' net short- term foreign position ⁴	-11 512	-8 596	-10 008	-12 898	-9 288	-4 294	-8 972	-19 622	-28 736	-45 123

1. Notes and coins plus demand deposits.

2. M1 plus general savings deposits.

3. M2 plus time deposits.

4. Includes short-term loans relent in Iceland.

Source: Central Bank of Iceland.

Table K. **Public sector**

	1960	1970	1980	1990	1992	1994	1996	1997	1998 ¹
General government accounts (as a per cent of GDP)									
Current revenue	28.2	30.2	33.1	36.0	37.8	35.3	36.6	36.5	36.9
Tax revenue ²	27.2	29.6	30.9	33.5	34.9	32.6	34.2	34.1	34.6
Interest income	..	..	1.9	1.6	1.7	1.6	1.4	1.2	1.2
Capital revenue	..	..	0.2	0.7	0.8	0.8	0.8	0.8	0.7
Total expenses	25.8	29.9	32.4	40.0	41.4	40.9	39.0	37.3	37.2
<i>of which:</i>									
Current expenditure	..	..	26.0	33.3	34.8	34.4	34.0	32.8	32.5
Current transfers	..	..	4.3	7.0	7.6	7.8	7.6	7.2	6.8
Subsidies	..	..	3.1	3.6	3.3	2.2	2.1	1.9	1.8
Capital expenditure	..	..	6.4	6.7	6.6	6.5	5.0	4.5	4.7
Gross fixed investment	..	..	3.7	3.9	4.0	4.1	3.2	3.0	3.3
Capital transfers	..	..	2.7	2.7	2.6	2.4	1.8	1.5	1.4
Tax receipts as a per cent of general government total taxes									
General government									
Direct taxes	31.5	30.9	26.9	35.2	39.7	44.2	45.9	47.5	47.7
Indirect taxes	68.5	69.1	73.1	64.8	60.3	55.8	54.1	52.5	52.3
Central government and Social security									
Total taxes	77.5	77.2	79.8	80.9	80.3	80.9	80.9	77.6	77.1
Direct taxes	13.3	16.8	15.9	24.0	28.3	30.2	32.0	30.0	29.3
Indirect taxes	64.2	60.4	63.9	57.0	52.0	50.7	48.8	47.6	47.7
Local government									
Total taxes	22.5	22.8	20.2	19.1	19.7	19.1	19.1	22.4	22.9
Direct taxes	18.2	14.1	11.0	11.2	11.4	14.1	13.9	17.5	18.3
Indirect taxes	4.3	8.7	9.2	7.9	8.3	5.1	5.2	4.9	4.6

1. Provisional

2. Direct and indirect taxes.

Source: National Economic Institute and Sögulegt Yfirlit Hagtalna, 1945-1988.

Table L. **Labour market**¹

	1990	1991	1992	1993	1994	1995	1996	1997	1998 ²
Working age population									
15 to 64	164.1	166.3	168.1	169.4	170.9	172.0	173.4	175.1	177.7
16 to 74	..	173.4	175.0	177.8	179.0	179.8	180.7	182.4	185.0
Labour force									
Man-years	127.2	126.7	126.9	127.7	128.9	130.3	132.4	135.0	137.0
ILO definition	..	140.5	143.0	144.2	145.4	149.0	147.7	147.9	152.2
Unemployment rates									
Total Man-years	1.8	1.5	3.0	4.4	4.8	5.0	4.4	3.9	2.8
Total ILO definition	..	2.5	4.3	5.3	5.3	4.9	3.7	3.9	2.8
Males ILO definition	..	2.3	3.8	5.0	5.1	4.8	3.4	3.3	2.3
Females ILO definition	..	2.9	4.9	5.6	5.5	4.9	4.1	4.5	3.3
Employment									
Man-years	124.9	124.8	123.0	122.1	122.7	123.7	126.6	129.8	133.2
ILO definition	..	136.9	136.9	136.6	137.7	141.8	142.2	142.2	148.0
Participation rates									
Total Man-years	77.5	76.2	75.5	75.4	75.4	75.7	76.4	77.1	77.1
Total ILO definition	..	81.0	81.8	81.1	81.3	82.9	81.6	81.1	82.3
Males Man-years	89.1	87.4	86.4	85.8	85.0	86.0	86.3	86.7	87.1
Males ILO definition	..	87.4	87.6	85.9	85.8	87.7	86.5	86.2	87.1
Females Man-years	65.5	64.7	64.2	64.6	65.5	65.1	66.1	67.1	66.7
Females ILO definition	..	74.6	75.8	76.1	76.7	77.9	76.8	75.8	77.5

1. Aged 15 to 65 except for ILO definitions where 16 to 74.

2. Estimates

Source: National Economic Institute.

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