INTERNATIONAL MONETARY FUND

Staff Country Reports

June 1995

IMF Staff Country Report No. 95/47

Iceland—Recent Economic Developments

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INTERNATIONAL MONETARY FUND

ICELAND

Recent Economic Developments

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and Martin Muhleisen (all EUI)

Approved by European I Department

April 14, 1995

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Iceland: Basic Data

Demographic and other data

Area	103,000 square kilometers
Population (December 1994)	266,786
Natural rate of increase (10-year average)	1.04 percent
Life expectancy at birth (1992)	
Males	75.08 years
Females	80.79 years
Infant mortality (aged under 1, in percent, 1984)	0.6 percent
Population per physician (1990)	357
GDP per capita (1993)	SDR 16,463

<u>Composition of GDP in 1993, at current prices</u>	<u>In billions of kronor</u>	<u>Distribution in percent</u>
Private consumption	249.0	60.5
Public consumption	84.0	20.4
Total investment (including stockbuilding)	65.5	15.9
Total domestic demand	398.5	96.8
Exports of goods and services	135.0	32.8
Imports of goods and services	122.8	29.8
GDP at market prices	411.7	100.0

<u>Selected economic data</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
	<u>(Annual percentage change)</u>		
Output and unemployment:			
Real GDP at market prices	-3.3	0.9	2.0
Manufacturing production	-3.7	-1.7	5.6
Average unemployment (in percent)	3.1	4.4	4.8
Earnings and prices:			
Hourly wage rate: skilled and unskilled labor	4.4	1.6	0.0
Cost of living index	4.0	4.1	1.6
Money and interest rates			
M1 (end-period)	1.3	5.4	11.1
M3 (end-period)	3.8	6.5	2.2
3-month Treasury bill yield (period average)	10.0	8.9	4.9
5-year indexed government bond (real yield)	7.6	4.9	5.1
	<u>(In billions of kronor)</u>		
Fiscal accounts:			
Treasury receipts	103.4	103.2	109.5
Treasury expenditure	110.6	112.9	117.0
Treasury net borrowing requirement	7.2	10.7	15.3
(In percent of GDP)	1.8	2.6	3.6
Balance of payments:			
Current account balance	-12.4	0.2	9.2
(In percent of GDP)	-3.1	0.0	2.1
Trade balance	-0.1	12.3	20.5
Exports	87.8	94.7	113.5
Imports	87.9	82.4	93.0
Services and transfers (net)	-12.3	-12.1	-11.3
Gross reserves, official basis			
(Millions of SDR, end-period)	364.3	311.7	244.2
Exchange rate (ISK/SDR, end-period)	87.9	99.9	99.7

Sources: National Economic Institute; Central Bank of Iceland; and budget documents.

I. Introduction and Summary 1/

For over four decades following independence in 1944, Iceland's resource-based economy was characterized by rapid economic growth, which was mainly driven by strong fish catches and favorable trends in the terms of trade. Expansionary macroeconomic policies led to high resource utilization which kept unemployment very low while inflation was well into double digits. As the economy relied heavily on the fisheries, developments in this sector were usually translated into movements of the real exchange rate. Iceland suffered from a "Dutch disease" effect, in that favorable conditions for the fisheries led to a high real exchange rate that hurt other export sectors, notably manufacturing. As a result, diversification efforts made limited headway, investment declined substantially relative to GDP, and total factor productivity slowed down markedly. The financial system remained relatively undeveloped with the public sector playing a substantial role in resource allocation.

Macroeconomic conditions turned for the worse after 1987. Following a period of overheating, Iceland's economy suffered its most prolonged recession during 1987-92 as the economy continued to be buffeted by severe adverse shocks. Reflecting cuts in fish catch quotas (necessitated in part by past overfishing) and declining world market prices for both fish and Iceland's power-intensive exports (aluminum and ferro-silicon), real marine production and the terms of trade both declined by about 15 percent. These shocks contributed to prolonged weakness in economic activity, a rise in unemployment from below 1 percent to over 4 percent and the emergence of a large external current account deficit. Despite this adversity, the authorities persevered with stability-oriented policies that had been adopted in the late 1980s. Wage moderation fostered by the weakness of activity and the adoption of a fixed exchange rate policy contributed to bringing inflation down from double digits to under 4 percent by 1992. At the same time, structural reforms especially in the financial sector contributed to increasing the role of market forces in the allocation of resources.

Macroeconomic performance in the last two years improved significantly and Iceland is now enjoying a moderate, mainly export-led, recovery. Real output has for a second year in a row risen beyond expectations, unemployment has declined, the external current account has moved into surplus for the first time in many years, and earlier successes in reducing inflation have been consolidated, with the underlying inflation rate now close to 1 percent. In the context of improving economic conditions, the expiration of the 1993 national wage agreement--which provided virtually no increases through end-1994--was marked by increasing signs of labor unrest as unions pressed to recoup real wage losses, but with the help of fiscal concessions granted by the Government, a new national wage agreement calling

1/ Prepared by Ousmane Doré.

for increases averaging 6.9 percent over two years was concluded by the social partners in February 1995.

Monetary policy continues to be oriented toward maintaining a stable exchange rate, notwithstanding two devaluations, in November 1992 (in the wake of the European currency turmoil) and June 1993 (in response to a deterioration in the fisheries outlook). The authorities' policy of stable, but adjustable, exchange rates has played a major role in reducing inflation to low levels, while accommodating adjustment to real shocks and maintaining adequate competitiveness. The krona was supported by heavy central bank intervention in 1994 and early 1995; it remained relatively stable for much of 1994, but tended to weaken inside its fluctuation band from late 1994. Two events have characterized monetary policy developments in recent years: the development of domestic money market and the establishment of a foreign exchange market. The development of these two markets allowed the central bank to strengthen its instrument of indirect monetary control and to operate under conditions of unrestricted capital movements. As of January 1, 1994, all restrictions on long-term securities transactions were lifted and those on short-term capital movements were eliminated at the start of 1995.

Since late 1993, the authorities have been actively intervening in money and bond markets to hold down interest rates. This action led to a sharp decline of real yields on indexed government securities as well as a decline in nominal rates on Iceland's fledgling money market to their lowest level ever in mid-1994. In the context of free capital movements, the authorities' interest rate policies, coupled with the effects of portfolio diversification, contributed to substantial capital outflows, which more than offset the current account surplus and led to a significant decline in the central bank's net reserve position. The authorities allowed short-term interest rates to rise, notably during the period after the remaining capital account restrictions were removed at the start of 1995, but have maintained efforts to hold down long-term rates.

A major task of economic management has been to rein in persistent budget deficits that have led to a rapid rise in public debt. During the mid-1980s, while the economy was growing strongly and resource use was at unsustainably high levels, the treasury deficit moved from a rough balance to a deficit averaging 2 percent a year, and moderate deficits have continued. An important element of budgetary policy has been the adjustments--often to expedite national wage agreements--made after the budget's approval, leading to recurrent fiscal slippages. In the 1995 budget proposal, an indicative long-term strategy for balancing the budget through expenditure restraint over the medium-term was presented by the Ministry of Finance.

Over the past decade, Iceland has considerably reduced government involvement in resource allocation while making headway on a number of elements of market-oriented structural reforms. These have featured efforts to strengthen fisheries management, steps to develop domestic financial

markets, and the complete liberalization of external capital transactions. Nevertheless, public sector financing and regulation continue to play a larger role in the economy than in most other industrial countries and competition in the largely state-owned banking system remains limited. Iceland has ratified the agreement establishing the World Trade Organization (WTO) and its participation in the European Economic Area (EEA) provides a number of benefits, including access to the EU single market. ^{1/}

This paper reviews economic development in Iceland over the period since the last Article IV consultation discussions (October 1993). The next chapter (Chapter II) describes developments in the real economy. Chapter III examines monetary and exchange rate developments and policies and the transmission of monetary policy. Chapter IV provides a detailed look at recent budgetary outcomes and the stance of fiscal policy for the current year. The main text is complemented in the appendix by four articles and notes. The first article (Appendix I) looks at the determinants of past and present growth in Iceland. In the second article (Appendix II), indicators of fiscal sustainability are used to argue for better public finances in Iceland, while Appendix III examines the Icelandic tax structure. Finally, Appendix IV looks at the role of financial indexation in relation to interest rates in Iceland.

II. Developments in the Real Economy ^{2/}

1. Overview

Helped by an increasingly favorable external environment and a subsequent surge of exports, Iceland has emerged from the last recession with GDP growing by 0.9 percent in 1993, and by 2 percent in 1994. ^{3/} Despite a record low in the stock of Icelandic cod, fish exports increased significantly, in particular after the resumption of fishing in distant waters in 1994. With imports relatively subdued, the external current account balance became positive for the first time since 1986. Although the krona was devalued twice in 1992-93, the inflation rate continued to fall after a moderate wage agreement was concluded in early 1993. Consequently, confidence in the recovery increased and led to a strong rebound of private consumption. The growth in output translated into increasing employment in both the private and public sector and, as a result, the unemployment rate passed its peak in early 1994 and has continued falling since then.

The shift to a positive current account balance reflects both stagnating investment and increased savings. Although private investment increased somewhat in 1994, owing to lower long-term interest rates and a

^{1/} The economic impact of the EEA agreement on Iceland was analyzed in the 1994 Recent Economic Development paper (SM/94/7).

^{2/} Prepared by Martin Mühleisen.

^{3/} The determinants of Icelandic growth are investigated in Appendix I.

booming fishing sector, the ratio of total investment to GDP fell to a new record low. At the same time, the high indebtedness of private households has restrained expenditure and contributed to an increase in the overall savings rate.

2. Domestic demand and imports

Following two years of decline, total domestic demand and imports are estimated to have grown by 0.8 percent and 1.7 percent, respectively, in 1994. This turnaround was mainly caused by an upswing in employment that halted the decline of real disposable income and fostered demand for both domestic and foreign consumption goods. At the same time, investment also ceased to decline after having fallen sharply during the two previous years; public consumption continued to grow, although by a smaller rate than in 1993 (Chart 1, Table A1).

Private consumption growth is estimated at 2.1 percent for 1994, rebounding strongly from a decline of 4.5 percent in 1993; however, private consumption still remains some 10 percent below the level reached during the last peak in 1987. Most notably, falling real disposable income (Chart 2), increasing indebtedness of households, and rising unemployment have contributed to the decline in consumption between 1987 and 1993. In 1994, disposable income remained stable after export earnings improved strongly during the year; moreover, unemployment started to decline and price increases were kept small in the light of moderate wage increases and a stable exchange rate. These developments promoted consumer confidence and led to an upswing in private demand (reaching 5 percent growth year-on-year in the last quarter of 1994), but the depressed level of real wages and the still increasing debt burden of households prevented an even stronger growth rate.

Public consumption and investment contributed little to GDP growth in 1994. In particular, the slowdown in the growth rate of public consumption resumed after a temporary increase in 1993. However, some unplanned expenditures had to be met during the year, in particular in the health sector, and local government consumption continued to increase strongly. As a result, public consumption grew by 1.1 percent in 1994, compared to 2 percent in 1993. At the same time, public investment dropped by 7 percent, following a strong increase during 1993. ^{1/} However, the overall level of public investment still remains some 7 percent higher than in 1992.

With long-term interest rates declining and export prospects improving, private investment increased slightly in 1994, growing by 2 percent in both the industrial and housing sectors (Chart 3, Table A2). Owing to the

^{1/} In 1993, the government facilitated a moderate wage agreement by introducing a public roads investment program, the main purpose being to fight rising unemployment.

CONTRIBUTIONS TO GDP GROWTH (Changes in percent of previous year's GDP)

Source: National Economic Institute.

1/ Estimates.

- 4b -

CHART 2
ICELAND

INCOME, CONSUMPTION, AND IMPORTS

Source: National Economic Institute.

1/ Estimates.

- 4c -

CHART 3
ICELAND

SAVING AND INVESTMENT

(In percent of GDP)

Source: National Economic Institute.

1/ Estimates.

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decline of interest rates on government and housing bonds towards the end of 1993, and following the strong growth of marine exports during 1994, investment picked up most strongly in residential construction and in the fisheries. However, the ratio of private investment to GDP has continued to fall to a new record low, although the pace of the decline was less strong than during 1992-93 when investment dropped by 40 percent.

With domestic demand and exports rising, and the terms of trade remaining constant, imports also picked up during 1994, increasing by 1.7 percent, compared to an 8 percent fall in both 1992 and 1993. Imports rebounded more strongly than domestic demand in 1994 (see Chart 2), owing both to purchases of aircraft and ships ^{1/} and to an increase in non-oil general imports of 3.8 percent in the wake of rising private consumption. As a consequence, the net impact of domestic demand and imports on GDP growth was negative, leaving exports as the main driving force behind growth (see Chart 1).

3. Output and exports

Following a protracted period of stagnation, GDP growth reached an estimated 2 percent in 1994, its highest level since 1987. The recovery was led by a 6.3 percent growth of the export sector; increases in the fisheries were strongest but favorable price and exchange rate developments resulted also in higher export revenues of the energy-intensive industrial and small-scale manufacturing sectors.

Output remains heavily dependent on the fishing sector which had an estimated share of 78.5 percent of 1994 exports, and which contributes directly to some 15 percent of total GDP (Table A3). ^{2/} During 1994, price increases and a move towards products with higher value-added offset a 3.6 percent fall in the total fish catch, resulting mainly from lower cod and capelin catches (Table A4). Growth of fish exports is estimated at 2.5 percent, bringing the fish export volume back to a level last reached in 1987. However, the better-than-expected performance of the fishing sector rested on the resumption of fishing in distant waters, necessitated by the still diminished cod stock in the Icelandic exclusive economic zone. The total allowable catch quota for cod--the dominant export species--has fallen constantly in recent years and, for the fishing year 1994-95, amounted to a mere 40 percent of the 1987 level.

^{1/} Given the small size of the Icelandic economy, purchases of large investment goods have a relatively strong impact on the current account and aggregate investment. Excluding ships and aircraft, industrial investment has fallen by 7 percent in 1993 and 4.3 percent in 1994 in current prices.

^{2/} The overall contribution of the fishing sector is higher than 15 percent because fish-related activities in the services and manufacturing sector are not included in this estimate.

Production in other export sectors increased due to a boom in the world economy and a strong improvement in Iceland's competitive position (the latter owing to a cumulative devaluation of the krona by 14 percent in 1992-93). Aluminum exports rose by 5 percent in real terms ^{1/}; soaring world market prices, however, led to a value increase of 28.9 percent. Ferro-silicon production fell by 4.4 percent in 1994 after a strong 27.5 percent growth in 1993, but the export value remained constant. Exports of manufacturing goods surged in 1994, picking up by 14.3 percent after a cumulative decline of 30 percent since 1989. Overall, the output of the manufacturing sector rose by 7.3 percent, with electronic products and fisheries equipment being among the products which performed most successfully during the year (Table A5).

In the services sector, the average growth rate reached 2.4 percent in 1994, following a decline of 4.7 percent and 2 percent in 1992 and 1993, respectively. Helped by the favorable exchange rate, and driven by an increasing trend towards adventure and ecological tourism, visitor arrivals in Iceland have more than doubled in the past ten years, reaching growth rates of more than 10 percent in both 1993 and 1994. Receipts from tourism have recently grown at a less rapid rate, reflecting shorter durations of stay.

4. Savings, investment, and the current account balance

Following a strong decline in the terms of trade in 1992-93, the external current account balance turned positive for the first time since 1986, amounting to a surplus of 2.1 percent of GDP in 1994. The surplus was mainly due to the increase of national savings which, at an estimated 16.8 percent of GDP, also went up to a level last reached in 1986. The investment ratio fell slightly from 15.8 percent in 1993 to 15.6 percent in 1994.

The Icelandic savings rate has only recently begun to climb after falling for most of the past 15 years, passing its trough in 1991 (at 14.2 percent of GDP). Factors behind the recent increase were threefold. First, the indebtedness of private households grew from 24.1 percent of disposable income in 1980 to an estimated 136.5 percent in 1994, encouraged by financial sector liberalization. Therefore, despite the parallel accumulation of considerable assets, Icelandic households face the need to repay debt through increased savings. Second, with inflation rates strongly reduced since 1987, real short-term interest rates have become positive and increased to comparatively high levels. Third, public sector savings finally ceased to fall in 1991, fluctuating around a level of 3 percent of GDP since then.

^{1/} Figures for single export sectors are based on data through November 1994.

Although both savings and investment declined strongly in the past, savings were consistently lower than investment, yielding an average current account deficit of 2.6 percent of GDP during the last decade. The resulting accumulation of external debt has caused net interest payments to average around 3.6 percent of GDP since 1986, remaining roughly stable at this level since 1989 because a rising debt to GDP ratio has been offset by falling interest rates overseas.

The improvement of the current account balance in the last three years is attributable to a strong increase in the trade balance (Chart 4, Tables A6-A9), caused mainly by two exchange rate devaluations in 1992-93. At the same time the terms of trade have fallen by 9 percent since 1991. However, whereas fish prices fell on average by 18.3 percent in SDR terms during the last three years, they have started to increase strongly in 1994, improving by 8 percent between April and December. Similarly, aluminum prices rose by 60 percent during the year. Therefore, with import prices rising by about 5 percent, the terms of trade remained stable in 1994.

Foreign direct investment in Iceland has remained rather low, partly as a consequence of the remaining restrictions in the fishing and energy sector. Although the current situation has been favorable for small-scale investment in the manufacturing sector, the world market conditions relevant to the energy-intensive sector (which dominates investment due to its size) have not yet led to the realization of new investment projects. Although the world aluminum price has crossed the threshold at which the construction of a new smelter has been considered profitable, the final decision on the realization of this project will depend on the perceived sustainability of the price level.

5. Wages and prices

Price and wage inflation continued on their downward trend in 1994. The inflation rate fell to an unprecedented level of 1.6 percent, aided by a national wage agreement that provided for virtually no wage increases in 1993-94. As a result, real wages fell by 2.9 percent between 1992 and 1994, and with two devaluations the real effective exchange rate, as measured by relative unit labor costs, decreased by 16.3 percent over the same period.

Iceland has been successful in fighting high and unstable inflation rates that were prevalent during most of the past two decades. With a strong link between the volume of fish exports and the real effective exchange rate, and strong trade unions that were effective in obtaining high nominal wage increases, inflation rates were highly volatile and reached well above 50 percent during the early 1980s. ^{1/} The sharp decline in inflation over the last years (from 21.1 percent in 1989 to an average 2.4 percent in 1992-94) can mainly be attributed to the decision to fix the exchange rate in late 1989. The effects of the two devaluations in 1992-93

^{1/} This relationship was explained in detail in SM/94/7.

were only partly passed through, ^{1/} and thus largely confined to imported goods. Despite the recent slowdown in inflation, however, the Icelandic price level remains high on an international basis, in particular in the agricultural sector which has been largely sealed off from international markets.

Real earnings fell strongly after a surge during the 1987 boom, the aggregate decline amounting to 11.9 percent by 1993 (Chart 5, Table A10). The decline was strongest in 1989, but subsequent nominal wage increases fell below inflation rates in every year but 1991-92. The real wage reductions were effected through centralized national wage agreements, often including the Government, which facilitated moderate outcomes through fiscal concessions. Against the background of rising unemployment, the agreement reached in May 1993 provided for no nominal wage increases over an 18-month period to the end of 1994. The outcome was supported by a public roads investment and employment creation program which helped temporarily reduce the unemployment rate. In early 1995, several trade unions demanded significantly higher nominal wage increases than in the recent past. The final settlement in February provided for an average wage increase of 6.9 percent over a two-year period (11.3 percent for lower income groups ^{2/}) and was again supported by government fiscal concessions (described below in the chapter on public finance).

Due to restrained wage and price increases, the devaluations of the krona in 1992-93 led to a strong decrease of the real effective exchange rate which fell to a level last reached in 1971. At the same time, corporate taxation was reduced in the 1992-93 budgets, leaving the Icelandic economy in a highly competitive situation.

6. Employment and unemployment

The Icelandic labor market continues to be one of the most flexible in Europe. However, this has not prevented unemployment from rising to a record level in early 1994, despite the implementation of a public sector job creation program. A number of factors that contributed to low unemployment in the past have disappeared. With the strengthening of activity, however, employment picked up in the course of 1994 (Chart 6) and unemployment started to decline.

^{1/} The inflation rate, measured on a year-on-year basis, peaked at 5.8 percent in November 1993 and fell continuously until November 1994, reaching -0.1 percent.

^{2/} Owing to similar higher wage increases for low-income groups in the past, wage inequalities continue to be of a relatively minor order. Since 1990, wages of unskilled workers have increased by about 1 percentage point more on aggregate than for skilled workers, and by only 2.5 percentage points less than white collar salaries.

- 8a -

CHART 4
ICELAND

CURRENT ACCOUNT AND TERMS OF TRADE

Source: National Economic Institute.

1/ Estimates.

- 8b -

CHART 5
ICELAND

WAGES AND PRICES

(Annual percentage change)

Source: National Economic Institute.

- 8c -

CHART 6
ICELAND

EMPLOYMENT AND UNEMPLOYMENT

Source: National Economic Institute.

1/ Estimates.

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Employment peaked in 1987 and subsequently fell by 3.4 percent, to some 137,000 persons in 1992. In 1993-94, employment grew by an aggregate 2.2 percent, the largest increase being in 1994 (1.4 percent). Some of this expansion can be attributed to a public labor market program which led to temporary job-creation, mainly in the construction sector. In 1994, job creation in the private sector was nevertheless larger than in the public sector (private employment increased by 1.7 percent, in particular in the fish-processing industry, whereas public employment grew by only 0.2 percent). This marks a contrast with the period 1987-93, during which employment in the public sector grew on average by 1.2 percent, whereas it declined by 0.6 percent in the private sector.

The labor market has seen a strong increase in unemployment in the last 3 years. The unemployment rate peaked at 7.5 percent in January 1994, at the time of a labor dispute in the fisheries, falling to 4.5 percent by the fourth quarter of 1994. Nevertheless, the average unemployment rate was 4.7 percent for 1994, compared to 4.3 percent for 1993. Unemployment is highest among the young (below 24 years) and unskilled, having reached 10 percent and 6.7 percent, respectively, in 1993. Unemployment insurance coverage and the replacement ratio have recently been increased; ^{1/} consequently, the incentives to work have somewhat declined, in particular for the lowest wage group. Apparently, the social structure of the Icelandic society has changed in a way such that employers are prepared to lay off workers earlier during recessions than in the past; additionally, a lack of controls--in particular in the countryside--may encourage greater misuse of the benefit system. Most of the unemployment has occurred in the rural fishery sector, causing people to move to the capital in the hope for employment. Vacancies, however, have remained scant and consequently, the share of long-term unemployment in the total has been increasing from 6 percent in 1991 to around 17 percent in 1994.

Despite the recent changes in the benefit system, the Icelandic labor market is still characterized by a high degree of participation and flexibility. The labor force constitutes 81 percent of the population (76 percent for women), working hours are rather long by international standards (with an average of 46.5 hours per week), and firing costs are comparatively low due to the general absence of severance payments. Therefore, despite the negative trend in the recent past, Iceland has not so far experienced increases in the unemployment rate comparable to other European countries.

Nevertheless, the unemployment outlook remains uncertain. The low unemployment rates of the past have been supported by three special factors which have disappeared in recent years. First, whereas Icelandic surplus labor tended to migrate to other countries, in particular in Scandinavia,

^{1/} Unemployment insurance coverage has been extended to the self-employed, and unemployment benefits were raised to a fixed monthly net amount of ISK 48,200 (the current minimum wage is set at ISK 50,000).

during bad times, this possibility has all but been eroded by the critical situation of those labor markets. Moreover, with the development of a common European labor market, Icelandic workers now have to face competition from workers of other European countries abroad. Second, during the past decades, real wages were often adjusted through devaluations and high inflation rates, but with inflation reduced to single digits, it has become harder to achieve similar adjustments in the last years. Third, the female participation rate has fallen by 6 percentage points since 1987, and it is generally expected that it will soon begin to rise again, reflecting the indebtedness of private households. Overall, the labor force is expected to grow by about 1 percent over the next years.

7. Structural policies

Although Iceland considerably reduced government involvement in resource allocation during the past decade, its economy is still characterized by a general lack of competition in a number of sectors. Public sector financing and regulation continue to play a stronger role than in most other industrial countries. A large part of government involvement concerns the financial sector (see Chapter IV); some structural issues concerning fisheries and agriculture are considered below.

a. Fisheries

Although the fishing sector has diversified into other species, cod still remains of central importance to the Icelandic economy. However, the cod stock has suffered from severe over-fishing and policies for a sustained recovery of the stock will take some years to exert full effect. Although the quota system was effective in significantly bringing down yearly catch volumes, the total allowable catch (TAC) constantly exceeded the level recommended on conservation grounds by the Marine Research Institute (MRI), and the quota was itself surpassed by the actual catch, owing to a number of loopholes in the legislation. For 1993, the actual catch amounted to 15 percent more than the TAC, which in turn exceeded the MRI's recommendation by 13 percent. For 1994/95, the MRI recommended a catch volume of 130,000 tons, whereas the TAC has been set at 155,000 tons. In order to bring the actual cod catch volume closer to the TAC, the Fisheries Management Law was recently changed so as to bring smaller boats under the quota system. Moreover, a number of loopholes in the law were closed, preventing boat owners from legally exceeding their catch quota. It is assumed that it will take up to two years for these changes to take effect. The well-functioning quota transfer system will remain in place.

In the summer of 1994, the Government introduced a scheme to increase the efficiency of the fishing industry by reducing the significant over-capacity (estimated at 30-40 percent in the fishing fleet, and 20-30 percent in the fish processing sector). The newly founded Fisheries Development Fund (FDF) has been assigned three tasks, namely to (i) pay retirement premiums for ships being put out of commission; (ii) pay retirement premiums for fishing plants being shut down; and (iii) lend money to projects

creating new opportunities for persons formerly employed in the fishing sector. So far, the FDF has used its funds mainly to retire fishing vessels, paying the owners 45 percent of the insurance value (reduced to 40 percent at the start of 1995). It has so far been successful in retiring about 10 percent of the fishing capacity. To repay two loans received from the Ministry of Finance (adding to ISK 7 billion), the FDF is entitled to raise a levy on ships and fishing plants, and to put a tax on allocated quotas (some ISK 1,000 per allocated ton at the most), starting in the fishing year 1996/97.

b. Agriculture

Agricultural policy has been concentrated to a large extent on the implementation of the Uruguay round of the GATT talks. The Government, in fulfillment of the provisions contained in the Final Act (of the Uruguay round), has reduced its level of subsidies to the agricultural sector by 23.8 percent in real terms between 1988 and 1993. The reductions have been achieved notably through replacing the old system of export and consumer subsidies by direct income support tied to tradeable production quotas.

Following the ratification of the Final Act in late 1994, competition in the food market will increase over the near future although protectionist measures remain largely effective. The Uruguay Round contains minimum access rules which imply that foreign agricultural products are allowed to gain an estimated share of 3-5 percent in the Icelandic market by the year 2000. As a result, imports of food will increase, but due to the limited volume, the initial price effects are expected to remain small. At the same time, previously existing import bans will be converted into tariffs, which will in turn be reduced by 36 percent on average over the next 6 years. The new tariffs are calculated on the basis of the difference between 1986-88 domestic prices and world market prices. This results in still prohibitive tariff rates of more than 600 percent for certain categories of food products. In addition, Iceland reserves the general right to prohibit imports of raw meat and dairy products for sanitary reasons.

III. Monetary and External Capital Account Developments 1/

1. Overview

Two central themes have characterized monetary policy developments in Iceland since the late 1980s: first, an emphasis has been placed on a stable exchange rate to support the goal of low inflation, and; second, financial market deregulation has been pursued which initially focused on the liberalization of domestic interest rates, but more recently on the elimination, completed in January 1995, of restrictions on external capital

1/ Prepared by Birgir Árnason.

movements. In the context of financial liberalization, the central bank has sought to strengthen its instruments of indirect monetary management.

Since late 1989, when a stable exchange rate policy was adopted in the context of a national wage agreement aimed at securing a rapid lowering of inflation, the krona has been devalued twice in response to unfavorable external developments (Chart 7). The currency was first devalued by 6 percent in November 1992, during the currency turmoil in Europe, and again by 7.5 percent in June 1993 when the allocated catch quotas for the upcoming fishing year had to be sharply reduced because of the poor condition of fish stocks. In light of this experience, the authorities now characterize their exchange rate policy as stable, but adjustable, implying that, while the overall emphasis is on maintaining a stable exchange rate as an intermediate anchor for the price level, external developments may force a change in the targeted exchange rate. Despite extensive central bank intervention in the foreign exchange market for much of 1994 and into 1995, the exchange rate of the krona has tended to weaken inside its fluctuation band.

In the context of a sizable public sector borrowing requirement, the liberalization of interest rate determination--following decades of high inflation and financial control--led to quite high real interest rates on government debt and bank loans in the early 1990s when compared to interest rate levels among trading partners. In late 1993, the authorities announced a series of measures aimed at holding down real interest rates, and real long-term government bond rates declined by about 200 basis points (Chart 8). However, the removal of restrictions on long-term capital movements from the beginning of 1994 and a turning point in the interest rate cycle on foreign capital markets, contributed to large capital outflows and significant reserve losses that continued into early 1995.

2. Exchange rate policy and developments and the level of competitiveness

When the stable exchange rate policy was adopted in late 1989, the exchange rate of the krona against other currencies was unilaterally announced each day by the central bank based on the cross-rates of foreign currencies on international markets and the desired value of the official trade weighted currency index. Following a reappraisal of exchange rate policy in late 1991, partly motivated by the pegging of the currencies of Norway, Sweden and Finland to the ECU, a new basket--composed of the ECU with a weight of 76 percent, the dollar with a weight of 18 percent, and the yen with a weight of 7 percent--replaced the trade-weighted basket from the beginning of 1992. The adoption of the new currency basket did not otherwise signal any change in exchange rate policy; the central bank continued to administratively set the exchange rate of the krona on a daily basis within a $\pm 2 \frac{1}{4}$ percent band around a central rate of the official currency index. ^{1/} This change in the official currency basket was

^{1/} This band was artificial in the sense that market forces did not move the exchange rate within the band.

CHART 7
ICELAND

THE EXCHANGE RATE OF THE KRONA 1/
(Index: 12/31/1991=100)

Sources: Central Bank of Iceland; and staff calculations.

1/ Against the official currency basket: ECU=76%, US\$=18%, JPY=6%.

CHART 8
ICELAND

INTEREST RATES

(In percent)

Sources: Central Bank of Iceland, Economic Statistics, Annual Report; and data provided by Icelandic authorities.

regarded as an intermediate step towards closer economic integration with Europe in the context of the EEA agreement. The monetary authorities also realized that the unilateral setting of the exchange rate of the krona by the central bank would be untenable under the EEA regime of unrestricted capital movements, and preparations for a market in foreign exchange began. It was also felt desirable to allow the balance of supply of and demand for foreign currency to impact the exchange rate within the constraints of the authorities' exchange rate policy.

In May 1993, an interbank market in foreign exchange was established. Agents on this market are the central bank, on the one hand, and, on the other, the three commercial banks and the savings bank association. At fixing sessions every morning between these agents, the exchange rate of the krona is fixed against individual currencies on the basis of transactions during the session and international cross-rates. The central bank's official exchange rate is based on the rates set at these fixing sessions. The banks are, however, free to quote their own exchange rates and buy/sell spreads to their customers; the banks are permitted to take open positions in individual currencies amounting to 10 percent of equity capital and 20 percent in total. Again, with the introduction of a foreign exchange market the authorities decided to maintain an unchanged exchange rate policy, i.e., the exchange rate continued to be targeted at an unchanged central rate inside $\pm 2 \frac{1}{4}$ percent fluctuation margins. The role of the central bank became to use interventions in the foreign exchange market and its monetary instruments to implement this exchange rate policy.

It is difficult to judge how successful the introduction of the foreign exchange market has been. Since mid-1993, the krona has been under almost constant selling pressure and the central bank has been forced to intervene almost continuously in order to prop up its value; transactions not involving the central bank have been quite limited--10-20 percent of the quarterly totals in 1994. However, it is clear that the foreign exchange market does provide an indicator of market sentiment about the exchange rate.

Having been devalued by 7.5 percent in June 1993, the krona was largely unaffected by the events that lead to the widening of the ERM fluctuation margins from $\pm 2 \frac{1}{4}$ percent to ± 15 percent in late summer 1993. However, the authorities realized that after the removal of all restrictions on foreign exchange transactions from the beginning of 1995, Iceland would be in the rather anomalous position of being one of very few countries pursuing a stable exchange rate policy based on narrow fluctuation margins. Having studied a number of options--including widening the fluctuation margins and switching back to a trade weighted currency index ^{1/}--the authorities decided that the possibility that a change in the exchange rate policy framework would be interpreted as a departure from the policy of a stable

^{1/} This would have the effect of increasing the weight of the dollar in the currency basket while reducing that of European currencies.

exchange rate warranted sticking to the narrow band framework despite the threat of one-way speculative bets.

Since the devaluation in mid-1993, the nominal effective exchange rate of the krona has been fairly stable. Against a background of significant central bank intervention and reserve losses (see Section 5 below), the exchange rate depreciated by about 1 1/2 percent in relation to the official currency index from mid-1993 through mid-1994, going from somewhat above its central rate to somewhat below it. At the end of 1994 the exchange rate was about 13 percent lower than its central rate prior to the two devaluations in 1992 and 1993. The exchange rate strengthened somewhat within its band in early February when the central bank's foreign reserves were replenished through treasury borrowing abroad. The real effective exchange rate (based on relative consumer prices) depreciated slightly through 1994 to about 10 percent below its level prior to the 1993 devaluation and it remains at a historical low, indicating a comfortable competitive position for Icelandic firms (Chart 9).

3. Interest rate policy and developments

Two features set Icelandic financial markets apart from those of other industrial countries; first, the widespread use of indexation of financial contracts and, second, the relative underdevelopment of Icelandic markets.

Limitations on the use of indexation in financial contracts were largely lifted in 1979 when runaway inflation had ravaged the monetary system for almost a decade. More recently with the slowing down of inflation, some steps have been taken to limit the use of indexation, especially for shorter term financial contracts. As a result of the widespread use of indexation, the economically most important interest rates in Iceland have generally been real rates on top of indexation. 1/

The development of securities markets only began in earnest in the second half of the 1980s when legislation was passed that liberalized the setting of interest rates. The money market remained embryonic until mid-1992 when an agreement was reached to close the automatic overdraft facility of the treasury at the central bank by the beginning of 1994. 2/ According to this agreement, the treasury is to meet its short-term financing needs through regular auctions of short-term government paper--treasury bills. In its monetary policy operations the central bank can, if it so chooses, influence the yield on treasury bills through operations in the secondary market. The increased volume of treasury bills was also intended to form the basis of additional central bank facilities--repurchase facilities--that would enhance the bank's effectiveness in the achievement

1/ For a further discussion of indexation in Iceland see Appendix IV.

2/ This agreement is not enshrined in law but a provision that would prohibit direct central bank lending to the treasury is contained in a proposal for a new central bank law that has been under consideration.

EFFECTIVE EXCHANGE RATES

(Indices: 1990=100)

Sources: Central Bank of Iceland; and IMF, International Financial Statistics.

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of its monetary policy objectives, notably that of a stable exchange rate. The development of the money market was, therefore, seen as complementary to the establishment of the interbank market for foreign exchange.

Real interest rates on indexed government bonds rose sharply during the 1980s, going from below 4 percent in the first half of the decade to above 8 percent in the second half. Rates on indexed bank loans followed suit with some lag, rising above government bond rates by about one percentage point towards the end of the 1980s. From then on, rates on indexed government bonds effectively provided a floor to rates on other indexed financial instruments, including bank loans and mortgages. The significance of the real rate on indexed government bonds was strengthened by the banks' practice of increasingly financing their lending operations--whether indexed or non-indexed--through "switching terms" deposits, which yielded the better of a fixed nominal rate or indexation plus a fixed real rate--the latter in effect putting a floor on the real yield on deposits (see also Table A11). In turn, the fixed real rate was set in relation to the real rate on government bonds. To the extent that the banks used these switching terms deposits to finance their non-indexed loans, the rates on those loans were also influenced by indexed government bond rates. Although real yields on government bonds declined somewhat in 1992 and into 1993, they remained--at 7 percent--very high in absolute terms as well as in relation to bond yields in most neighboring countries. ^{1/}

In late October 1993, the authorities announced a package of measures aimed at bringing real government bond rates down to 5 percent. The

^{1/} It is difficult to find foreign interest rates that are comparable to the rates on Icelandic indexed government bonds. One alternative is to compare them with index-linked UK gilts. This is done in Chart 10. Through most of 1993, the real rates on the Icelandic bonds were almost 4 percentage points higher than those on the UK gilts. Despite the very high, and relatively secure, real yields on government bonds denominated in kronur in recent years, foreign investors have shown little interest in including them in their portfolios. One reason is undoubtedly the small size of the market as well as (short-term) exchange rate risk. Another important factor may, however, be that the authorities have been able to alter the index to which the value of bonds is linked--the credit terms index. From 1979-89, the index was composed of the cost of living index with a weight of two-thirds and the building cost index with a weight of one-third. In 1989, the authorities decided to add a wage cost index to the credit terms index with a weight of one-third; the weight of the cost of living index was reduced commensurately. With real wages falling or stagnant, the new credit terms index rose by 7 percent less from 1989 to early 1995 than the old credit terms index would have in the same period. In the recent wage negotiations, the authorities agreed to alter the credit terms index again, this time eliminating both the building cost index and the wage cost index; henceforth, the credit terms index is the same as the cost of living index, which has been renamed the consumer price index.

treasury announced that offers for indexed government securities would not be accepted at real yields above 5 percent and vowed to seek financing abroad if necessary. The central bank as market maker would ensure that yields in the secondary market for bonds declined commensurately. In early November, the central bank followed up on these measures by lowering its official rediscount rates for securities purchases under repurchase agreements with deposit money banks--repo-rates--by 50 basis points, to 6.5 percent for treasury bills and 7.5 percent for other government-guaranteed securities. The bank also eased liquidity rules by allowing banks to count all treasury bills of up to 12 months duration towards their liquidity and lowered the general reserve requirement by one percentage point, from 5 percent to 4 percent. This package immediately had its intended effect, with real yields on government or government-guaranteed bonds (primarily housing bonds) coming down by around 200 basis points; indexed bank lending rates quickly followed suit, declining from an average of 9.4 percent in October to 7.5 percent in November.

Financial markets remained quite calm during the first half of 1994, despite the lifting of restrictions on long-term capital movements from the beginning of the year. The treasury successfully auctioned on a regular basis 3-12 month treasury bills, as well as a 2 year treasury note, with nominal yields in the range 4.5-6 percent. Auctions of 5- and 10-year indexed government bonds with yields hovering around or slightly below 5 percent were also successful. The central bank continued to lower its official repo rate on treasury bills into 1994, bringing it down to 5.2 percent in March. Money market rates declined also, with the 3 month rate falling to 4.5 percent in April from 7.3 percent in October 1993. However, signs of upward market pressure on interest rates were also beginning to emerge: in early 1994, the central bank was forced to tender bids for housing bonds in order to ensure that their yields were commensurate with those on government bonds; indexed bank lending rates gradually rose during the first half of 1994, from a low of 7.5 percent in December 1993 to 8.1 percent in June; in the first half of 1994, a significant negative interest rate differential opened between Icelandic short-term money market rates, on the one hand, and German rates (see Chart 10) and the theoretical rates calculated using the weights of the official currency basket, on the other; finally, the central bank's net claims on the treasury began to rise, going from ISK 6 billion at the end of 1993 to ISK 12.5 billion at the end of June 1994. In addition, significant reserve losses were recorded in the second quarter of 1994, to some extent related to the (private sector's) repayment of foreign debt.

Interest rate pressures mounted in the second half of 1994. Money market rates began to rise in July; with the treasury continuing to decline bids with real yields above the targeted 5 percent, the last successful auctions of 2-year treasury notes and 10-year government bonds were conducted in late July, and of 5-year bonds in early September. In December, only 3-month treasury bills were auctioned; when the central bank ceased making bids for indexed housing bonds in the secondary market their yield rose, reaching almost 6 percent in October before stabilizing at close

INTEREST RATE DIFFERENTIALS AND FOREIGN RESERVES

Sources: Central Bank of Iceland, Economic Statistics; CSO, Financial Statistics (United Kingdom); and IMF, Research Department (Germany).

1/ Three-month Treasury bill rate (Iceland) minus three-month Interbank rate (Germany).

2/ Five-year indexed Treasury bond yield (Iceland) minus 2.5x Treasury index-linked 2016 bond yield (United Kingdom).

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to 5.8 percent during the last months of the year. On the other hand, during the last three months of the year the treasury auctioned a substantial amount of 5-year ECU-linked bonds with nominal yields around 8.5 percent. During this period the central bank kept its official interest rates largely unchanged--increasing them only marginally in early December--despite a clear turnaround in the interest rate cycle among important trading partners, including the United States and the United Kingdom. The central bank also continued, at the behest of the government, to make bids for indexed government bonds corresponding to a real yield of 5 percent but only for the minimum amounts consistent with its market making role on the Icelandic Securities Exchange, meanwhile raising its net claims on the treasury further, to almost ISK 17 billion, by the end of 1994.

Faced with increased pressure on the exchange rate and international reserves resulting from the lifting of remaining restrictions on short-term capital movements from the beginning of 1995 and growing uncertainty related to the ongoing wage negotiations, the central bank began aggressively to raise its official interest rates in several steps, bringing the repo rate for treasury bills to 7.3 percent in mid-March, up from 5.4 percent in December; the last increase in the repo-rate was also accompanied by tightened deposit money bank access to central bank financing. On the other hand, in the run up to the April elections the Government's target of a 5 percent real yield on government bonds has been broadly maintained, with an exception being made when the treasury offered to redeem government bonds coming due in February with government bonds with a real yield of 5.3 percent. In the immediate aftermath of the conclusion of the wage agreement, the secondary market yield on the outstanding 2-year treasury notes declined by 40-50 basis points and the treasury successfully auctioned 6- and 12-month treasury bills for the first time in months; this reflected market perceptions that low inflation had been ensured for the coming two years.

4. Changes in monetary aggregates

The growth of monetary aggregates has been greatly affected by the slow down in inflation in recent years (Chart 11, Tables A12-A13). After double digit annual growth rates for many years, the growth rate of M1 and M3 fell to the low single digit level in 1992. These developments continued in 1993, with M1 and M3 growing at 12 month rates of 5.4 percent and 6.5 percent, respectively, through December. In 1994, a sharp pick-up was recorded in the rate of growth of M1, which expanded at a 12 month rate of 11 percent in December. This largely reflected a large increase in currency in circulation related to a move to an electronic payments system away from a check based system. The 12-month rate of growth of M3 was 2.2 percent in December.

5. Capital account developments and changes in international reserves

In 1993, the capital account of the balance of payments was characterized by an outflow of short-term capital, to the tune of

ISK 9 billion as shown in Table A14 and in the tabulation below. Private agents and financial institutions accounted for the bulk of these outflows, which resulted from a sharp decline in trade credits associated with the sharp contraction in imports from 1992. New long-term borrowing only partly offset the short-term outflows and the capital account was in deficit of just above ISK 5 billion. With the current account recording a very small surplus, the capital account deficit was reflected in an overall deficit in the balance of payments of ISK 6 billion (including errors and omissions). The central bank's net foreign reserves declined by about ISK 2.5 billion in the course of the year to just under ISK 29 billion, but remained fairly stable in relation to imports--equivalent to about 2 3/4 months of imports of goods and services--because of the import contraction.

Balance of Payments Summary
(ISK billions)

	1993	1994
Current account balance	0.3	10.1
Capital account balance	-5.3	-22.6
Direct investment, net	0.3	-0.1
Portfolio investment, net	-2.9	-7.5
Long-term borrowing, net	6.4	-6.2
Short-term borrowing, net	-9.1	-8.7
Net errors and omissions	-0.6	-0.6
Overall balance	-5.7	-14.0

Source: Central Bank

The capital account deficit more than quadrupled between 1993 and 1994 to almost ISK 23 billion. A number of factors account for the deterioration in the capital account. The lifting of restrictions on long-term capital movements and lower domestic interest rates also contributed strongly to the outflow. Thus, portfolio outflows went from ISK 2.9 billion in 1993 to ISK 7.5 billion in 1994, and short-term outflows continued at about the same pace despite some recovery in imports. Firms appear to have taken advantage of the lower domestic interest rates to raise funds to repay foreign debt both short-term and long-term, with the result that amortization of foreign debt with a maturity of more than one year significantly exceeded new borrowing. The rather sizable current account surplus in 1994 made only a dent in the capital account deficit, with the overall balance (including errors and omissions) recording a deficit of ISK 14 billion, equal to 3.3 percent of GDP. The overall deficit was mirrored in the central bank's net foreign reserves which declined to only ISK 15 billion--the equivalent of just above one month worth of imports of goods and services (Table A15).

The drain on central bank reserves continued during the first two months of 1995. The bank's reserves were replenished by an ISK 10 billion treasury Euro-yen loan in early February. Nevertheless, at the end of that

CHART 11
ICELAND
MONETARY AGGREGATES
(12-month percent change)

Source: Central Bank of Iceland, Economic Statistics.

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month the central bank reserves were--at ISK 18.5 billion--only ISK 3.5 billion higher than at the beginning of the year.

6. Foreign debt and debt service

Because of valuation effects related to the devaluation of the krona in June 1993, the net foreign debt to GDP ratio rose from 52.3 percent in 1992 to 58 percent in 1993 (Chart 12, Table A16). With the current account in sizable surplus and GDP expanding, the debt ratio declined to 54.5 percent in 1994. Debt service in relation to exports of goods and services has risen sharply in recent years, to almost 33 percent in 1994 compared with 20 percent in 1990. However, this is largely the result of unusually large swings in the amortization schedule, whereas the interest burden has remained fairly stable at between 10 to 11 percent of export revenue.

7. Developments in the banking system

Icelandic credit institutions--commercial and saving banks and credit funds--have encountered serious problems in recent years related to large loan loss provisions and write-offs. The worst appears to have been over for the credit funds in 1991, whereas 1992 and 1993 were particularly difficult for the deposit money banks as a whole. For those two years, loan loss provisions amounted to 2.8 percent and 2.4 percent, respectively, of total bank assets. Losses before tax in the deposit money banks as a whole amounted to more than 1 percent of assets in 1992, and the Government was forced to shore up the capital of one of the state-owned banks in order to ensure that it met international capital adequacy requirements. The deposit money banks reached the break-even point in 1993 and it is estimated that they recorded a small before-tax profit in 1994, partly because of a decline in loan loss provisions to below 2 percent of assets. While the commercial and saving banks currently meet the BIS capital adequacy requirements, their profitability--as measured by the return on equity--is modest at between 3 to 4 percent.

8. Changes in foreign exchange regulations

All remaining restrictions on long-term foreign exchange transactions were lifted from January 1, 1994, and those on short-term transactions from January 1, 1995. Prior to January 1, 1994, net transactions by domestic residents in long-term foreign securities denominated in foreign currency were limited to ISK 750 thousand for individuals and to ISK 150 million for members of the Icelandic Stock Exchange. From January 1, 1994, limits on amounts of deposits by domestic residents in accounts with foreign deposit institutions were eliminated and domestic individuals were permitted to hold foreign denominated short-term securities in the amount of ISK 1 million while the holdings of domestic mutual funds were limited to ISK 175 million. From the same date, foreign residents were permitted to hold domestic short-term securities up to a total of ISK 75 million and domestic residents were allowed to borrow funds from non-residents, for purposes other than trade in goods and services, up to a total of ISK 5 million. These limits on amounts

involved in short-term foreign exchange transactions were lifted on January 1, 1995.

IV. Public Finance 1/

1. Overview

A major task of economic management in recent years has been to strengthen control of the public finances following several years of deficits and growing debt. 2/ Since 1984, the treasury has been run with a deficit each year, averaging nearly 2 percent of GDP, and its net indebtedness in relation to GDP has risen to almost 30 percent in 1994. The need for better public finances was high on the agenda of the government that came to power in 1991, with the goal of eliminating the treasury deficit within two years. However, these efforts were frustrated by the economic downturn during 1987-93, and by fiscal concessions to expedite wage settlements. As a result, for many years the deficit has been larger than targeted (see tabulation below).

Iceland: Treasury deficit 1991-94 (Percent of GDP)

	1991	1992	1993	1994
Budget bill (Dec)	1.1	1.0	1.6	2.5
Outcome	3.3	1.9	2.3	1.7

Source: Ministry of Finance.

Fiscal slippage has been a recurrent issue. The deviation from the budget target was particularly pronounced in 1991 when the treasury's deficit outcome of 3.3 percent of GDP compared with 1 percent in the 1991 budget bill. Significant fiscal consolidation was achieved in 1992 with the deficit reduced to 1.9 percent of GDP; nevertheless, the deficit was almost twice as large as had been targeted in the 1992 budget bill. The budget bill for 1993 envisaged a reduction of the treasury deficit to 1.6 percent of GDP, a slight improvement over the 1992 deficit of 1.9 percent of GDP. However, decisions taken by the Government in the course of the year (in particular in connection with the wage agreement concluded in May), as well as weaker domestic demand than had been anticipated, resulted in a larger deficit of 2.3 percent of GDP.

1/ Prepared by Ousmane Doré.

2/ Appendix II of this report discusses the sustainability of fiscal policy in Iceland as well as the medium-term fiscal outlook.

CHART 12
ICELAND
EXTERNAL DEBT
(In percent)

Source: Central Bank of Iceland.

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Reflecting the effects of automatic stabilizers during the current upturn, the deficit was reduced to 1.7 percent of GDP in 1994. This is a significant improvement over the 2.5 percent target and constitutes a notable break with recent trends of persistent budgetary slippage. The 1995 budget presented in December also called for a treasury deficit equivalent to 1.7 percent of GDP. However, fiscal concessions granted in the context of the February 1995 wage agreement are estimated to raise the deficit to 1.9 percent of GDP.

2. Recent budgetary developments

Budgetary developments in Iceland can be analyzed through three major budgetary concepts: the treasury revenue balance, the treasury net borrowing requirement and the public sector borrowing requirement (PSBR). The treasury revenue balance--also referred to in this report as the treasury deficit--is the difference between central government expenditures, including capital expenditures and interest payments, and revenues, including interest revenue, dividends and the proceeds from the sales of government assets. The treasury net borrowing requirement includes, in addition, net lending by the treasury. The public sector borrowing requirement (PSBR) includes, in addition the net borrowing of the public financial and non-financial institutions, including housing funds.

Iceland: Treasury and Public Sector Finances
(Percent of GDP)

	1990	1991	1992	1993	1994	1995
Revenue deficit	1.2	3.2	1.8	2.4	1.7	1.9
Net lending	1.0	0.6	0.0	0.2	1.7	0.5
Treasury borrowing requirement	2.2	3.8	1.8	2.6	3.4	2.4
Other ^{1/}	5.2	6.4	4.2	3.0	0.7	1.4
Total PSBR	7.4	10.2	6.0	5.6	4.2	3.8

Source: Ministry of Finance.

^{1/} Includes borrowing by public enterprises, the investment credit funds, and the State Housing Fund.

The development of treasury finances in terms of these budgetary concepts is summarized in Chart 13 (see also Table A17). The chart also illustrates recent fiscal developments in terms of revenues and expenditures. As shown, the central government finances started to drift out of balance quite sharply in 1990-91, as revenue stagnated while total expenditures surged in real terms. Reflecting alternation between budget cuts and fiscal concessions, expenditures have oscillated between 26 1/2 and 28 1/2 percent of GDP. Treasury revenues, on the other hand have varied

within a narrow range of 25 to 26 percent of GDP, as major changes in tax law have tended to be approximately revenue-neutral. ^{1/}

a. The 1994 budget

The budget bill for 1994 envisaged a treasury deficit of ISK 9.6 billion or 2.5 percent of GDP, based on a continued contraction in GDP expected at the time of the passage of the budget in December 1993. However, most of the assumptions on which the budget was based did not materialize. Higher economic activity contributed to boosting the revenue side, while expenditures increased leaving an estimated budget deficit for 1994 of ISK 7.5 billion or 1.7 percent of GDP. This was ISK 2 billion below the budget figure and contrasted with overruns on the budget in previous years.

Treasury expenditures are estimated to exceed the budget appropriations by roughly ISK 3 billion, the bulk of which is accounted for by operating expenditures mainly due to overruns in the health sector, and education. Wage costs also increased following wage agreements made with certain groups (including nurses). Transfers exceeded the budget by close to ISK 1 billion due to slippages in social security outlays, whereas interest payments were considerably lower than projected in the budget, reflecting inter alia a lower borrowing requirement in 1994 than anticipated. Maintenance and capital expenditures exceeded the budget figures, largely due to discretionary investment decisions made by the Government (the purchase of a rescue helicopter and road construction and maintenance).

Greater economic activity strengthened treasury revenues, now estimated to exceed the budget by ISK 5.6 billion in 1994, and is equally reflected in increased revenues from turnover taxes and income taxes. The broadening of the VAT base announced in the 1993 budget, which was expected to lead to an increase in revenues, was outweighed by the lowering of the VAT rate on food from 24.5 percent to 14 percent from the beginning of 1994 as promised in the context of the May 1993 wage agreement. To meet some of the revenue losses associated with the lowering of the VAT on food and to strengthen the finances of the Unemployment Insurance Fund, the Government proposed a one-half percentage point increase in the personal income tax rate to 42 percent as well as a 0.35 percentage point increase in the social security tax rate to a top rate of 6.35 percent. All in all, revenues from the VAT exceeded budget estimates by ISK 2.2 billion, while revenues from income taxes and revenues from corporate taxes deviated by close to ISK 1 billion from the budget figures.

The net treasury borrowing requirement for 1994, which was projected to be 3 percent of GDP, is now estimated at ISK 15.3 billion or 3.5 percent of GDP. This reflects the difficulties of the State Housing Board in raising

^{1/} Appendix III reviews the major changes in the Icelandic tax structure since the late 1980s.

CHART 13
ICELAND

PUBLIC FINANCE

Source: Ministry of Finance, Treasury Finances.

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funds directly on the market due to the interest rate policy stance which set a cap on housing bond rates. As a result, the treasury had to borrow up to ISK 7 billion--mainly from the central bank--and relend to the Housing Board. The public borrowing requirement for 1994 is estimated at ISK 18 billion or 4 percent of GDP.

b. The budget bill for 1995

The budget for 1995 as passed in December, ^{1/} reflects continued emphasis of reducing the treasury deficit, while maintaining the stability of the economy. With the improved economic outlook, revenues are expected to increase while expenditures are reduced, thus achieving a lower deficit. Total revenues are projected to amount to ISK 112 billion and total expenditures to ISK 119.5 billion, 4 percent lower in real terms than projected for 1994 (Table A18). Consequently, the estimated treasury deficit in 1995 is ISK 7.5 billion or 1.7 percent of GDP. The net borrowing requirement of the treasury is expected to fall considerably in 1995 from the inflated 1994 level that reflected financing of the state Housing Board and amount to ISK 9.4 billion or 2.2 percent of GDP. The public sector net borrowing requirement is estimated to amount to ISK 15.3 billion or 3.4 percent of GDP, a dramatic fall from the 1991 peak of 10.1 percent of GDP.

As in the past years, the budget was modified by the Government between the October proposal and the December budget bill. The October budget proposal contained no new discretionary tax changes, and the proposed fiscal adjustment was entirely on the expenditure side. In relation to GDP, revenue was projected to decline by 0.3 percentage points, reflecting carryover effects of the lowering of the VAT on food in 1994 and the planned removal of the temporary surtax on higher earnings levied in 1993 and 1994. The final budget in December reflected a more favorable economic outlook than earlier expected, giving a 2.5 percent boost to revenue. It also included certain tax provisions. First, the Government committed itself to the introduction of a capital income tax in 1996, most likely in the form of a nominal withholding tax on interest income. Meanwhile, the temporary 5 percent surtax on income above a certain level will be extended for one year. The revenue from this extension will be used to compensate for the abolition of the highest bracket of net wealth taxes.

The October budget proposal called for expenditure to decline by 1.5 percentage points in relation to GDP, or by almost 4 percent in real terms. This reduction mainly reflected a 25 percent reduction in capital spending as a result of the petering out of infrastructure investment initiatives adopted in the context of the 1993-94 wage agreement. Operating

^{1/} The budget is initially proposed to the Parliament in October. After undergoing a revision, the budget is passed in its final form in December. However, further recurrent concessions to secure moderate wage agreements have often led to significant revisions of the final budget during the year.

expenditures, including the wage bill, were budgeted to remain largely unchanged in real terms. On the other hand, transfers were budgeted to decline by 3 percent in real terms, as a result of the removal of automatic cost-of-living increases as well as tighter enforcement of eligibility requirements. However, in the final budget, budgeted expenditure was raised by over 3 percent from the original proposal, reducing the decline in the expenditure/GDP ratio to about 1/2 percentage point and leading to a marginally larger treasury deficit in 1995 (1.7 percent of GDP) than initially proposed.

The additional discretionary measures incorporated into the final 1995 budget were aimed at creating a more positive environment for the upcoming wage negotiations, and included large-scale infrastructure investments, mainly road building claiming ISK 1.3 billion in 1995. The net borrowing requirement of the treasury was expected to fall considerably and amount to ISK 9.4 billion, or 2.2 percent of GDP. The public sector borrowing requirement was projected to decline somewhat to 3.6 percent of GDP (see tabulation). As in the past, the budget was revised in February 1995 to reflect fiscal concessions granted to secure the wage agreement. It is estimated that this agreement will add an additional 0.2 percent of GDP to the targeted budget deficit.

Iceland: Treasury finances
(Percent of GDP)

	1994	1995 Budget		
		Initial	Final	Revised
Revenue	25.5	24.6	24.9	24.7
Expenditure	27.2	26.1	26.6	26.6
Deficit	-1.7	-1.5	-1.7	-1.9

Source: Ministry of Finance.

3. Structure of the public sector

Iceland has a relatively small public sector, consisting of the central government, the social security system, and municipal governments (Tables A19-A21). The finances of central and local authorities are interrelated and the same tax base is used for direct taxes for both levels; direct taxes are the most important revenue source for local government. Besides its budgetary role, the central government is also heavily involved in the allocation of credit, through both its ownership of a large portion

of the banking system and by its sponsorship of some of the investment credit funds. 1/

Municipalities have been running budget deficit in recent years after contributing little to the PSBR prior to 1993 (see tabulation below). Their single largest source of revenue has been the personal income tax, representing more than a third of total net personal income tax revenue of all levels of government. In terms of expenditures, local governments account for about one-fourth of general government in Iceland, a share which has remained roughly stable for the past two decades. However, because of legal constraints, they have limited scope for independently determining their own taxes, expenditures and borrowing.

There have recently been changes to the division of fiscal responsibilities and powers between the two levels of government. The central government has taken more responsibility for the health-care sector, while changes to laws affecting social services, education, nursery schools, and the environment may raise municipal outlays. In the past, municipalities shared a percentage of sales tax revenues, but when the sales tax was replaced with the VAT, this arrangement was changed to a share of total central government revenue. Relative to their share in the general government finances (about one-fourth), municipalities have been in a weaker financial position for some years, with a deficit of nearly half that of the central government in 1994.

General Government Deficit
(percent of GDP, accrual basis)

	1990	1991	1992	1993	1994
General	3.3	2.9	2.8	4.5	4.1
Central <u>1/</u>	3.4	2.8	2.4	3.3	3.0
Local	-0.1	0.2	0.4	1.2	1.1

Source: Ministry of Finance.

1/ Including social security.

4. Public sector indebtedness

With the weak real growth rate, low inflation and persistent deficits, the accumulation of public debt in terms of GDP has been substantial in Iceland. Net treasury debt amounted to only 1/2 percent of GDP at the end

1/ Iceland has a long history of significant public ownership of commercial enterprises, with an equity share recently estimated to be worth ISK 100 billion (nearly 25 percent of GDP). The central government borrows resources for relending purposes, and also gives state guarantees to public and private agencies and companies.

of 1982, but is now heading for 30 percent of GDP (see Chart 13). Even though the present level of indebtedness is relatively modest by international standards, its recent rapid increase is noteworthy. The treasury's gross debt has risen at about the same pace as the net debt going from 24 percent in 1987 to 47 percent in 1994 (see Table A22 and tabulation below), as the net foreign debt rose from 9 percent to 22 percent. The rise in the net foreign debt position reflects in part the treasury's continued reliance on foreign borrowing. ^{1/}

In addition, the debt service burden is becoming heavier. In the early 1980s, the treasury showed a surplus of interest revenues over interest payments; since then, the position has deteriorated sharply, and net interest payments now amount to 7 percent of GDP. The treasury's heavy interest burden inevitably restricts the scope for responding to external setbacks. Even more serious is the vulnerability of the budget to movements in interest rates, although the treasury has attempted to spread this risk in the most recent years by converting variable interest loans to fixed-interest.

Local governments likewise had claims in excess of their debts at the beginning of the 1980s, but at the end of 1994 their net debt was estimated to 3.7 percent of GDP (48 percent of their revenues) and their net interest payments at 2.5 percent of GDP.

Iceland: Treasury Debt 1989-94
(Percent of GDP)

	1989	1990	1991	1992	1993	1994
Gross debt	30.0	30.7	31.7	38.4	43.7	46.8
of which:						
Foreign debt	17.9	16.4	17.1	21.9	24.8	--
Lending	15.0	14.2	15.6	16.9	15.6	17.2
Net debt	15.0	16.4	16.2	21.5	28.1	29.6

Source: Ministry of Finance.

5. Recent reforms in the public sector

While the deficit record has been disappointing, a number of fiscal reforms have made important contributions to modernizing the operations of government institutions while increasing efficiency. Various management reforms have been introduced, including contract management, and a clear

^{1/} Indeed, the Treasury relied heavily on foreign markets in 1994 in order to ease interest rate pressures in domestic credit markets. In addition, it issued ISK 1.1 billion in ECU-linked bonds in the domestic market. See Chapter III of this report.

policy concerning public procurement has been announced. In addition, the Ministry of Finance has introduced for the first time a report on the medium-term fiscal outlook. 1/

In the past few years, the operational costs of the public sector have been gradually scaled down. At the same time centralization has been reduced and administrators have been given greater financial responsibility. In this spirit, the budget is developed through a framework in which appropriations can be transferred from one fiscal year to another. Core departmental services have been reorganized along corporate lines, with department heads contracting with their ministries to provide specified services in exchange for a specified amount of revenue. This so-called management by contract is a new form of communication between ministries and institutions aimed at improving public services, while increasing efficiency.

The potential for competition to play a beneficial role in resource allocation and cost minimization has also been extended to government procurement. Updating the 1970 legislation on public-works contracts and 1987 legislation on procurement, a new market-oriented policy was approved in September 1993 whose aim is to ensure the participation of the greatest number of suppliers. Since the end of 1994, all procurement and purchased services by all state institutions and enterprises are to be handled by the State Trading Center in the Ministry of Finance, and those over ISK 2 million are subject to tendering, with the requirement that the best value bid be accepted unless an explanation is provided.

1/ See Appendix II.

Determinants of Economic Growth 1/

The Icelandic economy experienced an export-led recovery in 1994, despite an unprecedentedly low level of the fish stock in domestic waters. In light of the close historical relationship between the fishing sector and the economic performance, it is therefore of interest to analyze the current recovery in more detail and, in particular, to investigate whether the dependence on the fishing sector has weakened. This appendix seeks to quantify major determinants of growth by estimating a simple econometric model, based on the decomposition of aggregate expenditure into domestic absorption, exports and imports. The major finding is that the current recovery is still mainly driven by fish exports, although world demand conditions, tourism, and the real effective exchange rate have contributed to recent growth. Despite the strong performance of the manufacturing sector in 1994, however, its relative impact on growth is still small and the fishing sector will continue to exert a key influence on the Icelandic economy.

Following a brief discussion of some salient features of the Icelandic growth history, a simple analytical framework for growth is presented, based on a modified Solow growth accounting model. The results of this model are used to quantify the growth contribution of important economic variables. The section concludes with an in-depth analysis of the current recovery.

1. A brief history of Icelandic growth 2/

Due to the richness of its resources, Iceland has enjoyed strong growth rates (averaging 3.5 percent between 1966 and 1994) and high living standards throughout the past decades (Chart 14). Currently, however, the economy is recovering from a prolonged downturn that began in 1988, caused by the over-fishing of Icelandic fish stock and a series of severe terms of trade shocks. Although yielding high export revenues, the domination of the business cycle by the fisheries has created structural problems for other sectors. As a result, diversification efforts have met limited success, and the investment to GDP ratio has been declining over the last two decades. Moreover, total factor productivity growth has slowed down markedly during the same period.

The high dependency on fish is an inherent feature of the Icelandic economy. More than 15 percent of GDP is directly or indirectly related to the fishing business, and recessions in the fisheries have always translated into slumps in the overall growth rate, such as in 1983 or 1988. Despite a number of diversification efforts, Iceland has maintained a relatively

1/ Prepared by Martin Mühleisen.

2/ A detailed description of the past growth performance is contained in SM/94/7.

CHART 14
ICELAND

OUTPUT INDICATORS

(Annual percentage change)

Sources: Data provided by Icelandic authorities; and staff calculations.

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constant 75-80 percent share of marine products in merchandise exports. ^{1/} However, the high profitability in the fishing sector and the common property nature of the fish stock led to the buildup of over-capacity, and consequently to over-fishing. It takes about 4-5 years for cod to grow to catchable sizes and therefore, a significant decrease in the fish stock--as experienced after 1987--was bound to have a more than temporary effect on catch volumes.

Due to its dominating size, fluctuations in the fishing sector have usually translated into strong movements of the real effective exchange rate (REER; see Chart 14). Strong export growth was often not countered by corrective fiscal policies and led to an over-heating of the economy, promoting inflation and increases in the REER. ^{2/} Appreciations of the REER were regularly countered by nominal devaluations and restrictive domestic wage policies. Over time, however, this process led to simultaneous increases of wage demands and prices, with inflation rates reaching more than 40 percent on average during the 1970s and 1980s. Only after the adoption of a fixed exchange rate regime, and in the wake of rising unemployment, could wage increases be contained to allow a sustained reduction of inflation rates.

Concerning export activities of other sectors, the high revenues of the fisheries were a mixed blessing. Iceland suffered from a Dutch disease effect, namely that fishing revenues were reflected in a high real exchange rate that hurt other export sectors, notably manufacturing. Strong fluctuations of the exchange rate acted as an additional obstacle for investments in export-oriented industries, which were already at a disadvantage of selling to a small domestic economy and producing in a location far from major export markets. Reflecting the rich thermal energy resources of Iceland, the only major export contribution of the manufacturing industry consisted in power-intensive aluminum and ferro-silicon products. More recently, however, significant improvements in competitiveness have fostered greater export diversification.

During the past two decades, Iceland has experienced a drastic fall in the gross investment to GDP ratio. From a peak of some 35 percent in 1974, investment declined to less than half this level in 1994. Although this fall can be partly attributed to the withdrawal of the Government as a major investor (often having financed ill-fated diversification projects in the 1970s), other factors have also contributed. For most of the time, investment was hindered by a volatile exchange rate and high inflation rates. Moreover, investment also suffered from the financial sector not being able to provide financing at adequate interest rates. At first, the

^{1/} Within the fisheries, however, diversification has taken place to some extent, shifting the industry away from cod to other species, and toward higher value-added products.

^{2/} By coincidence, these fluctuations were often amplified by parallel movements in the terms of trade, such as in 1975 or 1991.

supply of credit was limited throughout the 1970s, due to the prevailing negative real interest rates. Later on, however, the constraint fell on the credit demand side when real long-term interest rates swiftly climbed to rather high levels (of more than 10 percent by 1988) after they became positive in 1984. In addition, the past reluctance of Iceland to allow foreign investment and, in particular, foreign ownership exacerbated the situation, e.g. by inhibiting the enlargement of the power-intensive sector during the 1980s.

As a consequence of reduced investment in the manufacturing and service sectors, but also due to the buildup of over-capacity in the fisheries, the growth of productivity declined during the past decades. Total factor productivity rose on average by 1.1 percent in 1984-92, compared to 2.5 percent in 1969-1975 and 1.5 percent in 1976-83 (see Chart 14). ^{1/} Due to the strong dependency of Iceland on the fishing sector, total factor productivity is closely related to the size of the fish catch. If the stock is larger, productivity increases because the average catch per vessel increases. Therefore, the slowdown in productivity growth after 1987 owes partly to the decline in the stock.

The current recovery poses some interesting questions. Notably, it is a recovery that cannot be based on a fast return to previously reached fish production levels, given the depleted cod stock. Moreover, in contrast to earlier upswings, domestic prices and wages have been stable, and unemployment remains relatively high by past standards. Therefore, it is worth investigating the sources of past and present growth in order to assess whether the current recovery can be sustained in the medium term.

2. The analytical framework

In what follows, a simple decomposition of GDP is used to derive a growth model for the Icelandic economy. The purpose of this model is to quantify the impact of changes in important variables on GDP growth. It will describe how the relative weight of factors like fish production, REER, or terms of trade can be determined and how the model has been estimated.

It is well known in the literature that the econometric analysis of factors behind economic growth poses considerable difficulties. ^{2/} In particular, explanations are sought for why the production factors (labor and capital) fail to account for a large part of economic growth. Standard growth accounting models (e.g., Fischer (1993) or Ram (1985)) focus on the influence of technology shocks, human capital accumulation, inflation or budget effects on investment and productivity. They concentrate mainly on

^{1/} Total factor productivity has been calculated by estimating a Cobb-Douglas production function with data on labor force and capital stock received from the authorities.

^{2/} For a survey of recent approaches to modeling growth, see Renelt (1991) or Solow (1994), among others.

the production side and try to identify growth factors over relatively long periods. These approaches are not necessarily well suited for modelling short-term fluctuations in demand variables, such as those caused by exchange rate or real wage movements, and for the analysis of economies like Iceland's that are strongly dependent on exports. Several papers have covered both theoretical and empirical approaches to Icelandic growth (Einarsson and Magnusson (1987), Einarsson (1992), and Herbertsson (1994)); however, they also do not contain models that could be used to answer the questions of this section. 1/

The following model therefore pursues a slightly different approach. 2/ In order to evaluate the impact of changes in the economic environment, the model regresses the demand components of GDP on a number of variables which are relevant to the Icelandic economy, uses the results to derive short-term elasticities, and calculates contributions to growth. The approach is based on the observed constancy of the shares of GDP demand components. Splitting GDP into domestic absorption (A), exports (X), and imports (I), the basic accounting identity becomes $Y = A + X - I$. The growth of the demand components can then be estimated by a simultaneous equations model.

Two econometric versions of the model have been estimated. The first version is a purely static formulation that contains variables that have been assumed to affect growth *a priori*. The second version has been given a dynamic structure by including a number of lagged variables. Facing the restriction that consistent time-series are only available from 1965, the set of variables was reduced by eliminating insignificant variables after a sequence of statistical tests. Consequently, the dynamic model is supported by the standard model selection criteria and is used for further analysis.

The quantitative impact of shocks can be evaluated by obtaining growth elasticities from the reduced form and by conducting an impulse response analysis. Although the approach implies that some of the endogeneity in the variables might not have been completely captured, it has yielded some valuable insights into the nature of Icelandic growth and into the mechanisms of how shocks are passed through the economy. Moreover, it has proved fairly robust with respect to different model specifications.

3. Contributions to growth

The estimation results of both model versions confirm that, besides the long-run impact of the production factors labor and capital, fish production

1/ The first two papers have formulated real business cycle models, which they use mainly to evaluate the consequences of a move toward a fixed exchange rate regime. The last study analyzes Icelandic growth between 1946 and 1980, using a growth accounting framework that was updated with a human capital component.

2/ The complete model is described in the Annex.

and demand in other industrial countries are the most important factors for Icelandic growth. The quantitative effect of these and other important variables is discussed in the following. It is noted, however, that the results have to be interpreted carefully in light of the simplicity of the employed model.

Beginning with the estimation of the national accounts identity, the following relationship for the growth rates of GDP, domestic absorption, exports and imports has been estimated (standard errors in parentheses): 1/

$$g_Y = 0.9986 g_A + 0.3217 g_X - 0.3304 g_I + \varepsilon$$

(0.0136) (0.0047) (0.0094)

The weights implied by this equation have remained fairly stable over time, as could be confirmed by a set of tests on structural breaks. Moreover, the result does not violate on a statistically significant level the constraint that the true weights must add up to one. Therefore, the relationship is used with confidence for the further analysis.

Proceeding with the estimation results contained in Tables 1 and 2, the results indicate that there is a clear causal link from a number of exogenous variables to export performance, and further to domestic absorption. In fact, the final export equations basically contain a set of exogenous variables that can be grouped into three categories. First, lagged export and fish production are exogenous instruments that were solely added to capture the observed fluctuations in exports. Second, fish and aluminum production are regarded as price-inelastic variables. 2/ Third, demand effects are captured by GDP growth of industrial countries (exogenous to Iceland), by the REER and real wages (which has been dropped in the dynamic model). The impact of the REER and tourist arrivals, the only remaining endogenous variables, is relatively small; other possibly endogenous variables were tested and have been found insignificant. 3/

Furthermore, the equations for domestic absorption also demonstrate the importance of the export sector. First, there is a direct effect of export revenues on domestic demand in the following year (as indicated by the lagged export coefficient); and second, domestic absorption also depends on real wages which in turn have closely followed the fish production cycle in the past. However, domestic absorption is also characterized by a strong

1/ Growth rates are in logarithmic differences and are denoted by g.

2/ The impact of Iceland on the world fish market is small, and due to the limited durability of fish, sales are rather price-inelastic and mostly determined by the catch.

3/ The size of the exchange-rate sensitive export sector of Iceland is small, and probably limited to small-scale manufacturing and tourism. However, the degree of fish processing--which is contained in the production value--might be dependent on the REER.

Table 1. Estimation Results for the Static Model

	Domestic Absorption	Exports	Imports	Static Elasticity <u>2/</u>
Domestic Absorption			1.4429 (1.86)*	--
Exports	0.2048 (0.89)		0.0276 (0.11)	--
Industrial Countries' GDP		0.3529 (0.71)		0.1480
Labor Force	-0.3688 (-0.42)	0.9054 (1.18)	-0.4054 (-0.65)	0.3213
Capital Stock	1.2998 (1.98)*	-0.4625 (-0.79)	-0.3585 (-0.93)	0.6028
Fish Production		0.4942 (3.90)***		0.2073
Aluminum Production		0.0641 (1.91)*	0.0694 (1.50)	0.0039
Tourist Arrivals		0.0856 (0.89)		0.0359
Real Wage	0.2675 (1.48)	0.0424 (0.25)	-0.0002 (-0.01)	0.1575
Tax Ratio <u>1/</u>	0.0009 (0.76)			0.0498
Central Government Deficit <u>1/</u>			0.0028 (0.53)	-0.0918
Real Long-term Interest Rate <u>1/</u>	-0.0073 (-1.05)			-0.3833
Real Short-term Interest Rate <u>1/</u>	0.0001 (0.09)			0.0046
REER	0.2358 (1.33)	-0.2909 (-1.60)	0.0214 (0.11)	0.0081
Terms of Trade		0.1263 (1.02)	0.0101 (0.06)	0.0496
N	27	27	27	
AR(1)	16.44**	32.17**	8.77*	
Correlation Actual-Fitted	0.770	0.757	0.765	

Note: *, **, *** indicate significance on the 10, 5, and 1 percent level, respectively. N is the number of observations, and AR(1) gives the test statistic for autocorrelated residuals.

1/ Variable expressed as GDP ratio (tax, deficit) or in actual levels (interest rates).

2/ Elasticity is computed only for variables denominated in growth rates. For the remaining variables, the column contains the respective partial derivative of GDP growth. For example, an increase in the real long-term interest rate of one percentage point would decrease GDP growth by around 0.4 percentage points.

Table 2. Estimation Results for the Dynamic Model

	Domestic Absorption	Exports	Imports	Long-run Elasticity 2/
Domestic Absorption			1.5080 (10.90)***	--
Domestic Absorption (-1)	-0.0675 (-0.67)			--
Domestic Absorption (-2)	-0.1834 (-2.50)**			--
Exports (-1)	0.4643 (4.58)***	-0.4696 (-3.29)***		--
Industrial Countries' GDP		1.0845 (2.22)**		0.3744
Labor Force	0.2079 (0.49)	0.7682 (1.34)	-0.2535 (-0.51)	0.4322
Capital Stock	1.1225 (2.62)**	-0.4265 (-0.84)	-0.5499 (-1.63)	0.4834
Fish Production		0.5046 (4.94)***		0.2146
Fish Production (-1)		0.1169 (1.33)		--
Aluminum Production		0.0957 (3.38)***	0.0739 (2.29)**	0.0086
Tourist Arrivals		0.0411 (0.43)		0.0142
Real Wage	0.2616 (3.83)**			0.1046
Long-term Real Interest Rate 1/	-0.0033 (-2.45)**			-0.1339
REER		-0.1278 (-1.83)*		-0.0441
N	26	26	26	
AR(1)	16.86**	33.77**	5.92*	
Correlation Actual-Fitted	0.913	0.869	0.896	

Note: *, **, *** indicate significance on the 10, 5, and 1 percent level, respectively. N is the number of observations, and AR(1) gives the test statistic for autocorrelated residuals.

1/ Variable expressed in actual levels.

2/ Elasticity is computed only for variables denominated in growth rates. For the remaining variables, the column contains the respective partial derivative of GDP growth. For example, an increase in the real long-term interest rate of one percentage point would decrease GDP growth by around 0.14 percentage points.

business cycle effect, leading to negative coefficients for the two absorption lags. Among other variables, only the long-term interest rate appears to have a significant impact on demand, yielding around 0.14 percent of GDP growth for every reduction of 100 basis points. This finding is broadly consistent with the observed importance of the housing sector which is particularly sensitive to changes in the long-term interest rate.

The relationship between imports and domestic absorption is clearly complementary. Even after the estimation of several different specifications of the import equation, the only remaining result is that imports are more or less completely driven by domestic demand. The exception is minor, namely that aluminum production requires a high amount of foreign raw materials, and that therefore imports increase with rising aluminum exports. Although it seems striking that imports are not dependent on the REER or the terms of trade, there are two explanations for this. First, Iceland has a small production base and is relatively strongly dependent on foreign goods, making imports less price-sensitive. It is rather the overall demand that is affected by changes in external prices, and this is reflected in the estimates. Second, terms of trade have mostly moved in line with the REER (see Chart 14), which in turn was mostly dependent on the fortunes of the fisheries. Therefore, import fluctuations are also caused indirectly by changes on the export side. In the model, this effect is also contained in the coefficient of domestic absorption.

Finally, it has been confirmed that capital stock and labor force have the expected impact on growth. However, because both variables change little in the short-run, they are generally used to explain the long-term trends of growth. The results are therefore consistent with the fact that the decline of average growth rates over the past decades has occurred simultaneously with a drop in the investment ratio and a fall in the female participation rate. The estimated capital elasticity in the dynamic model is smaller than in the static model, indicating that shocks to the capital stock are smoothed over the business cycle. ^{1/} Even in the dynamic model, however, the growth elasticities of both variables are large, being estimated at 43 percent for the labor force, and 48 percent for the capital stock. These values are in line with the results of Herbertsson (1994) who found output shares of 42 and 46 percent, respectively, for the period 1946-80.

The impulse response of growth on a one percent shock in domestic absorption is negative, reaching -0.1 percent after four years. This reflects mainly an increase in the demand for imports which is not matched by a growing export volume. The impulse response of growth on a shock in exports is positive but small, yielding an accumulated additional growth of 0.04 percent after four years.

^{1/} The dynamic model contains lagged variables which capture the influence of previous years' growth rates, thus allowing for adjustment behavior of economic agents.

Summing up, the most important growth factors besides labor and capital are export-related. The Icelandic economy is not only strongly sensitive to developments in the fishing sector but also, primarily in the long-run, to demand conditions in other industrial countries. Compared to the fisheries, other export sectors like aluminum production and tourist arrivals have a relatively minor impact (as expressed by the long-run elasticity of growth of both sectors which is a mere tenth of the one for fish production). On the domestic side, real wages and real long-term interest rates have a relatively strong impact (with a long-run elasticity and derivative, respectively, of some 10 percent). On the other hand, a number of variables did not turn out to be important for growth, in particular fiscal variables. It has to be noted, however, that the results are derived from an approach that is based solely on econometric evidence, mixing supply and demand variables and thus remaining valid only for a limited time period. The results should therefore be interpreted carefully. However, the outcome has been fairly robust over several model specifications, and therefore gives a valuable insight into the impact magnitude of several variables on Icelandic growth.

4. The current recovery

Both an analysis of the ongoing recovery and a growth projection underline the continuing dependency of Iceland on the fishing sector. Growth of fish production was the strongest factor causing the turnaround of real GDP growth after 1992. Moreover, a growth forecast based on the estimated relationship yields a sustainable growth rate of 2.4 percent by the end of the decade.

Comparing the predicted values from a dynamic simulation with actual growth rates (Chart 15), it is evident that exports have replaced domestic absorption as the main driving force behind GDP growth since 1992. Domestic absorption and imports were much stronger during 1990-91 than simulated by the model whereas, at the same time, exports performed relatively poorly. According to the simulation, growth rates were kept from becoming negative mainly by the unpredicted high growth rates of the domestic economy. However, both domestic absorption and imports fell below their simulated values in 1992, whereas exports approached their forecasted level. In 1994, exports were higher than simulated, whereas imports increased in line with predictions and both GDP and domestic absorption remained sluggish.

The deviations between actual and simulated values can be explained by two straightforward arguments, owing to recent developments which were not captured by the model. First, the strong fluctuation of domestic absorption around its predicted path is mostly caused by an exceptional growth rate in 1991. The increase in domestic absorption in 1991 was caused by an over-proportional growth of private consumption, following a strong nominal wage increase, and accompanying growth in public consumption and gross investment (the latter due to aircraft purchases). Moreover, the reduction in inflation rates promoted increased consumer confidence. Subsequently,

CHART 15
ICELAND

DOMESTIC ABSORPTION, EXPORTS AND IMPORTS: SIMULATED VS. ACTUAL

(Annual percentage change)

Sources: Data provided by Icelandic authorities; and staff calculations.

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higher unemployment rates diminished the effective labor force and contributed to a decline in private consumption. ^{1/}

Second, the exceptional export performance in 1994 is also due to a relatively new development. Besides increasing fish production, other sectors have also started to contribute to export growth, notably the manufacturing and service sectors. Fishery equipment and services have picked up strongly, and the service sector, especially, has evolved only recently. Consequently, exports have so far seen a rare period of three subsequent years of recovery.

The relative impact of the explaining variables on the ongoing recovery is contained in the tabulation below. The numbers indicate the share of each variable in the improvement of GDP growth between 1992 and 1994, which amounted to an aggregate 5.4 percentage points. The shares have been computed by applying the long-term elasticities to the difference between the 1994 and 1992 growth rates of the explaining variables. Altogether, the variables account for 66.2 percent of the growth increase (the dynamics of the model capture another 35.1 percent). The overall forecast error is thus 1.3 percent (or 0.07 growth percentage points), hinting at a relatively well specified model. The upswing owes most to the fishing sector which contributed some 20 percent, whereas labor force and capital stock increases are relatively less important than earlier periods (resulting from lower participation rates of females and falling investment). The worldwide recovery, improvements in the REER, and tourist arrivals have also contributed to the recovery, albeit in a less prominent role.

The model-based growth projection for the next five years (Chart 16) shows that, conditional on the continuation of sound economic policies, Iceland should be able to sustain a growth rate of close to 2.5 percent. This result is mainly based on the assumption of an optimal fishing policy, allowing a slow increase of fish production from the year 1997 (reaching a growth rate of 3 percent by 1999), and a stabilizing growth rate of the capital stock, reaching 2 percent in 1997 and 2.5 percent by 1999. Apart from that, domestic policies are assumed to facilitate real wage increases along with productivity growth (1.5 percent) and the long-term interest rate is modelled to increase slightly. The GDP of industrial countries is expected to increase annually by 2.5 percent, fostering growth of aluminum exports and tourism. The projection does not assume that a new aluminum smelter is being built during the next 4 years. The REER has been kept unchanged over the forecast period.

^{1/} The achievement of low inflation rates has certainly led to a different economic environment in the past five years. However, tests for a structural break after 1988 showed that the estimation results remained unaffected by this development. Moreover, the inclusion of unemployment has not improved the model performance.

Share of Variables in the Current Recovery (1992-94)

	Growth percentage	Percent
Industrial Countries' GDP	0.44	8.3
Labor Force	0.76	14.1
Capital Stock	0.83	15.3
Fish Production	1.14	21.1
Aluminum Production	0.04	0.7
Tourist Arrivals	0.19	3.6
Real Wage	-0.07	-1.3
Long-term Real Interest Rate	-0.01	-0.1
REER	0.24	4.4
Total share of explaining variables	3.57	66.2
Dynamic effects	1.90	35.1
Residual	-0.07	-1.3
Total growth	5.40	100.0

Export growth is projected to slow in 1995, reflecting both the still depleted fish stocks and the current uncertainty about further catches in international waters. After 1997, with the fishing sector picking up, export growth strengthens and reaches 2.8 percent by the end of the projection period. The export outlook might be better if the non-traditional export sector continues to perform well but, judging from the impulse response analysis, the impact on growth would be small. Domestic absorption is projected to grow by some 3.5 percent in 1995, based on stronger investment, but will decline slightly in 1996, provided wage increases remain moderate and fiscal policy is geared towards further consolidation. Thereafter, it is projected to grow steadily with rising exports. Imports move basically in line with domestic absorption. As a result, GDP growth would rise to about 2.5 percent by 1999.

CHART 16
ICELAND

MODEL PREDICTIONS FOR DOMESTIC ABSORPTION, EXPORTS, IMPORTS AND GDP 1/ (Annual percentage change)

Sources: Data provided by Icelandic authorities; and staff calculations.

1/ Shaded area indicates standard prediction error.

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Annex: The Modified Growth-accounting Model

The model originates from the accounting equation

$$Y = A + X - I \quad (1)$$

with Y = GDP, A = domestic absorption, X = exports, and I = imports, all in real terms. Expressed in growth rates, it holds approximately that

$$g_Y \approx A/Y g_A + X/Y g_X - I/Y g_I \quad (2)$$

where g denotes the growth rate as first difference in logs. The estimation of (2) yields a vector of estimated shares, denoted γ .

To take account of the external shocks (e.g., terms of trade and fish catch), a system of equations is formulated that comprises each of the single, sectoral growth rates. Feedback between the different sectors is allowed for by including the respective growth rates in the equations. The model in its static form then looks like:

$$\Gamma' g + \Pi x + \eta = 0 \quad (3)$$

where $g = (g_A \ g_X \ g_I)'$. The x -vector contains a set of explaining variables which are assumed to have an impact on overall growth through one or more of the three sectoral equations. The model has been set up to be fully identified, and can be estimated by full information maximum-likelihood. In order to calculate the elasticities, the estimated parameters are inserted into the Γ and Π matrices, and considering that GDP growth is modeled as $g_Y = \gamma' g$, one obtains

$$g_Y = -\gamma' \Gamma^{-1} \Pi x \quad (4)$$

with the elasticities calculated as $-\gamma' \Gamma^{-1} \Pi$.

In a second step, lags are added to the system to yield the dynamic version, specified as:

$$\Gamma g + \Gamma_1 g_{-1} + \Gamma_2 g_{-2} + \Pi x + \Pi_1 x_{-1} + \eta = 0 \quad (5)$$

Long-run elasticities are calculated by setting $g = g_{-1} = g_{-2}$ and $x = x_{-1}$. Consequently, the elasticities result as $-\gamma' (\Gamma + \Gamma_1 + \Gamma_2)^{-1} (\Pi + \Pi_1)$.

In general, the estimations have performed relatively well. As Icelandic data were only available on an annual basis, the remaining degrees of freedom were quite small, preventing the use of more sophisticated techniques. Neither could the problem of autoregressive errors be resolved satisfactorily, nor the high correlation between residuals across equations. Dynamic simulations have been conducted by using actual values for the explaining variables and simulating only the components of output growth.

Fiscal Sustainability and the Medium-Term Fiscal Outlook 1/

Traditional fiscal indicators for Iceland show imbalances that appear moderate when compared with those of many other industrial countries. However, the relatively small budget deficit (1.7 percent of GDP in 1994 compared to the European average of 3 percent) and lower public debt (about 50 percent of GDP compared with 60 percent on average in Europe) have tended to mask potential growing fiscal imbalances in Iceland's public sector. 2/ Also, these conventionally defined measures of the government deficit and public debt may fail to capture both the extent of government solvency and the sustainability of a given fiscal policy. 3/ Thus, evaluating the appropriateness of the fiscal stance requires the use of calculable indicators of fiscal sustainability. In this appendix, two different approaches to fiscal sustainability are used to analyze prospects for Iceland's public finances.

The first approach assesses the magnitude of fiscal adjustment that would be needed to stabilize the debt ratio at the current level, based on reasonable assumptions regarding the economy's growth prospects. The second approach assesses the fiscal position from a saving-investment perspective. The official medium-term fiscal outlook is examined in section 3. It follows from these exercises that, based on prudent assumptions about real GDP growth rates, the indicative official projections reaching budgetary balance by 1998 are consistent with fiscal sustainability; given adverse underlying fiscal trends, this would require early measures of fiscal consolidation.

1. A Primary gap approach

In this section we make use of the primary gap indicator to assess the sustainability of fiscal policy in Iceland. The primary gap indicates the amount of fiscal consolidation that would be necessary in a given year in order to stabilize the debt-GDP ratio at its prevailing level.

1/ Prepared by Ousmane Doré.

2/ For example, just over six years ago, the treasury's gross debt was about 24 percent of GDP and the deficit at 1.3 percent of GDP. By 1994, the treasury's gross indebtedness in relation to GDP had risen steadily to near 50 percent of GDP, as a consequence of persistent revenue deficits averaging 2 percent a year during 1987-93.

3/ These issues have been examined in the literature by, among others, Buiter (1983), Boskin (1987) and Kotlikoff (1989).

Following the approach discussed in Blanchard (1990), which starts from the government's budget constraint ^{1/}, it can be shown that, expressed in terms of ratios to GDP, the change in the net debt to GDP ratio satisfies the following equation:

$$\Delta d = -b + [(r-g)/(1+g+\pi)]d \quad (1)$$

where g is the real GDP growth rate, π is the inflation rate and lower case letters denote ratios to GDP of variables defined in the footnote below. Assuming some constant values for r and g , equation 2 implies that for fiscal policy to be sustainable at the current debt ratio, the present value of primary surpluses b discounted by the difference between the real interest rate and the real growth rate $(r-g)$, must be equal to the initial level of debt (d).

$$d = \int b \exp(-(r-g)) dt. \quad (2)$$

This implies that if the Government is to meet its intertemporal budget constraint, primary budget deficits now will need to be offset by primary surpluses later, if the Government is not to resort to ever increasing levels of borrowing to finance its overall operations. ^{2/}

$$b^* = d(r-g)/(1+g+\pi) \quad (3)$$

denote the constant primary surplus that would stabilize the debt-to-GDP ratio. The difference between this and the actual primary surplus, b , measures the deviation of current policies from a sustainable fiscal path. This indicator is commonly referred to as the primary gap and will be denoted by:

$$(3) \quad PG = b^* - b = (r-g)d/(1+g+\pi) - b$$

Starting from equation (3), and given the official fiscal projections for 1995 and 1998, we consider alternative scenarios based on different assumptions regarding real GDP growth, real interest rate and domestic inflation, and derive the magnitude of fiscal consolidation that would be necessary in order to stabilize the debt-to-GDP ratio at its 1994 level. Assuming real interest rates to be maintained at 5 percent, the primary gap

^{1/} The government budget constraint in period t is given by

$$D_t = G_t - T_t + (1+r) D_{t-1} = B_t + (1+r) D_{t-1}$$

where D is the stock of government debt in real terms, G is government expenditure excluding interest, T is government revenue so that B is the primary balance and r the real interest rate on government bonds. Over an infinite time horizon, the intertemporal budget constraint is derived by summing the succession of single-period budget constraints.

^{2/} While useful as one indicator of sustainability, this approach has been criticized on the ground that the sustainability condition can be obtained at very high level of public debt.

is derived for the cases when the economy will grow at 1.5, 2, 2.5, and 3 percent, respectively. Those four cases are also examined assuming that the real interest rate will be at 4 percent. In all cases, the inflation rate is assumed to be maintained at 2.5 percent.

The results of this exercise, displayed in the tabulation below, indicate that in all cases, fiscal adjustment would be required to stabilize the net debt at 30 percent of GDP in 1995. Moreover, it is shown that, based on prudent assumptions regarding economic growth and interest rate development, the official objective of budgetary balance by 1998 is consistent with fiscal sustainability.

	Primary gap (In percent of GDP)			
	r = 5 percent		r = 4 percent	
	1995	1998	1995	1998
case 1: g = 1.5%	1.2	0.0	1.0	-0.2
case 2: g = 2%	1.0	-0.2	0.8	-0.4
case 3: g = 2.5%	0.8	-0.4	0.6	-0.6
case 4: g = 3%	0.7	-0.5	0.5	-0.7

Source: Staff calculations.

2. A saving-investment approach

A continuing financial deficit of the public sector is sustainable over time only if it contributes to investment and growth in the economy as a whole. In Iceland, the treasury deficit should therefore be examined against the overall development of saving and investment. As shown in Chart 17, the levels of domestic investment and saving have tended to decline over the past decade. Also, until 1993, total investment exceeded national saving by a relatively wide margin, implying a large current account deficit. Another aspect worth noting in the saving-investment analysis is the relative role of the Treasury in contributing to the national saving-investment gap. Chart 18 shows that since the mid-1980s, the treasury saving gap has averaged about 2 percent of GDP. The rest of the economy (private sector and municipalities together) has also invested on average more than it has saved, the gap, however, being in recent years somewhat smaller than that of the Treasury.

While the relationship between fiscal policies and national saving and investment developments are complicated and not well understood, it would appear safe to conclude that better balanced treasury finances could

CHART 17
ICELAND
SAVING AND INVESTMENT
(In percent of GDP)

Source: National Economic Institute.

CHART 18
ICELAND

TREASURY SAVING GAP

(In percent of GDP)

- 42b -

contribute favorably to the overall growth prospects in Iceland by making more room for private investment. The accompanying table below summarizes the results of some exercises about the requirements on public finances stemming from a saving and investment analysis of the economy.

The analysis is based on the following assumptions. The private sector gross saving rate is assumed to be the same as on average for 1990-94 (16.5 percent). Assuming an increase in real gross investment by up to 6 percent a year and a real GDP growth of about 2 percent a year, this would imply that the total investment level will increase from 16.5 percent of GDP in 1995 to 18.2 percent by 1998. The increase is assumed to be about the same in relative terms in the private sector. An investment level of at least 18 percent of GDP might be an appropriate target based on the experience of industrial countries over the last two decades. The external current account surplus is assumed to remain at its 1995 projected level of 1 percent of GDP.

The result of this simple exercise is that public sector financial saving would have to be improved by about 0.7 percent of GDP in 1996 and a further 1.2 percent and 0.7 percent in 1997 and 1998 respectively. The public sector would have to reach zero saving gap in 1997 and contribute to financial saving with 0.7 percent of GDP in 1998, in order for the economy as a whole to generate enough saving to finance the targeted level of investment without a deficit on the external current account.

Saving and Investment
(In percent of GDP)

	Outcome 1994	Projected 1995	<u>Target</u>		
			1996	1997	1998
Gross saving	17.7	17.3	17.8	18.6	19.2
Private	16.5	16.5	16.5	16.5	16.5
Public	1.2	0.8	1.3	2.1	2.7
Gross Investment	15.6	16.5	16.8	17.6	18.2
Private	12.7	13.8	14.3	15.5	16.2
Public	2.9	2.7	2.5	2.1	2.0
S/I balance	2.1	0.8	1.0	1.0	1.0
Private	3.8	2.7	2.2	1.0	0.3
Public	-1.7	-1.9	-1.2	0.0	0.7

Source: Staff calculations.

3. Official projections of the medium-term fiscal outlook

The Ministry of Finance's assessment of Iceland's medium-term fiscal prospects was incorporated in the October 1995 budget proposal. Two scenarios were presented: a baseline which assumed unchanged policies and showed a rising deficit over the medium term, and an alternative scenario based on measures that were projected to bring the budget into balance by 1998.

In the baseline scenario, the development of revenues and expenditures were calculated based on current laws and regulations taking into account general demographic trends, but in the absence of any specific measures on behalf of the Government. Given the increased longevity of the Icelandic population, on unchanged policies, the rapid increase of transfer payments--amounting currently to 40 percent of total expenditures--would continue unabated; operating expenditures would also continue to claim a significant proportion of government spending. This would lead the treasury deficit to rise to 5 percent of GDP by 1998, which coupled with a low nominal GDP growth assumed over this period, would push the debt ratio close to 60 percent. Moreover, in view of recent deficit-widening measures associated with subsequent fiscal concessions made in connection with the February 1995 wage agreement, the deficit would (by staff estimates) under this baseline scenario reach 6 percent of GDP, implying a debt ratio of over 60 percent.

The budget document noted that the consequences of a rising deficit for the overall macroeconomic picture of the economy would be deleterious. Interest rates would increase, hampering economic growth, the stability of prices and exchange rates could be threatened, the competitive position of industry would be eroded, the current account would turn into a deficit and foreign debt would build up again. The document sets out an alternative scenario designed to avert these pitfalls. Under this alternative (target) scenario, specific measures would be implemented to eliminate the deficit by 1998. To this end, the budget proposal articulated broad plans for expenditure restraint, including a 5 percent cumulative reduction in public consumption through increased accountability and use of contracting out. Second, transfer payments were to fall by almost 6 percent by targeting the largest categories of transfers (social security and agricultural sector). This would be achieved by reevaluation of priorities and increased efficiency to better match the need of the lowest income groups. Finally, public investment would be targeted to decline. On these assumptions, expenditures would fall by 7 percent in real terms, while revenues would remain constant, bringing a budgetary balance by 1998. The treasury's gross debt would fall from 49 percent of GDP in 1994 to 46 percent in 1998 (Chart 19).

Although the goal of budgetary balance and the expenditure measures to achieve it in the target scenario are indicative plans to inform discussion of medium-term budgetary issues, they clearly show the positive effects of credible measures of balancing the budget. In the target scenario, economic

CHART 19
ICELAND

CENTRAL GOVERNMENT GROSS DEBT

(In percent of GDP)

Source: Ministry of Finance, Treasury Finances.

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growth would be higher, climbing to 2 percent, interest rates are expected to be much lower, which lead to higher private investment and domestic demand increases without disturbing the stability of prices and exchange rates. Finally, the balance on the current account would be positive, further lowering the foreign debt.

The Tax Structure in Iceland 1/

The Icelandic tax system underwent a comprehensive overhaul in 1987 to reduce distortions and bring it more in line with that prevailing in other European countries. The 1987 tax reforms involved major changes to the personal income as well as to the corporate and indirect tax systems. Prior to 1987, the tax structure was characterized by a degree of built-in pro-cyclical instability as direct taxes and turnover taxes on business were collected on the previous year's income. The nominal value of that revenue was decided a year before it was collected on the basis of projected incomes. As a result, the effective tax rate tended to fall if incomes and prices rose faster than expected, pushing the general government accounts into deficit. Another important feature of the system was its heavy reliance on indirect taxes, with the income tax providing nearly a half of local government revenue but only 13 percent of treasury receipts.

In addition, the indirect tax system suffered from an increasingly complex mode of operation. The system became complex in its operation due to numerous exceptions that were granted in the sales tax, both as a result of lobbying by various pressure groups and economic measures taken to influence price developments. For example, food, exports, industrial machinery and most services were all exempt from the sales tax. By 1987, the tax base of goods and services exempt from the sales tax was estimated to be about 40 percent. Since one criterion for an efficient and non-distortionary tax is that it be levied as uniformly as possible on a wide base with a minimum of exceptions, the Icelandic system was deficient in this respect, even though the tax burden was low by international standards. 2/

The 1988 tax reforms shared three basic characteristics with those being implemented in the OECD at large:

- i) The reduction and simplification of personal income tax via a reduction in the number of tax rates.
- ii) A rationalizing and broadening of the expenditure tax base, through a switch to a general expenditure tax.
- iii) A trend to base-broadening and greater neutrality in the corporate tax system.

The first stage of tax reform was motivated primarily by the short-term need to introduce a greater degree of built-in stability into revenues, but equity considerations also played a part, especially in the design of the

1/ Prepared by Ousmane Doré.

2/ As noted above, one characteristic of the pre-1988 tax system was the low incidence of direct taxes, which amounted to only 6 percent of personal income.

personal income tax. The income tax was simplified by abolishing numerous exemptions and deductions, widening the tax base. The marginal tax rate was set at a flat 35.2 percent for 1988, raised to 37.7 percent in 1989 (made up of a 30.8 percent central government tax rate and a 6.9 percent local) and then to 39.8 percent in the 1990 budget. However, due to various rebates such as personal tax credit, child benefits and mortgage tax credits, the effective tax rate remained quite low at 16 percent in 1989. Unlike the old system, the income tax was paid on a pay-as-you-earn (PAYE) basis, with a final assessment at the end of each year.

Reforms of the indirect tax system involved a revision to the sales and excise taxes and to import duties. The sales tax system was revised at the beginning of 1988 by abolishing the numerous exemptions which had built up and by extending its coverage to services and food products. The import duty and excise tax systems were rationalized and integrated with the revised sales tax system. These reforms cleared the way for the introduction of a single-rate value-added tax in January 1990 based on a single tax rate of 24.5 percent. The base was fairly broad, exemptions being allowed for exports, social, educational and cultural activities, banking, insurance and transportation. Reimbursements for dairy products, meat, fish and vegetables resulted in the effective tax on these products being nearer to 14 percent.

The corporation tax was also thoroughly overhauled, with the tax base being increased by reducing the tax-free allocation to investment funds. A remaining gap in the reform program was the taxation of capital income and the full integration of income and corporation tax systems. The corporation tax base was to be further broadened by curtailing deductions and making firms within the energy sector subject to income tax. This gave scope for subsequently reducing the statutory rate of corporation tax to 45 percent in 1989.

Recent reforms

Although the new system represented a clear improvement over the pre-1987 tax system with respect to both revenue-raising and resource allocation, substantial distortions remained and the tax structure was not well suited to increased competition with Europe. The corporate tax burden was higher than the average elsewhere in Europe ^{1/}, while the personal tax rates with numerous allowances and credits were lower than the European average of 15 percent. ^{2/} This led to further reforms in the tax system

^{1/} In Iceland, the statutory corporate tax was 45 percent, with an additional turnover tax of 1.3 percent on business operating costs collected by municipalities; the marginal corporate tax rates across the EC and EFTA was about 39 percent in 1991.

^{2/} In 1992, the marginal personal tax rates was just under 40 percent, but the average rate was only 13 1/2 percent when account is taken of various allowances and credits.

during 1992-94. The main tax change in 1992 was the abolition of the import equalization tax. ^{1/} Additionally, further adjustments were made on the personal income tax system, aimed at broadening the tax base. Tax exemptions for seamen were tightened and changes were made in the child benefit system in favor of higher benefits to lower income parents.

In 1993, the Government made major changes in the corporate tax structure in order to reduce business costs and boost competitiveness. Corporate income tax rates were lowered first from 45 to 39 percent and then to 33 percent in 1994, but at the same time the tax base was broadened by the abolition of corporate investment tax credits (the so-called investment funds). The turnover tax, an important source of revenue for the municipalities, was also abolished. In the context of the wage negotiations in spring of 1993, several tax concessions were also made, among which was the lowering of the VAT on food products from the higher rate of 24.5 percent to 14 percent as of January 1, 1994. Personal income taxes were raised by 0.4 percentage points and the employer's social security tax by a similar amount. Finally, the system of tariffs and excises was subject to extensive changes in the context of the single market provisions the EEA agreement.

Major changes in 1994 included the introduction of a 14 percent VAT on hotel services, a reduction of the corporate income tax rate from 39 to 33 percent, the reduction of interest rebates for residential housing and a tax reshuffling between the central Government and the municipalities. ^{2/} Apart from the plan to introduce by 1996 a capital income tax in the form of nominal withholding tax on interest income, the 1995 budget contains no new discretionary tax changes.

Comparative analysis

Compared to other European countries, the burden of taxation in Iceland is quite low. Tabulation A below shows that at about 36 percent of GDP, tax revenue in Iceland is much lower than the European average of 45.5 percent. The recent lowering of the VAT on foods from 24.5 percent to 14 percent and the effects of numerous exemptions and rebates in the income tax system have contributed to making Iceland one of the most lightly taxed countries in Western Europe. Unlike other industrial countries, a significant share of general government's tax revenue is attributed to indirect taxes. As shown in Tabulation B, in 1994 indirect taxes accounted for over 55 percent of general government total tax revenue in Iceland. This compares with 41 percent and 45 percent respectively in Sweden and Norway. It appears however that the relative importance of this form of taxation has been

^{1/} The system of import duties was revised with an emphasis on lowering general tariffs and abolishing various import levies.

^{2/} This arrangement entailed a cut of 1.5 percentage points in personal income tax rates and the abolition of national business property taxes.

diminishing, at least for the central Government, reflecting recent changes in the tax system.

Tabulation A. General Government Current Receipts
(As a percentage of GDP)

	1990	1991	1992	1993	1994
Sweden	63.3	60.2	59.8	58.3	56.2
Norway	56.3	55.2	55.0	54.4	55.2
Finland	50.7	52.5	53.3	53.7	54.0
Iceland	36.0	37.3	37.8	36.5	35.9
Average Europe	43.9	44.6	45.1	45.5	45.5

Source: OECD.

Tabulation B. Indirect Taxes
(As a percentage of general government total taxes)

	1990	1991	1992	1993	1994
Sweden	42.1	47.2	44.7	42.3	41.9
Norway	39.7	39.9	42.3	44.0	45.1
Finland	46.2	46.6	47.7	49.5	45.0
Iceland	64.8	61.2	60.3	56.8	56.0

Source: OECD.

Measured in terms of government spending per GDP, Iceland has a relatively small government sector. General government expenditures, as a ratio of GDP, amounted to roughly 40 percent compared with the European average of 51 percent. However, the functional distribution of central Government is quite typical and in line with other industrial countries. The largest category, accounting for about 40 percent of total expenditures in recent years covers welfare, including social security, pensions, health and public housing.

General Government Total Outlays
(As a percentage of GDP)

	1990	1991	1992	1993	1994
Sweden	59.1	61.3	67.2	71.8	67.4
Norway	53.8	55.4	57.4	57.1	56.5
Finland	45.4	53.9	59.1	60.8	58.6
Iceland	40.1	41.0	41.4	40.6	40.4
Average Europe	47.6	49.0	50.3	52.0	51.5

Source: OECD.

Financial Indexation and Interest Rates in Iceland 1/

1. Introduction

Indexation has been a feature of the Icelandic financial system for many years, and its scope expanded sharply in the late 1970s. Rapid inflation led to large scale financial disintermediation, with total deposits in the deposit money banks, measured as a ratio of GDP, falling below 20 percent in 1978 from an average of 40 percent in the 1960s. The Central Bank had made an attempt in the mid-1970s to link interest rates informally to inflation so as to bring real rates to positive levels. Although interest rates moved in the right direction, it took a general indexation scheme stipulated in laws in 1979, to bring about a positive real interest rate. Following the passage of the Economic Management Act in 1979, almost all long-term securities, some loans, deposits and debt instruments were linked to a price index (the Credit Terms Index) so that changes in the index instantaneously alter the amount of financial obligations in question.

Interest rates, which had been inflexible in Iceland for most of the 1970s remained so even after the institutionalization of indexation. Initially, real interest rates as well as nominal rates on non-indexed instruments continued to be administratively set by the Central Bank. With the financial liberalization process that began in 1984, market forces were given an increasing role in interest rate determination. The Central Bank Act of 1986 left commercial banks free to set practically all their own interest rates. Following the deregulation of interest rates, deposit and lending rates rose, as banks increasingly competed among themselves and with other institutions for financial savings. Real interest rates rose sharply both on indexed claims and non-indexed claims such as non-indexed bank loans.

While financial indexation appears to have contributed to the lowering of inflation from chronically high levels, and therefore helped bring about positive real interest rates and increased savings, there is an ongoing debate in Iceland as to whether the mechanism of indexation should be dismantled altogether or simply reformed, e.g by changing the composition of the Credit Term Index to which financial instruments are indexed. A prominent view among policymakers in Iceland is that markets should be left to decide when and how to dismantle financial indexation. More generally, indexation of financial assets at the short-end are viewed as having more drawbacks than merits. There is also a belief that high interest rates in Iceland might to some extent be attributed to the indexation of financial assets and liabilities.

This appendix examines the role of financial indexation in affecting the behavior of interest rates in Iceland. Arguments in favor of and against indexation of financial assets are brought forth to show that the

1/ Prepared by Ousmane Doré.

debate regarding whether indexation leads to an increase in interest rates or not, boils down to the question of whether the financial markets are efficient under rational expectations. Starting from this view, empirical tests are undertaken using data on indexed and non-indexed bank rates to examine the extent to which the indexation of debt instruments has affected the level of interest rates in Iceland. The main findings are that financial indexation has not induced an increase in interest rates and that the interest rate spread between indexed and non-indexed assets is an indicator of future inflation.

2. Institutional background

Financial indexation has a long history in Iceland. The practice of indexation in Iceland started in 1955 with a 25 percent indexation of general housebuilding loans and a full indexation of the Compulsory Savings of young people in 1957. In 1961, the Fisheries Loan Fund started granting loans that were partly linked to the exchange rate while the Treasury began issuing indexed saving bonds linked to the Building Cost Index in late 1964. Although a law was passed in 1966 concerning the indexation of financial assets, indexation was introduced very slowly and did not cover to any extent financial assets outside the public credit system until 1972.

Indexation of credit granted by the Pension Funds to the Investment Credit Funds began in 1972. A year later, some of the Investment Credit Funds introduced indexation of credit granted out of funds obtained from the pension funds. In 1977, the Central Bank permitted the pension funds to adopt a partial indexation of 40 percent on their general loans, provided that the interest rate be no higher than 11.5 percent and the amortization period at least 10 to 15 years. The same year, it was decided by law that the pension funds should use at least 40 percent of their disposable funds to buy fully indexed long-term bonds from the Investment Credit Funds. These were the main fields in which indexation was applied until the Government announced a system of general price indexation of saving and credit in April 1979. ^{1/}

Subsequently, banks were given permission to grant fully indexed loans carrying a positive real rate of interest, with the loan principal indexed to the credit terms index. The minimum loan maturity was initially set at four years, shortened to two and half years in 1981 and to six months in 1983. The real interest rate on indexed loans was initially set at 2 1/2 percent. On the deposit side, banks began to offer fully indexed two-year time deposits carrying a real interest rate of 1 percent in 1980, and in 1981 the minimum maturity was reduced to six months. Three-month indexed deposits with a zero real interest rate were also made available in 1982.

^{1/} In accordance with the stipulations of the 1979 Economic Management Act, the central bank calculates monthly the Credit Terms Index to which the bulk of all indexed instruments are linked.

Until the late 1980s, Iceland had followed a policy of low and inflexible nominal interest rates. With persistent inflation during much of the early period, real interest rates were often negative. The real interest rate on total deposits at the DMBs was -3.8 percent in the period 1960-72, while the average real interest rate on bank lending was -1.3 percent. During 1973-77, the inflation rate accelerated and the real interest rates on deposits and lending fell to -17.7 percent and -16.8 percent, respectively. With accelerating inflation and the alarming fall in the ratio of deposits to GDP in DMBs, a more flexible interest rate policy was called for at the beginning of the 1980s. As a result, banks introduced "switching term deposits"--whose terms switched between ordinary and indexed rates according to which was more favorable to the depositor--in order to maintain competitiveness.

The development of real interest rates on indexed obligations from the beginning of the liberalization process can be seen in Chart 20. It shows the interest rates on non-indexed bank loans and government bonds from 1987-94. The turnaround in real rates on indexed obligations and loans was even more dramatic as real rates went from being highly negative to being highly positive in the course of a few years. (See Chart 20) The change from negative to positive interest rates had become imperative as financial saving was being heavily eroded and disintermediation had become a serious problem. The spread of indexation, high interest rates and deregulation resulted in a strong growth of the capital market in the mid-1980s.

Present regulations

According to the present regulations, indexing of loans with shorter maturity than two years is not permitted and indexed deposits should have a maturity of at least one year. Indexation of kronur obligations is allowed against SDR, ECU and the Credit Terms Index (CTI). Originally, the CTI was calculated monthly on the basis of cost-of-living index (with a weight of 2/3), and the building cost index (1/3). In February 1989, the composition of the index was changed with the inclusion of the wage index (with a weight of 1/3), and the weight of the cost-of-living index was reduced to 1/3.

New legislation on the indexation of financial assets was adopted in February 1995 in conjunction with the national wage agreement. To facilitate the agreement, the Government undertook to replace the current CTI with the cost-of-living index (renamed the consumer price index). The motivation of the social partners for demanding a change in indexation from the CTI to the CPI was to minimize the impact of potential wage increase on the stock of indexed debt and therefore on the debt servicing burden of households and firms. These changes can have significant effects: as a result of the 1989 revision, nominal values of indexed claims are now 7 percent below levels that would have resulted from use of the pre-1989 CTI.

CHART 20
ICELAND

REAL INTEREST RATES
(In percent)

Sources: Central Bank of Iceland, Economic Statistics, Annual Report; and data provided by Icelandic authorities.

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3. Empirical evidence

Whether and to what extent indexation has affected the level of interest rates in Iceland remains an unresolved question. 1/ As a prelude to the empirical work that follows, we first examine the nature of the relationship between the returns on indexed and non-indexed bonds in a market in which transactors are free to choose between these two instruments. If the redemption value and coupon payments of indexed bonds are to be adjusted in accordance with the development of the price level, then the rate of interest carried by indexed and non-indexed bonds cannot be identical, but must reflect these differences.

In equilibrium, the rates of interest established must be such that the expected yield to be obtained from purchasing either type of bond is the same for all holders, given their expectations about the rate of price increase, and subject perhaps to an allowance for any change in their risk position which transactors may think is involved if indexed rather than non-indexed bonds are held. Thus, the relationship between the two rates of interest is approximated by the Fisher equation namely that $r = i - \pi^e$ where π^e is the expected rate of inflation. For a given ex ante real rate of interest, the Fisher effect dictates that a higher nominal interest rate applies to financial transactions if prices are expected to rise.

The case in favor of financial indexation can be presented by considering an environment in which errors in inflationary expectations are not made systematically and markets operate efficiently. If the price expectations of all bond holders are uniform and the authorities offer indexed bonds in replacement of maturing non-indexed bonds on terms which exactly reflect these price expectations, no upward or downward pressure on the interest rates should be experienced. In this case, if one disregards the risk involved in the possible non-fulfillment of price expectations, it will be a matter of indifference to any bondholder whether he/she holds indexed or non-indexed bonds. 2/ Under these conditions, the Fisher effect implies that the evolution of interest rates in an indexed system cannot deviate systematically from the evolution of interest rates in a non-indexed system.

The case against financial indexation is often based on the hypothesis that full Fisherian transmission never takes place because expectations

1/ There is considerable debate in the literature regarding the merits of widespread financial indexation. Advocates claim that financial indexation, by eliminating the adverse effects of unanticipated price changes, does not lead to an increase in interest rates, while critics argue that it contributes unnecessarily to the increase in interest rates. For a discussion of these issues in the context of Chile, see Mendoza (1992).

2/ If account is taken of this risk, then presumably bond holders will, given the differential, distribute themselves between the two types of bonds according to their attitudes toward this factor.

underestimate inflation systematically, or that there is no efficient arbitrage in financial markets to eliminate the inflation risk component of interest rates. Suppose the authorities issue indexed bonds on terms which, for that volume, are in line with market expectations, then because of the lack of efficient arbitrage, the lenders who expect the most rapid price inflation will not be able to remove themselves from the indexed market so as to bring about an interest rate parity across markets. Under these conditions, indexation will force nominal interest rates to be higher than under normal market conditions.

As these arguments show, the conflicting views about financial indexation are founded on different notions regarding the efficiency of credit markets and the manner in which individuals formulate expectations about future inflation. In economies where financial markets are well organized and competitive, and where market participants formulate expectations rationally, indexation cannot result in systematically higher interest rates than a system without indexation, the intuition being that indexation eliminates the inflation-risk component of interest rates.

The case of Iceland

This section presents empirical tests to assess the effectiveness of indexation in eliminating the inflation-risk factor of nominal interest rates in Iceland. The claim that indexation does not validate higher interest rates than a non-indexed system in Iceland is examined by undertaking two tests: one that explores the degree of market efficiency and another that extracts the information conveyed by the differential between indexed and non-indexed interest rates regarding future increases in inflation. Both tests are conducted jointly with the hypothesis that agents formulate their expectations rationally, i.e., that their projections of future inflation are not systematically biased.

Consider a financial market of the Icelandic-type, where indexed and non-indexed instruments co-exist. A lender has the option of holding an indexed instrument with real yield r or buy a non-indexed instrument with a nominal rate i . The nominal return on the indexed bond is linked to the lender's expectation of the Credit Terms Index (CTI) at time t . As discussed in the preceding section, if the market is efficient, the following will emerge as an arbitrage condition: ^{1/}

$$(1 + \text{NOM}) = (1 + \text{REAL})(1 + E_t T) \quad (1)$$

where NOM is the monthly nominal interest rate on 90-day non-indexed bank loans, REAL is the real rate on indexed bank loans, $T = \Delta \text{CTI} / \text{CTI}$ is the change in the Credit Term Index ex-post, and E_t denotes the expectation operator conditional on information available at date t . It can be shown

^{1/} This condition would need to be modified if account is taken of the term structure of interest rates.

(see Annex) that under conditions of risk aversion, the above arbitrage condition may not hold at equality due to the presence of a risk premium. Non-indexed bonds may need to be offered at a premium because the two assets are not perfectly substitutable or because of risk aversion on the part of the investors. In the case of Iceland, the risk premium could be due to the uncertainty associated with the possibility of changes in the CTI. To test the empirical content of this theory, we estimate the following equation:

$$\text{NOM}_t = \text{RP} + \beta (\text{REAL}_t + T_t) + \mu_t \quad (2)$$

where RP is a time-invariant risk premium. The test will analyze jointly efficient arbitrage (unbiasedness hypothesis), a time-invariant risk premium, and a particular hypothesis of how expectations are formed. It is assumed here that expectations by agents in the Icelandic financial markets are formed rationally, i.e., on the basis of all publicly available information. If expectations are rational, forecasting errors are random variables that follow a white-noise process.

To be consistent with the hypothesis mentioned, the coefficient estimates should be $\text{RP}^* \neq 0$, $\beta^* = 1$, if there is efficient arbitrage under rational expectations and the error term μ_t must be a serially uncorrelated random variable. The null hypothesis can be written as

$$H_0 : \quad \text{RP} \neq 0 \quad , \quad \beta = 1 \quad , \quad (\mu_t) \text{ serially uncorrelated.}$$

The estimation of equation (2) is done using monthly data on the effective real rates paid on indexed bank loans and non-indexed secured loans from 1986 to 1995. The estimation results over different subperiods are summarized in the tabulation below. The results for the period as a whole, support the hypothesis that there is efficient arbitrage in Icelandic financial markets in the sense that β^* is not statistically different from 1. This implies that, corrected for the liquidity premium, changes in the effective return of indexed loans are reflected in almost equally proportional changes in the effective return of non-indexed loans. The hypothesis of a time invariant risk premium ($\text{RP} \neq 0$) also could not be rejected at the 5 percent level, suggesting that there is a risk premium attached to the rates on non-indexed loans. The regression as a whole has a high explanatory power and a low standard error, and it produces residuals that are serially uncorrelated.

Estimates of Regression Equation

Period	RP	β	SE	R ²	DW	t ($\beta=1$)	F
1988-1994	3.5 (3.21)	0.82 (9.35)	4.06	0.70	1.55	2.01	202.24
1988-1993	3.2 (1.71)	0.83 (9.17)	4.75	0.66	1.49	1.97	137.61
1988-1992	2.35 (1.33)	0.85 (9.45)	4.65	0.65	1.51	1.85	109.39
1988-1991	1.92 (0.70)	0.86 (7.53)	5.20	0.55	1.49	1.22	56.81
1988-1990	0.64 (0.16)	0.91 (5.82)	5.93	0.49	1.42	0.57	33.89

Note: Numbers in brackets are t-statistics for the null hypothesis that the corresponding coefficient is not significantly different from zero while t ($\beta=1$) are t-statistics for the null hypothesis that the coefficient β is not different from 1.

Chart 20 depicts the evolution of the real interest rates on indexed and non-indexed bank loans. The real interest rate on non-indexed bank loans is measured by the average nominal interest rate during each quarter, deflated by price increases over the quarter. This is therefore an ex-post measure of the real interest rate and fluctuates considerably due to changes in the rate of inflation and rigidities in nominal interest rates. The chart shows that both rates follow similar trends with the rates on indexed loans being systematically lower than those on non-indexed loans in recent years. The higher real rates on indexed loans compared to non-indexed loans in the period 1980-88 reflect the premium that was associated with the agents' perception of the risk involved in the variance of monthly inflation during that period.

A related question is to what extent does the interest rate differential between indexed and non-indexed bonds reflect inflationary expectations in Iceland. The informational content of the spread between indexed and non-indexed interest rates can be extracted by estimating a functional relationship that follows from the Fisher effect. ^{1/} If the differential reflects inflation expectations, then assuming that expectations are fully realized, a regression of actual inflation on the spread should produce a coefficient estimate not statistically different from one. Such an equation was estimated by ordinary least squares using

^{1/} This approach has been used in various tests in the efficient market literature in finance, e.g Fama (1990) and Mishkin (1990).

quarterly data from 1988 to 1995. In this case, the regression output is summarized as follows:

$$\text{INF} = -0.231 + 1.11 (\text{NOM-REAL}) + \mu_t$$

(0.29) (14.85)

Adj. R^2 = 0.89 DW = 1.81 SE = 2.94 F = 220.60

The results show that the hypothesis that the coefficient estimate is not different from 1 cannot be rejected at the 5 percent significance level. Furthermore we are unable to reject the null hypothesis that the constant term is not significantly different from zero, suggesting that changes in the differential between indexed and non-indexed rates provide an indicator of future inflation. Chart 21 depicts the actual and predicted values of inflation produced by the model during the period considered. The chart illustrates the predictive power of the regression based on the spread between indexed and non-indexed interest rates to forecast the evolution of the uncovered increase in inflation.

4. Current views of indexation in Iceland

One of the arguments given for the introduction of indexed bonds in Iceland was that this kind of security would stimulate private voluntary saving. It is reckoned that full indexation, by enabling savers to know how much their savings will be worth in the future in terms of purchasing power, has had a positive effect on domestic saving in Iceland. Total deposits and bonds issued by banks have recovered to over 40 percent of GDP and pension funds' assets and other financial savings have been inflation-protected. As shown in Chart 22, indexed deposits rose from next to nothing in 1980 to over 60 percent of total deposits in 1994. The introduction of indexed bonds was also proposed because of its expected positive effects on fighting inflationary pressures. While the lowering of inflation in Iceland may be attributed to a number of factors, including a successful exchange rate policy, there is little doubt that indexation of financial assets played a major role in reducing the disruptive impact of past high inflation on the financial system.

These merits notwithstanding, there have been calls in recent years to reduce the scope of indexation in the financial market. One problem associated with indexation is its adverse effects on interest rate formation in the banking system. Interest rate decisions by banks have been complicated by the mismatch between their indexed assets and indexed liabilities. 1/ Banks' indexed liabilities (mainly deposits) have been far bigger than their indexed assets, leading them to raise nominal interest rates higher than they would have been, because of the risk premium it

1/ The mismatch between indexed assets and liabilities amounted to some ISK 25 billion in 1993, prompting the central bank to enter a swap agreement with the commercial and saving banks aimed at reducing such a mismatch.

entails. 1/ Another problem is that, because indexation is associated with a high-inflation mentality, it carries allocational costs. On this ground, and in view of the low level of inflation rate, there is a case to be made for reducing indexation in the Icelandic financial system.

Attempts to move in this direction started in July 1988, when the Government banned direct indexation of the principal value of financial instruments with maturities shorter than two years and set the minimum maturity for indexed bank deposits at six months. In June 1989, the Central Bank announced that indexation of switching-term deposits would only apply to the unused amount in each saving account in each six-month period. In October 1993, as part of its effort to reduce interest rates, the Government announced a package of reforms which included the reduction of indexation on short-term instruments; the minimum maturity for indexed loans was reduced from 3 to 2 years, and deposits could only be indexed for a maturity of over 1 year.

How far the dismantling of the indexation should go depends on the progress towards disinflation. Given the crucial role played by the mechanism of indexation in creating a stable financial system, a gradual removal of it through market forces might be the appropriate approach. 2/ A sudden removal of indexation could be interpreted as an attempt by the Government to resort to inflationary finances, and therefore could jeopardize the hard-won gain in inflation performance of recent years. A prominent view in Iceland is that indexation at the short-end has had more drawbacks than merits as it tended to be market distorting, whereas at the long-end indexation has proved to be more beneficial. 3/ Therefore, one proposal is the early introduction of non-indexed government securities with longer maturities than the present two years, as a first step toward the progressive withering of indexation provisions in the Icelandic financial system.

5. Conclusions

The purpose of this appendix has been to look into the mechanism of financial indexation in Iceland and its influence on the operation of the financial system, particularly with regard to interest rate formation. Despite calls for dismantling financial indexation, the claim that Iceland's

1/ In the summer of 1993, commercial banks raised nominal interest rates in response to a 7.5 percent nominal devaluation of the krona in June 1993, which had adversely affected their net liabilities position in indexed claims.

2/ For example, as competition in banking increases and depositors become free to bank with foreign institutions, the need for an indexation system will decline.

3/ For example, the recent general rise in European interest rates did not noticeably affect Iceland, partly because higher inflation risks played no role for indexed bonds.

CHART 21
ICELAND

ACTUAL AND PREDICTED INFLATION RATE

(Quarterly change at an annual rate, in percent)

Source: Central Bank of Iceland; and staff calculations.

CHART 22
ICELAND
INDEXED DEPOSITS AND CREDITS
(In percent of total)

Source: Central Bank of Iceland; and data provided by Icelandic authorities.

stubbornly high real interest rates of recent years is to some extent attributable to indexation, could not be supported by the evidence presented in this paper. Therefore, the root cause of high real interest rates in Iceland may be found elsewhere, for instance in the fiscal position, saving performance, and a relatively large external debt. A prolonged period of restricted financial activities and capital controls in the past and inadequate competition in the banking system may also have affected the level of real interest rates in Iceland.

Annex

Consider a dynamic stochastic economy which has a single good each period whose quantity varies stochastically over time and across consumers. Each period t , for $t = 0, 1, \dots, T$ the economy experiences an event z_t . Let $c_t(z^t)$ denote the consumption of the single good at date t given history z_t and by $P(z^t)$ its price, so that $P_{t+1}(z^{t+1})/P_t(z^t) = \pi(z^{t+1})$ represents the inflation rate. Each period, $y(z^t)$ units of the consumption good become available per capita.

There is a government in this economy who consumes $g_t(z^t)$ units of the consumption goods, collects lump-sum taxes $T_t(z^t)$ in period t if history z^t occurs and issues indexed bonds $B_t(z^t)$ with a real yield $r(z^t)$ known at time t . At time t , each agent in the economy has access to a one-period securities market where indexed government bonds $B(z^t)$ are traded alongside with privately issued non-indexed bonds $L(z^t)$ which pay off a nominal return $i_t(z^t)$, but whose real return $v(z^{t+1}) = i(z^t) \cdot \pi(z^{t+1})$ is uncertain at time t .

The representative consumer in this economy chooses his consumption of the single good (c^i), asset positions (b^i, l^i) so as to maximize the expected utility function given by

$$\sum_{t=0}^T \sum_{z^t \in Z^t} \beta^t f(z^t) u(c_t(z^t))$$

subject to the sequence of budget constraints given by

$$c_t(z^t) + l_{t+1}(z^t) + b_{t+1}(z^t) \leq y(z^t) + R_t(z^t) b_t(z^{t-1}) + V_t(z^t) l_t(z^{t-1}) - T_t$$

where for all t and $z^t \in Z^t$, $u(\cdot)$ is increasing, concave and differentiable and satisfies the Inada conditions.

In equilibrium, government policies obey the sequence of budget constraint

$$B_{t+1}(z^t) = R_t(z^t) B_t(z^{t-1}) + g_t(z^t) - T_t(z^t)$$

and all markets clear, i.e for all t , and z^t

$$\sum_i c^i(z^t) + g_t(z^t) = \sum_i y_t^i(z^t)$$

$$\sum_i l^i(z^t) = 0$$

and the terminal condition $B_{T+1} = 0$.

Assuming the consumer problem has a solution with finite value of the objective function, the following result can easily be derived from the first order necessary conditions.

$$r_t = i_t - \frac{E_t \eta_{t+1} E_t \pi_{t+1} + \text{Cov}(\eta_{t+1} \pi_{t+1})}{E_t(\eta_{t+1})}$$

$$r_t = i_t - \pi^e - \rho_t$$

where $\rho_t = \text{Cov}(\eta_{t+1} \pi_{t+1}) / E_t \eta_{t+1}$ is a risk premium, and $\eta_{t+1} = u'(c_{t+1})$ is the marginal utility of consumption in period $t+1$. It follows from the last equation that under risk aversion, $v_t - r_t$ is non-zero.

Table A1. Iceland: GDP and Expenditure Components 1/

	1993 In billions of kronur at current prices	1989	1990	1991	1992	1993	1994 Prov. Forecast 2/	1995 Forecast 2/
		Percentage changes at constant prices						
Private consumption	249.0	-4.2	0.5	4.1	-4.4	-4.5	2.1	2.9
Public consumption	84.0	3.0	4.4	3.2	-0.8	2.0	1.1	2.0
Gross fixed investment	65.0	-7.8	2.6	2.0	-11.1	-10.4	--	5.5
Final domestic demand	397.9	-3.6	1.6	3.5	-5.0	-4.2	1.5	3.1
Change in stocks 3/	0.6	-0.8	-0.2	1.6	-0.3	0.3	-0.7	0.4
Total domestic demand	398.5	-4.4	1.4	5.2	-5.3	-4.0	0.8	3.6
Exports of goods and services	135.0	2.9	-0.0	-5.8	-1.7	6.4	6.3	0.3
Imports of goods and services	122.8	-10.3	1.0	5.5	-7.8	-8.5	1.7	4.6
Gross domestic product	410.8	0.3	1.1	1.3	-3.3	0.9	2.0	2.1
Net factor income 3/	-12.1	-0.3	0.0	-0.4	0.1	-0.3	0.4	-0.5
Gross national product	398.6	-0.1	1.2	1.1	-3.4	0.8	2.6	2.4
Gross national income 4/		-1.6	0.5	2.6	-4.1	-0.9	2.0	3.0

Source: National Economic Institute.

1/ Before 1990, volume changes are based on 1980 prices, thereafter on 1990 prices.

2/ Official estimates and forecasts as of January 1995.

3/ Change as a percentage of GNP of previous year.

4/ GNP adjusted for changes in terms of trade.

Table A2. Iceland: Gross Fixed Capital Formation ^{1/}

	1993 In billions of kronur at current prices	1989	1990	1991	1992	1993	1994 Forecast ^{2/}
		Percentage changes at constant prices					
Gross fixed capital formation	65.0	-7.8	2.6	2.0	-11.1	-10.4	--
Business sector	22.0	-20.0	7.4	0.1	-16.4	-25.2	-0.9
Agriculture ^{3/}	1.5	-24.8	-39.6	0.2	-19.0	-5.5	-1.0
Fisheries, processing	3.2	-50.5	-22.8	-7.1	70.6	-58.9	21.6
Manufacturing	6.0	-1.0	-20.0	17.6	-20.7	0.3	0.4
Transport equipment	3.3	97.9	116.7	-8.2	-45.9	-42.6	-10.0
Commerce and services	3.5	-8.9	-6.2	-14.8	-19.9	-3.0	-3.0
Other	4.5	-35.9	24.3	21.5	-21.3	-5.0	-10.0
Housing	14.3	2.7	-0.5	-4.9	-3.3	-4.0	2.0
Public sector	25.1	5.4	-1.4	9.9	-13.9	8.8	-9.3
Electricity	2.2	34.5	37.2	11.8	-56.7	-17.5	-12.0
Geothermal heat and water	1.5	15.8	-37.3	-18.1	1.0	0.8	--
Communications	12.2	-5.1	-8.0	23.0	1.8	20.8	-13.0
Public buildings	9.2	2.5	-0.7	2.6	-4.6	-4.4	-5.0

Source: The National Economic Institute;

^{1/} Volume changes are based on 1990 prices, except for 1993 and 1994 which are based on previous year's prices.

^{2/} Official estimates and forecasts as of October 1994.

^{3/} Including aquaculture.

Table A3. Iceland: Gross Domestic Product by Sectors

	In percent of total (1990)	1989	1990	1991	1992	1993 Prel.	1994 Est.
		Percentage changes at constant prices					
Agriculture and fishing	13.0	-2.7	2.2	-12.6	-3.1	2.4	-1.4
Agriculture	2.9	0.3	-1.8	-0.8	-5.3	-2.1	-2.0
Fishing	10.1	-4.1	4.1	-18.0	0.1	3.8	-1.2
Manufacturing	17.4	-3.6	-2.8	1.2	-3.7	-1.7	5.6
Fish processing	5.2	-3.6	-2.0	0.4	-2.0	6.0	2.0
Other manufacturing	12.3	-3.6	-3.1	1.6	-4.4	-4.9	7.3
Electricity and water supply	4.3	2.2	0.6	1.7	1.0	1.0	1.0
Construction	8.2	0.8	-1.2	0.2	-8.5	-0.2	-3.9
Commerce	13.4	-5.5	4.1	1.4	-7.8	-2.5	2.0
Transport, storage and communication	7.8	-2.6	6.9	1.6	-3.5	--	2.5
Finance, insurance, real estate and business services	17.0	0.7	0.3	1.8	-5.0	-2.0	2.0
Other private services	6.2	-2.2	-1.0	3.7	-2.4	-2.0	3.0
Government services	16.1	3.0	4.9	3.8	-0.8	2.0	1.1
Other producers	1.1	2.8	3.7	2.6	--	--	-1.0
Less: Imputed bank service charges	-4.5	-2.2	-1.7	4.1	-5.0	-2.0	2.0
Gross domestic factor income	100.0	-0.8	1.8	0.2	-4.1	-0.4	1.6
Memorandum item: GDP from expenditure side		0.3	1.1	1.3	-3.3	0.9	2.0

Source: National Economic Institute.

Table A4. Iceland: Fish Catch and Marine Production

	1988	1989	1990	1991	1992	1993	1994 Est.	1995 Forecast 1/
<u>(In thousands of metric tons)</u>								
Fish catch	1,758	1,496	1,506	1,050	1,574	1,719	1,537	1,766
Cod	376	354	334	307	267	260	210	205
Other demersal species	322	338	339	347	318	324	341	354
Herring	93	97	90	79	123	117	149	120
Capelin	911	653	694	260	798	941	750	1,000
Crustaceans	42	40	44	51	61	69	82	82
Others	15	13	5	6	8	8	5	5
<u>(Percentage changes at constant prices) 2/</u>								
Value of catch	-1.0	-3.8	-2.9	-6.1	0.1	3.8	-3.6	3.0
Excluding capelin	-1.3	-1.8	-3.4	-2.0	-5.8	2.1	-1.9	0.2

Source: The National Economic Institute.

1/ Official estimates and forecasts as of January 1995.

2/ Catch values deflated by domestic fish prices.

Table A5. Iceland: Export Production and Merchandise Exports

	1989	1989	1990	1991	1992	1993	1994	1995
	In percent of export production	Percent changes at constant prices						
							Est.	Forecast ^{1/}
Export production	100.0	1.8	-1.8	-3.9	-2.6	6.7	3.6	0.5
Marine products	71.3	-2.3	-1.2	-2.6	-2.0	6.0	2.5	-1.0
Aluminum	13.0	7.8	-1.8	2.7	0.4	1.5	5.0	1.5
Ferrosilicon	4.3	3.8	-12.2	-20.6	8.7	27.5	-4.4	10.0
Other products	11.4	13.4	-0.8	-16.0	-10.5	-1.4	14.3	9.6
Exports	102.8	3.5	-1.4	-7.9	-1.0	5.1	10.0	0.5

Source: National Economic Institute.

^{1/} Official estimates and forecasts as of January 1995.

Table A6. Iceland: Balance of Payments on Current Account

	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
<u>(In millions of kronur)</u>								
Merchandise exports, f.o.b.	53,053	61,667	80,072	92,452	91,560	87,833	94,658	113,472
Merchandise imports, f.o.b.	55,020	61,996	72,603	87,652	94,639	87,909	82,390	92,964
Merchandise trade balance	-1,967	-329	7,469	4,800	-3,079	-76	12,268	20,508
Net non-factor services	-317	-2,050	-427	-149	-2,283	-619	-52	481
Balance on goods and services	-2,284	-2,379	7,042	4,651	-5,362	-695	12,216	20,989
Net interest payments	-6,213	-8,173	-12,951	-14,377	-14,797	-13,619	-14,579	-12,027
Net unrequited transfers	-24	-42	-185	6	-301	-360	-155	-919
Current account balance	-7,107	-8,927	-4,307	-7,744	-18,349	-12,360	182	9,201
<u>(In millions of SDRs)</u>								
Merchandise exports, f.o.b.	1,060.4	1,066.5	1,094.9	1,168.3	1,133.9	1,083.5	1,002.7	1,132.8
Merchandise imports, f.o.b.	1,099.7	1,072.2	992.8	1,107.7	1,172.1	1,084.4	872.8	928.1
Merchandise trade balance	-39.3	-5.7	102.1	60.7	-38.1	-0.9	130.0	204.7
Net non-factor services	-6.3	-35.4	-5.8	-1.9	-28.3	-7.6	-0.6	4.8
Balance on goods and services	-45.7	-41.1	96.3	58.8	-66.4	-8.6	129.4	209.5
Net interest payments	-124.2	-141.3	-177.1	-181.7	-183.3	-168.0	-154.4	-120.1
Net unrequited transfers	-0.5	-0.7	-2.5	0.1	-3.7	-4.4	-1.6	-9.2
Current account balance	-142.1	-154.4	-58.9	-97.9	-227.2	-152.5	1.9	91.9
<u>(In percent of GDP)</u>								
Merchandise exports, f.o.b.	25.4	24.0	26.0	25.4	23.1	22.1	23.0	26.3
Merchandise imports, f.o.b.	26.3	24.2	23.6	24.1	23.9	22.1	20.0	21.6
Merchandise trade balance	-0.3	0.5	3.0	1.9	-0.2	0.6	3.6	5.4
Net non-factor services	-0.2	-0.8	-0.1	-0.0	-0.6	-0.2	-0.0	0.1
Balance on goods and services	-0.5	-0.3	2.9	1.9	-0.8	0.4	3.6	5.5
Net interest payments	-3.0	-3.2	-4.2	-4.0	-3.7	-3.4	-3.5	-2.8
Net unrequited transfers	-0.0	-0.0	-0.1	0.0	-0.1	-0.1	-0.0	-0.2
Current account balance	-3.4	-3.5	-1.4	-2.1	-4.6	-3.1	0.0	2.1
Memorandum items:								
Terms of trade (1985=100)	109.1	107.7	102.8	100.0	104.4	100.6	94.4	94.4
(Change in percent)	5.3	-1.3	-4.6	-2.7	4.4	-3.7	-6.1	--
Conversion rate (ISK/SDR, period average)	50.0	57.8	73.1	79.1	80.7	81.1	94.4	100.2

Source: Central Bank of Iceland.

Table A7. Iceland: Merchandise Trade by Commodity

	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
<u>(In millions of kronur)</u>								
Merchandise exports, f.o.b.	53,053	61,667	80,072	92,452	91,560	87,833	94,658	113,472
Merchandise imports, f.o.b.	55,020	61,996	72,603	87,652	94,639	87,909	82,390	92,964
Trade balance	-1,967	-329	7,469	4,800	-3,079	-76	12,268	20,508
<u>(In percent of total exports)</u>								
Merchandise exports, f.o.b.	100.0	100.0	100.0	100.2	100.0	100.0	100.0	92.9
Marine products	76.0	71.1	71.0	75.6	80.0	79.6	78.8	56.8
Agricultural products	1.9	1.7	1.7	1.9	1.8	1.9	1.7	1.2
Manufacturing products	20.1	22.4	24.6	20.4	17.4	17.2	17.5	13.0
Aluminum	9.6	10.7	12.9	10.4	8.8	9.2	8.7	7.0
Ferrosilicon	2.8	3.9	3.8	2.6	1.9	1.9	2.5	1.5
Other	7.7	7.7	8.0	7.4	6.6	6.2	6.2	4.5
Miscellaneous	2.0	4.8	2.7	2.2	0.9	1.4	2.1	22.0
<u>(In percent of total imports)</u>								
Merchandise imports, f.o.b.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Special imports	10.8	13.4	14.9	16.0	13.8	13.9	8.6	9.2
Special investment goods	6.1	8.9	8.9	9.6	7.6	8.1	2.7	3.9
Aluminum smelter	3.9	3.6	5.0	5.5	5.5	5.2	5.2	4.6
Ferrosilicon plant	0.7	0.9	1.1	1.0	0.8	0.7	0.7	0.7
General imports	89.2	86.6	85.1	84.0	86.2	86.1	91.4	90.8
Oil	6.8	5.9	8.3	9.5	7.8	8.1	8.9	8.1
Other	82.4	80.7	76.8	74.5	78.3	78.0	82.5	82.7
<u>(Percentage changes at constant prices)</u>								
Merchandise exports	4.4	-1.2	3.5	-1.4	-7.9	-1.0	5.2	14.8
Merchandise imports	25.0	-5.5	-10.9	0.3	4.9	-7.6	-14.1	12.9
Oil	8.1	-1.7	14.7	0.3	-15.5	11.8	-2.8	5.2

Source: Statistical Bureau of Iceland.

Table A8. Iceland: Merchandise Trade by Area

	1987	1988	1989	1990	1991	1992	1993	1994 ^{1/}
<u>(In percent of total)</u>								
Exports, f.o.b.	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Western Europe	65.6	69.0	72.5	76.5	74.4	76.0	68.8	66.2
Of which:								
Germany	10.0	10.3	11.9	12.7	12.1	12.5	11.0	12.8
Italy	3.0	2.5	3.2	2.9	3.5	2.8	2.0	2.3
Portugal	9.4	8.5	4.3	3.6	4.7	2.9	1.6	1.3
Spain	3.0	3.4	3.4	5.0	4.8	5.1	4.9	4.6
Switzerland	2.7	4.5	5.5	4.2	4.0	2.5	3.7	1.7
United Kingdom	19.5	23.3	20.8	25.4	23.4	25.1	21.6	20.4
Eastern Europe	4.7	5.4	5.0	3.0	2.8	0.4	0.5	0.7
Of which: Russia	3.6	3.6	3.1	2.5	0.5	0.3	0.4	0.6
Other	29.7	25.6	22.6	20.5	24.8	23.6	30.7	33.1
Of which:								
United States	18.2	13.6	14.3	9.9	12.6	11.4	15.9	14.5
Japan	7.8	7.6	7.1	6.0	7.9	7.5	9.3	14.1
Imports, c.i.f.	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Western Europe	72.7	73.6	70.1	66.0	67.7	73.6	72.1	81.4
Of which:								
Germany	15.2	14.2	13.1	12.4	12.7	12.4	11.9	12.4
United Kingdom	8.2	8.2	8.1	8.1	8.0	8.5	9.0	10.9
Eastern Europe	5.8	5.5	6.5	6.7	4.0	2.4	3.4	3.4
Of which: U.S.S.R.	4.2	3.5	4.2	5.0	3.2	1.6	2.5	2.5
Other	21.5	20.8	23.4	27.3	28.2	24.0	24.5	15.2
Of which:								
United States	7.1	7.5	11.0	14.4	12.6	8.3	9.3	9.8
Japan	8.2	6.9	4.9	5.6	7.2	5.8	5.5	4.4
<u>(In millions of SDRs)</u>								
Memorandum items:								
Exports, f.o.b.	1,060	1,066	1,095	1,168	1,134	1,083	1,003	1,133
Imports, c.i.f.	1,224	1,188	1,097	1,221	1,290	1,195	967	928

Source: Statistical Bureau of Iceland.

^{1/} First eleven months of the year.

Table A9. Iceland: Trade in Services

(In millions of kronur)

	1988	1989	1990	1991	1992	1993	1994 Prel.
Travel, net	-5,222	-5,470	-8,058	-9,243	-9,167	-8,973	-7,877
Payments	9,902	11,712	16,168	17,279	16,571	17,918	17,514
Receipts	4,680	6,242	8,110	8,036	7,404	8,945	9,637
Transportation, net	229	849	2,266	1,048	1,322	2,778	3,365
Payments	8,819	10,263	10,404	11,943	10,840	12,849	13,661
Receipts	9,048	11,112	12,670	12,991	12,162	15,627	17,026
NATO defence forces, net	5,110	7,308	9,234	9,439	9,757	9,061	9,547
Miscellaneous, net	-500	-1,327	-1,615	-1,416	-217	-182	-256
Services excl. interests, net	-383	1,360	1,827	-172	1,695	2,684	4,779
Payments	22,435	27,156	32,625	36,549	34,766	40,805	42,093
Receipts	22,052	28,516	34,452	36,377	36,461	43,489	46,872
Interests, net	-8,173	-12,951	-14,377	-14,797	-13,619	-14,615	-15,167
Payments	9,130	14,568	16,190	16,580	15,994	17,246	17,597
Receipts	957	1,617	1,813	1,783	2,375	2,631	2,430
Total services and income, net	-8,556	-11,591	-12,550	-14,969	-11,924	-11,931	-10,388
Payments	31,565	41,724	48,815	53,129	50,760	58,051	59,690
Receipts	23,009	30,133	36,265	38,160	38,836	46,120	49,302

Sources: National Economic Institute; Central Bank of Iceland.

Table A10. Iceland: Unemployment, Wages, and Prices

	1989	1990	1991	1992	1993	1994 Est.	1995 Forecast ^{1/}
<u>(In percent of labor force)</u>							
Unemployment	1.7	1.8	1.5	3.1	4.4	4.8	4.5
Vacancies ^{2/}							
Spring	-0.1	0.2	0.6	-0.6	-0.9	-0.5	...
Autumn	-0.5	0.4	0.8	-1.4	-0.6	--	...
<u>(Percentage changes)</u>							
Nominal wages and incomes							
Hourly wage rates							
All employees	13.6	7.2	8.2	5.8	1.1	0.9	...
Skilled and unskilled labor	12.5	7.7	8.5	4.4	1.6	0.0	...
Disposable income per capita	11.5	10.0	9.5	1.4	-0.4	2.1	5.0
Prices							
Cost of living index	21.1	15.5	6.8	4.0	4.1	1.6	2.5
GDP deflator	19.8	16.8	7.6	3.7	2.5	2.6	2.4
Private consumption deflator	23.3	17.0	6.9	4.7	4.7	1.4	1.1
Real wages and incomes ^{3/}							
Hourly wage rates							
All employees	-6.2	-7.2	1.3	1.8	-2.9	-0.7	...
Skilled and unskilled labor	-7.1	-6.8	1.6	0.4	-2.4	-1.5	...
Disposable income per capita	-7.9	-4.8	2.5	-2.5	-4.3	0.5	2.5

Source: The National Economic Institute.

^{1/} Official forecast as of January 1995.

^{2/} Planned hiring less layoffs.

^{3/} Relative to the cost of living index.

Table A11. Iceland: Average Yields on Deposits and Borrowing Accounts in Deposit Money Banks

(Period average, in percent)

	Gen. savings books	Time deposits 1/	Gen. bills (60 days)	Unindexed securities	Indexed loans 2/	Inflation rate 3/
1981	34.0	38.8	32.5	40.0	2.5	54.5
1982	42.0	38.3	33.0	47.0	3.0	49.4
1983	35.1	39.5	35.0	27.0	4.0	82.0
1984	16.0	18.1	20.9	25.8	8.0	30.8
1985	22.7	24.7	30.0	32.0	6.2	32.0
1986	11.1	12.2	18.2	16.4	6.2	22.1
1987	14.1	15.5	25.2	36.2	9.5	18.1
1988	16.3	17.4	28.0	12.2	8.1	25.8
1989	11.6	12.3	25.8	31.8	7.8	20.8
1990	3.7	4.3	15.4	13.5	8.2	15.5
1991	4.7	4.9	17.0	16.3	10.0	6.8
1992	1.2	1.4	12.3	12.5	9.3	4.0
1993	0.8	...	14.2	11.7	7.5	4.1
1994						
Jan.	0.5	...	10.7	10.2	7.6	3.2
Feb.	0.5	...	10.7	10.2	7.6	2.5
Mar.	0.5	...	10.7	10.2	7.6	2.6
Apr.	0.5	...	10.7	10.2	7.6	2.4
May	0.5	...	11.0	10.2	7.7	2.2
June	0.5	...	11.3	10.8	8.1	2.3
July	0.5	...	11.4	10.8	8.1	1.6
Aug.	0.5	...	11.4	10.8	8.1	0.8
Sep.	0.5	...	11.4	10.8	8.1	0.7
Oct.	0.5	...	11.4	10.8	8.2	--
Nov.	0.5	...	11.4	10.9	8.3	-0.1
Dec.	0.5	...	11.4	10.9	8.3	0.5
1995						
Jan.	0.5	...	11.4	10.9	8.3	1.7
Feb.	0.5	...	11.4	10.9	8.3	1.7

Source: Central Bank of Iceland.

1/ Three-month time deposits.

2/ Five years and longer, real rate.

3/ Change in the cost of living index.

Table A12. Iceland: Monetary Aggregates

(Twelve-month percentage change)

	Base Money	Narrow Money (M1)	Broad Money (M3)
Dec. 1987	10.5	31.3	35.1
Dec. 1988	11.2	16.6	24.0
Dec. 1989	29.1	33.6	30.0
Dec. 1990	-18.1	24.5	14.6
Dec. 1991	9.6	19.9	14.3
Dec. 1992	-9.5	1.3	3.8
1993			
Jan.	-10.6	-2.1	2.8
Feb.	-12.6	-0.7	3.6
Mar.	-8.8	-0.6	2.8
Apr.	-20.2	-5.9	2.7
May	-17.0	-6.2	1.7
June	-10.8	2.1	4.5
July	-10.9	-1.2	3.9
Aug.	-16.1	4.0	5.9
Sep.	-19.3	2.9	5.4
Oct.	-20.6	3.5	6.0
Nov.	-23.6	5.6	6.4
Dec.	-12.1	5.4	6.5
1994			
Jan.	-12.1	6.5	6.8
Feb.	-11.0	9.5	6.3
Mar.	-5.1	21.8	10.0
Apr.	-3.8	16.2	7.7
May	-5.0	11.9	7.8
June	-10.0	9.9	5.2
July	-10.1	3.0	2.9
Aug.	-6.2	9.7	4.4
Sep.	-12.7	8.5	4.6
Oct.	-19.4	9.1	4.5
Nov.	2.9	10.2	3.6
Dec.	1.6	11.1	2.2

Source: IMF, International Financial Statistics.

Table A13. Iceland: Monetary Survey

	1989	1990	1991	1992	1993	1994			
						Mar.	June	Sep.	Dec.
(In millions of Icelandic kronur)									
Net foreign assets	22,947	25,791	27,572	33,893	34,490	44,339	29,966	30,509	24,962
Net domestic assets	132,217	141,122	159,580	162,415	170,454	162,643	173,410	172,532	176,010
Net domestic credit	165,458	181,356	203,846	210,063	229,066	226,358	233,389	235,462	235,396
By use:									
Public sector	20,891	26,759	32,914	28,814	37,776	34,146	40,607	46,813	42,711
Central government	16,297	22,034	27,614	23,406	31,568	27,741	34,029	39,315	35,126
Municipalities	4,594	4,725	5,300	5,408	6,208	6,405	6,578	7,498	7,585
Nonbank financial institutions	5,467	6,631	6,972	6,474	7,578	9,492	11,904	11,138	12,490
Private nonfinancial sector	139,100	147,966	163,960	174,775	183,712	182,720	180,878	177,511	180,195
Enterprises	107,489	110,064	119,403	124,930	130,136	128,618	125,545	122,510	122,681
Other (primarily households)	31,611	37,902	44,557	49,845	53,576	54,102	55,333	55,001	57,514
By source:									
Central Bank	12,533	8,770	11,639	2,357	5,259	1,386	16,530	16,912	23,804
Deposit money banks	152,571	169,351	188,874	199,224	213,512	211,491	211,048	209,249	211,138
Foreign funds re-lent	34,441	32,812	35,947	39,750	41,491	40,138	37,728	35,339	31,900
Other	118,130	136,539	152,927	159,474	172,021	171,353	173,320	173,910	179,238
Other items, net	33,241	40,234	44,266	47,648	58,612	63,715	59,979	62,930	59,386
Broad money	113,239	129,812	148,423	154,109	164,139	165,583	163,517	166,639	167,702
(Percentage change from 12 months earlier)									
Net domestic credit	24.6	9.6	12.4	3.0	9.0	5.0	8.9	3.3	2.8
By use:									
Public sector	29.0	28.1	23.0	-12.5	31.1	18.9	77.2	24.0	13.1
Central government	28.4	35.2	25.3	-15.2	34.9	11.6	79.6	21.0	11.3
Municipalities	31.3	2.9	12.2	2.0	14.8	66.1	65.7	42.7	22.2
Nonbank financial institutions	9.4	21.3	5.1	-7.1	17.1	37.7	58.0	57.4	64.8
Private nonfinancial sector	24.6	6.4	10.8	6.6	5.1	1.6	-1.6	-3.1	-1.9
Enterprises	23.5	2.4	8.5	4.6	4.2	-0.3	-5.0	-6.4	-5.7
Other (primarily households)	28.6	19.9	17.6	11.9	7.5	6.4	7.2	5.3	7.4
Broad money	30.0	14.6	14.3	3.8	6.5	10.0	5.2	4.6	2.2
Memorandum item:									
End-year income velocity of broad money	2.7	2.8	2.7	2.6	2.5				

Source: Central Bank of Iceland.

Table A14. Iceland: Balance of Payments on Capital Account

(In millions of SDRs)

	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
Direct investment, net	0.9	-12.1	-26.2	-2.0	20.2	6.5	2.3	-0.8
Portfolio investment, net	--	--	--	--	16.3	-11.4	-29.5	-74.9
New long-term foreign borrowing	249.1	283.6	344.1	350.5	366.4	397.1	316.8	337.6
Public sector	55.9	84.1	125.9	103.2	184.4	242.6	145.8	207.6
Financial institutions	150.8	168.5	169.6	115.0	114.2	120.7	158.5	57.4
Private sector	42.5	31.0	48.6	132.3	67.9	33.8	12.6	9.4
Amortisation of long-term debt	-114.4	-116.3	-126.1	-143.7	-186.0	-235.9	-249.5	-399.7
Public sector	-45.7	-31.2	-37.7	-36.7	-48.8	-112.5	-82.1	-132.8
Financial institutions	-42.8	-49.3	-61.8	-78.2	-88.8	-92.6	-132.2	-119.9
Private sector	-25.9	-35.7	-26.6	-28.7	-48.3	-30.8	-35.2	-32.1
Short-term capital movements	53.6	-3.0	-81.3	-51.0	18.0	36.7	-96.5	-87.4
Deposit money banks' net foreign liquidity	-59.3	-7.2	0.2	-1.2	1.3	14.9	--	-0.0
Capital account	130.0	145.1	110.8	152.6	236.2	208.1	-56.5	-225.3
Balance on current account	-142.1	-154.4	-58.9	-97.9	-227.2	-152.5	1.9	91.9
Net errors and omissions	-59.3	-7.2	4.4	-0.5	16.2	8.2	-6.3	-6.2
Overall balance of payments	-71.4	-16.5	56.4	54.2	25.1	63.8	-60.9	-139.6
Central Bank total reserves	-24.9	3.1	35.2	54.1	11.0	50.0	-43.2	-111.4
Central Bank short-term liabilities	12.8	-12.5	16.7	0.6	-2.0	4.0	-17.7	-31.8

Source: Central Bank of Iceland.

Table A15. Iceland: International Reserves

	1987	1988	1989	1990	1991	1992	1993	1994
<u>(In millions of kronur, end of period)</u>								
Gross reserves	11,167	13,536	20,742	24,259	25,245	32,015	31,139	24,353
Gold	86	105	136	133	135	151	172	172
SDRs	96	62	2	22	4	1	21	7
Reserve position in IMF	203	249	323	315	320	919	1,045	1,043
Deposits and securities	10,782	13,120	20,281	23,789	24,786	30,944	29,901	23,131
Short-term liabilities	-675	-1,650	-791	-190	-474	-695	-2,476	-9,397
Of which: IMF	-45	-1	--	-47	-154	-228	--	4
Net foreign reserves	10,492	11,886	19,951	24,069	24,771	31,320	28,663	14,956
<u>(In months of imports, f.o.b.)</u>								
Gross reserves	2.4	2.6	3.4	3.3	3.2	4.4	4.5	3.1

Source: Central Bank of Iceland.

Table A16. Iceland: Gross External Debt

	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
(In millions of kronur, end of period)								
Long-term debt	83,103	112,685	166,221	176,662	191,040	228,115	265,006	255,975
Public sector	51,712	66,482	93,847	96,859	107,570	131,303	158,436	167,975
Central government	29,837	40,081	58,247	59,519	65,756	84,491	101,905	113,175
Central Bank	207	221	228	149	100	57	--	--
Government enterprises	18,368	22,497	29,172	31,293	35,682	38,716	46,568	45,400
Municipalities	3,300	3,683	6,200	5,898	6,032	8,039	9,963	9,400
Private sector	31,391	46,203	72,374	79,803	83,470	96,812	106,570	88,000
Commercial banks	9,892	16,445	26,970	25,288	25,082	26,316	27,576	22,100
Investment credit funds	14,171	20,891	31,517	33,933	36,438	45,902	53,711	46,600
Nonfinancial enterprises	7,328	8,867	13,887	20,582	21,950	24,594	25,283	19,300
Short-term debt	19,800	28,000	16,300	24,000	26,300	27,100	25,500	26,300
(In percent)								
Long-term debt/GDP	40.1	41.1	49.5	49.4	49.5	52.5	60.8	59.7
Debt service/total exports of goods and services	16.1	16.8	19.4	20.0	22.9	26.2	27.9	32.1

Source: Central Bank of Iceland.

Table A17. Iceland: Treasury Budget (Cash Basis)

	1988	1989	1990	1991	1992	1993	1994 Budget Bill	1994 Est.	1995 Budget 1/ Bill
(In millions of kronur)									
Revenue	64,506	80,098	92,453	99,953	103,447	103,220	103,471	109,500	112,092
Expenditure	72,662	86,463	97,101	112,487	110,607	112,863	113,292	117,000	119,528
Revenue balance	-8,156	-6,365	-4,648	-12,534	-7,160	-9,643	-9,821	-7,500	-7,436
Net medium- and long-term lending (-)	779	722	522	1,954	2,062	871	1,200	7,700	960
Equity holdings	116	-70	123	233	43	410	500	200	500
Short-term lending, net 2/	211	889	2,079	-73	-2,090	-226	500	-100	500
Net borrowing requirement	9,262	7,906	7,372	14,648	7,175	10,698	12,021	15,300	9,396
(In percent of GDP)									
Memorandum items:									
Revenue	25.1	26.0	25.4	25.2	26.0	25.1	24.0	25.4	24.9
Expenditure	28.3	28.1	26.7	28.4	27.8	27.4	26.3	27.1	26.5
Revenue balance	-3.2	-2.1	-1.3	-3.2	-1.8	-2.3	-2.3	-1.7	-1.6
Net borrowing requirement	3.6	2.6	2.0	3.7	1.8	2.6	2.8	3.6	2.1

Source: Ministry of Finance, Treasury Finances.

1/ Final Budget, December 1994.

2/ Taxes counted under "revenues," but not yet paid.

Table A18. Iceland: Treasury Revenue and Expenditure by Category
(cash basis)

	1988	1989	1990	1991	1992	1993	1994 Prel.	1995 Budget 1/ Bill
(In millions of kronur)								
Revenue	64,506	80,098	92,453	99,953	103,447	103,220	109,500	112,092
Direct taxes	9,363	13,017	17,690	19,263	20,348	20,311	23,100	22,750
Indirect taxes	51,261	61,225	68,448	74,240	75,422	75,851	78,600	81,722
Sales and value added taxes	29,529	34,151	37,086	38,954	39,944	40,497	41,000	42,200
Payroll and social security tax	4,849	5,824	7,327	9,130	9,568	9,962	10,500	10,900
Other indirect taxes	16,883	21,250	24,035	26,156	25,910	25,392	27,100	28,622
Other revenue	3,882	5,856	6,315	6,450	7,677	7,058	7,800	7,620
Interest	3,272	4,589	4,096	3,947	4,203	4,420	4,600	4,600
Other	610	1,267	2,219	2,503	3,474	2,638	3,200	3,020
Expenditure	72,662	86,463	97,101	112,487	110,607	112,863	117,000	119,528
Salaries and net purchases	28,364	32,525	37,529	42,418	42,382	44,512	45,700	45,794
Current transfers	27,550	34,006	39,610	45,109	46,243	42,940	45,000	46,427
Interest payments	6,864	8,548	8,274	9,875	8,346	9,732	10,600	12,300
Maintenance	1,475	1,782	2,362	2,287	2,541	3,363	3,400	3,406
Capital expenditures	8,409	9,602	9,326	12,798	11,095	12,316	12,300	11,601
Revenue balance	-8,156	-6,365	-4,648	-12,534	-7,160	-9,643	-7,500	-7,436
Net lending (-)	779	722	522	1,954	2,062	871	7,700	960
Equity holdings	116	-70	123	233	43	410	200	500
Short-term credit, net	211	889	2,079	-73	-2,090	-226	-100	500
Net borrowing requirement	9,262	7,906	7,372	14,648	7,175	10,698	15,300	9,396
(In percent of revenue)								
Memorandum items:								
Direct taxes	14.5	16.3	19.1	19.3	19.7	19.7	21.1	20.3
Indirect taxes	79.5	76.4	74.0	74.3	72.9	73.5	71.8	72.9
(In percent of expenditure)								
Salaries and net purchases	39.0	37.6	38.6	37.7	38.3	39.4	39.1	38.3
Current transfers	37.9	39.3	40.8	40.1	41.8	38.0	38.5	38.8
Interest payments	9.4	9.9	8.5	8.8	7.5	8.6	9.1	10.3
Investment and capital transfers	11.6	11.1	9.6	11.4	10.0	10.9	10.5	9.7

Sources: Ministry of Finance, Treasury Finances.

1/ Final Budget, December 1994.

Table A19. Iceland: Central Government and Social Security Finances
(Accruals basis)

	1986	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
(In millions of kronur)									
Current revenue	44,603	57,907	78,168	93,986	106,139	119,375	121,133	119,048	125,012
Direct taxes	9,080	10,184	18,395	22,387	29,252	38,178	39,295	39,617	43,006
Indirect taxes	31,193	42,468	53,460	62,665	69,572	72,623	72,193	70,251	72,663
Interest income	2,916	3,456	4,032	5,527	4,730	6,257	6,019	5,961	5,920
Other current revenue	485	555	638	1,318	2,359	2,317	3,025	2,719	3,423
Transfers from public enterprises	929	1,244	1,643	2,089	226	--	601	500	--
Current expenditure	39,530	51,855	72,193	88,912	103,879	113,543	116,143	119,301	123,498
Public consumption	22,534	30,838	39,603	46,843	54,864	60,537	60,696	63,445	64,918
Wages	13,809	20,204	26,493	30,486	34,763	38,981	39,616	40,381	42,456
Consumption of fixed capital	711	863	1,018	1,245	1,508	1,736	1,813	1,917	1,969
Other consumption	8,014	9,771	12,092	15,112	18,593	19,820	19,267	21,147	20,493
Interest expenditure	3,931	4,340	7,174	9,685	11,370	12,961	12,875	13,678	15,877
Subsidies	5,064	5,727	8,780	12,366	12,281	11,351	12,227	9,526	8,902
Current transfers	8,001	10,950	16,636	20,018	25,364	28,694	30,345	32,652	33,801
Other public sector	52	73	155	124	1,380	1,582	1,743	2,016	2,250
Households	7,049	9,657	14,633	17,158	21,385	23,861	25,521	27,436	28,306
Other private sector	900	1,220	1,848	2,736	2,599	3,251	3,081	3,200	3,245
Current balance	5,073	6,052	5,975	5,074	2,260	5,832	4,990	-253	1,514
Capital revenue	880	1,234	1,492	1,714	1,976	2,346	2,330	2,448	2,499
Capital transfers	169	371	474	469	468	610	517	531	530
Consumption of fixed capital	711	863	1,018	1,245	1,508	1,736	1,813	1,917	1,969
Capital expenditure	12,362	8,847	12,481	19,041	16,536	19,186	16,828	15,892	17,021
Gross fixed investment	1,874	3,078	3,972	4,445	6,338	7,100	6,434	8,025	9,088
Capital transfers	10,488	5,769	8,509	14,596	10,198	12,086	10,394	7,867	7,933
Other public sector	615	1,033	1,638	1,940	1,676	1,855	1,802	1,716	1,730
Private sector ^{1/}	9,873	4,736	6,871	12,656	8,522	10,231	8,592	6,151	6,203
Financial balance	-6,409	-1,561	-5,014	-12,253	-12,300	-11,008	-9,508	-13,697	-13,008
Lending and change in equity holdings	-3,340	3,523	3,839	707	-1,053	5,827	-1,934	-780	...
Total lending	7,279	3,789	3,158	5,595	5,567	6,413	5,981	8,106	...
Total repayment	-7,096	-4,869	-2,510	-7,327	-6,741	-4,342	-2,390	-6,223	...
Change in equity holdings	150	792	111	-631	275	254	-837	3,321	...
Other claims (net)	-3,673	3,811	3,080	3,070	-154	3,502	-4,688	-5,984	...
Borrowing requirement	3,069	5,084	8,853	12,960	11,247	16,835	7,574	12,917	...
(In percent of GDP)									
Memorandum items:									
Revenue	28.2	28.3	31.0	31.0	29.7	30.7	31.0	29.5	29.6
Expenditure	32.2	29.0	33.0	35.0	33.1	33.5	33.4	32.8	32.6
Expenditure plus lending	30.1	30.7	34.5	35.3	32.8	34.9	32.9	32.6	...
of which: current transfers	5.0	5.2	6.5	6.5	7.0	7.2	7.6	7.9	7.8
Revenue balance	-4.0	-0.7	-2.0	-4.0	-3.4	-2.8	-2.4	-3.3	-3.0
Borrowing requirement	1.9	2.4	3.4	4.2	3.1	4.2	1.9	3.1	...

Source: National Economic Institute.

1/ In 1986 the Treasury wrote off a claim on the public electricity company amounting to ISK 5.1 billion. In the Icelandic version of the accruals accounts, the write off was counted as an expenditure in 1986.

Table A20. Iceland: Local Government Finances
(Accruals basis)

	1986	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
(In millions of kronur)									
Current revenue	10,736	14,226	19,734	23,703	26,623	30,144	31,482	30,996	31,916
Direct taxes	5,212	6,993	10,009	12,088	13,699	14,952	15,767	19,820	20,326
Indirect taxes	4,630	5,852	7,864	9,487	9,590	11,342	11,570	6,905	7,150
Interest income	539	905	1,051	1,200	998	1,067	808	833	700
Other current revenue	303	403	655	804	956	1,201	1,594	1,422	1,490
Transfers from public enterprises	52	73	155	124	1,380	1,582	1,743	2,016	2,250
Current expenditure	8,397	11,173	15,027	18,764	19,175	22,004	24,605	26,684	27,322
Public consumption	6,242	8,141	10,934	13,498	15,125	17,620	19,679	21,374	22,482
Wages	3,245	4,584	6,134	7,337	8,526	9,949	10,783	11,696	12,318
Consumption of fixed capital	237	288	339	435	521	583	641	683	724
Other consumption	2,760	3,269	4,461	5,726	6,078	7,088	8,255	8,995	9,440
Interest expenditure	503	792	1,115	1,522	1,533	1,755	1,633	1,703	1,680
Subsidies	209	261	327	469	672	969	998	978	1,000
Current transfers	1,443	1,978	2,652	3,275	1,845	1,661	2,295	2,629	2,160
Other public sector	929	1,244	1,643	2,089	226	--	601	500	--
Households	292	435	587	651	788	802	945	1,394	1,400
Other private sector	222	299	422	535	831	859	749	735	760
Current balance	2,339	3,053	4,707	4,939	7,448	8,140	6,877	4,312	4,594
Capital revenue	875	1,357	2,021	2,416	2,246	2,539	2,546	2,547	2,576
Capital transfers	638	1,069	1,682	1,981	1,725	1,956	1,905	1,864	1,852
Consumption of fixed capital	237	288	339	435	521	583	641	683	724
Capital expenditure	3,331	4,635	6,926	9,133	9,498	11,294	11,135	11,602	12,042
Gross fixed investment	2,926	4,217	6,376	8,186	8,040	9,128	9,582	9,721	10,067
Capital transfers	405	418	550	947	1,458	2,166	1,553	1,881	1,975
Other public sector	--	--	--	--	--	--	--	--	--
Private sector	405	418	550	947	1,458	2,166	1,553	1,881	1,975
Financial balance	-117	-225	-198	-1,778	196	-615	-1,712	-4,743	-4,872
Lending and change in equity holdings	899	1,216	823	156	1,492	156	509	-1,113	...
Total lending	861	553	1,397	555	1,234	1,369	1,338	1,099	...
Total repayment	-450	-400	-408	-328	-721	-1,062	-921	-784	...
Change in equity holdings	--	--	--	--	--	--	--	--	...
Other claims (net)	488	1,063	-166	-71	979	-151	92	-1,428	...
Borrowing requirement	1,016	1,441	1,021	1,934	1,296	771	2,221	3,630	...
(In percent of GDP)									
Memorandum items:									
Revenue	7.2	7.5	8.5	8.5	7.9	8.2	8.6	8.1	8.0
Expenditure	7.3	7.6	8.6	9.1	7.9	8.4	9.0	9.3	9.1
Expenditure plus lending of which: current	7.8	8.1	8.9	9.1	8.3	8.4	9.1	9.0	...
transfers	0.9	0.9	1.0	1.1	0.5	0.4	0.6	0.6	0.5
Revenue balance	-0.1	-0.1	-0.1	-0.6	0.1	-0.2	-0.4	-1.2	-1.1
Borrowing requirement	0.6	0.7	0.4	0.6	0.4	0.2	0.6	0.9	...

Source: National Economic Institute.

Table A21. Iceland: General Government Finances
(Accruals basis)

	1986	1987	1988	1989	1990	1991	1992	1993	1994 Prel.
(In millions of kronur)									
Current revenue	54,358	70,816	96,104	115,474	131,155	147,937	150,271	147,528	154,678
Direct taxes	14,292	17,177	28,404	34,475	42,951	53,130	55,062	59,437	63,332
Indirect taxes	35,823	48,320	61,324	72,152	79,162	83,965	83,763	77,156	79,813
Interest income	3,455	4,361	5,083	6,727	5,728	7,324	6,827	6,794	6,620
Other current revenue	788	958	1,293	2,120	3,314	3,518	4,619	4,141	4,913
Current expenditure	46,946	61,710	85,423	105,463	121,448	133,966	138,404	143,466	148,570
Public consumption	28,776	38,980	50,537	60,341	69,989	78,157	80,375	84,818	87,400
Wages	17,054	24,788	32,627	37,823	43,289	48,930	50,399	53,076	54,774
Consumption of fixed capital	948	1,151	1,357	1,680	2,029	2,319	2,454	2,600	2,693
Other consumption	10,774	13,041	16,553	20,838	24,671	26,908	27,522	29,142	29,933
Interest expenditure	4,434	5,132	8,289	11,207	12,903	14,716	14,508	15,381	17,557
Subsidies	5,273	5,988	9,107	12,835	12,953	12,320	13,225	10,503	9,902
Current transfers	8,463	11,610	17,490	21,080	25,603	28,773	30,296	32,764	33,711
Current balance	7,412	9,106	10,681	10,011	9,707	13,971	11,867	4,062	6,108
Capital revenue	1,140	1,558	1,875	2,190	2,546	3,030	3,074	3,279	3,345
Capital transfers	192	407	518	510	517	711	620	679	652
Consumption of fixed capital	948	1,151	1,357	1,680	2,029	2,319	2,454	2,600	2,693
Capital expenditure	15,078	12,449	17,769	26,234	24,358	28,625	26,161	25,778	27,333
Gross fixed investment	4,800	7,295	10,348	12,631	14,378	16,228	16,016	17,746	19,155
Capital transfers 1/	10,278	5,154	7,421	13,603	9,980	12,397	10,145	8,032	8,178
Revenue balance	-6,526	-1,785	-5,213	-14,033	-12,105	-11,624	-11,220	-18,437	-17,880
Lending and change in equity holdings	-2,441	4,739	4,662	863	439	5,983	-1,425	-1,893	...
Total lending	8,140	4,342	4,555	6,150	6,801	7,782	7,319	9,205	...
Total repay	-7,546	-5,269	-2,918	-7,655	-7,462	-5,404	-3,311	-7,007	...
Change in equity holdings	150	792	111	-631	275	254	-837	3,321	...
Other claims (net)	-3,185	4,874	2,914	2,999	825	3,351	-4,596	-7,412	...
Borrowing requirement	4,085	6,524	9,875	14,896	12,544	17,607	9,795	16,544	...
(In percent of GDP)									
Memorandum items:									
Revenue	34.5	34.6	38.2	38.2	36.7	38.1	38.5	36.6	36.7
Expenditure	38.5	35.5	40.2	42.7	40.1	41.0	41.4	41.1	40.8
Expenditure plus lending	37.0	37.7	42.0	43.0	40.2	42.5	41.0	40.6	...
of which current transfers	5.3	5.6	6.8	6.8	7.0	7.3	7.6	8.0	7.8
Revenue balance	-4.1	-0.9	-2.0	-4.6	-3.3	-2.9	-2.8	-4.5	-4.1
Borrowing requirement	2.5	3.1	3.8	4.8	3.4	4.4	2.5	4.0	...

Sources: National Economic Institute.

1/ In 1986 the Treasury wrote off a claim on the public electricity company amounting to ISK 5.1 billion. In the Icelandic version of the accruals accounts, the write-off was counted as an expenditure in 1986.

Table A22. Iceland: Treasury Debt and Lending

(In millions of kronur, end of period)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 Est.	1995 Budget Bill
Total debt	18,864	26,289	37,478	44,287	52,026	68,273	97,182	112,785	127,656	153,412	181,030	202,040	213,306
Central bank	915	1,897	3,683	1,693	3,059	3,448	3,221	1,810	757	13	6	...	...
Savings bonds	3,310	3,244	5,165	8,541	11,775	16,659	21,717	31,043	35,907	39,039	46,257	...	...
Treasury bills	--	--	--	--	--	--	--	--	1,257	2,487	6,012	...	...
Treasury notes	--	--	--	--	931	725	5,892	8,142	8,244	12,545	13,742	...	...
Other domestic liabilities	2,234	2,275	3,092	4,749	6,306	7,236	7,840	12,011	13,144	12,005	12,709	...	...
Foreign debt	12,482	19,497	25,538	29,304	29,955	40,205	58,512	59,779	67,953	87,273	102,304	...	...
Total lending	15,149	21,414	29,839	29,713	35,632	47,569	49,222	52,806	63,091	67,700	64,971	74,357	78,257
Long term credit	13,048	18,182	24,737	22,985	24,182	29,967	34,433	34,022	37,902	41,654	46,871	...	...
Indexed to domestic prices	3,114	4,168	10,517	11,596	13,476	15,795	16,331	18,306	22,071	22,644	26,246	...	...
In foreign currency	9,934	14,014	14,220	11,389	10,706	14,172	18,102	15,716	15,831	19,010	20,625	...	...
Short term credit, net	2,101	3,232	5,102	6,728	11,450	17,602	14,789	18,784	25,189	26,046	18,100	...	...
Total debt minus total lending	3,715	4,875	7,639	14,574	16,394	20,704	47,960	59,979	64,565	85,712	116,059	127,683	135,049
Lending as percent of debt	80.3	81.5	79.6	67.1	68.5	69.7	50.6	46.8	49.4	44.1	35.9	36.8	36.7
(In percent of GDP)													
Total debt	27.6	29.5	31.0	27.5	24.9	26.6	31.5	31.0	32.2	38.6	44.0	46.9	47.3
Of which: foreign debt	18.3	21.9	21.1	18.2	14.3	15.7	19.0	16.4	17.1	21.9	24.8	...	...
Total lending	22.2	24.0	24.7	18.4	17.0	18.5	16.0	14.5	15.9	17.0	15.8	17.3	17.4
Of which: in foreign currency	14.6	15.7	11.8	7.1	5.1	5.5	5.9	4.3	4.0	4.8	5.0	...	...
Total debt minus total lending	5.4	5.5	6.3	9.0	7.8	8.1	15.6	16.5	16.3	21.5	28.2	29.6	30.0

Source: Ministry of Finance, Treasury Finances.

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Appendix I

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