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Iceland: Selected Issues

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Selected Issues

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Approved by European I Department

April 20, 1999

Contents Page

Tables

Figures

Boxes

Statistical Appendix

Box 1: Main Websites for Icelandic Data

Data in the Statistical Appendices reflects information received at the time of the January 1999 Article IV consultation. In some cases, more recent data can be obtained directly from internet sources. The main websites in Iceland are as follows:

The Central Bank of Iceland: http://www.sedlabanki.is/
The Ministry of Finance: http://brunnur.stjr.is/interpro/fjr/fjr.nsf/pages/english-index
The National Economic Institute: http://www.stjr.is/
Statistic Iceland: http://www.statice.is/

Iceland: Basic Data

Demographic and other data

Area	103,000 square kilometers
Population	272,069
Natural rate of increase (10-year average)	1.02 percent
Life expectancy at birth (1995)	
Males	76.7 years
Females	80.9 years
Infant mortality (aged under 1, in percent, 1997 est)	.5 percent
Population per physician (1990)	357
GDP per capita (1997)	US$ 27,350

Composition of GDP in 1995, at current prices	In billions of krónur	Distribution in percent
Private consumption	358.1	60.8
Public consumption	119.5	20.3
Total investment (including stockbuilding)	129.3	21.9
Total domestic demand	606.9	103.0
Exports of goods and services	200.2	34.0
Imports of goods and services	226.5	38.4
GDP at market prices	589.1	100

Selected economic data	1996	1997	1998
	(Annual percentage change)		
Output and unemployment:			
Real GDP at market prices	5.6	5.3	5.8
Manufacturing production	8.6	2.1	3.1
Average unemployment (in percent)	4.4	3.9	2.8
Earnings and prices:			
Wage Index	6.4	5.4	9.4
Cost of living index	2.3	1.7	1.7
Money and interest rates			
M1 (end-period)	6.9	3.6	0.5
M3 (end-period)	6.8	9.4	14.4
3-month Treasury bill yield (period average)	7.1	7.2	7.6
5-year indexed government bond (real yield)	5.8	5.3	4.7
	(In billions of krónur)		
Fiscal accounts:			
Treasury receipts	127.7	-130.9	174.9
Treasury expenditure	139.7	-132.1	177.7
Treasury deficit	12.0	-1.2	2.8
(In percent of GDP)	2.5	-0.2	0.5
Balance of payments:			
Current account balance	-8.2	-8.4	-35.1
(In percent of GDP)	-1.7	-1.6	-6.0
Trade balance	250.2	262.2	291.6
Exports	125.7	131.2	131.7
Imports	-124.5	-131.0	-159.9
Services and transfers (net)	-258.4	-270.5	-326.6
Gross reserves, official basis			
(Millions of SDR, end-period)	320.3	285.5	304.8
Exchange rate (ISK/SDR, end-period)	96.2	97.4	97.6

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

I. EMU and the Monetary Policy Framework in Iceland[1]

1. The emergence of the euro presents an opportunity for reassessing the monetary policy framework in Iceland. Since Iceland is not a member of EMU, and is not likely to become a member in the near future, this chapter does not attempt a cost-benefit analysis of EMU membership nor does it address any of the issues that concern either EMU members or EMU-outsiders (United Kingdom, Denmark, Sweden). The chapter focusses on EMU's impact on current policies and sets out the options available to Iceland over the medium term. Although the wider impact on the Icelandic economy, including on institutions and policy making, the labor market, and the banking system, is also important, these issues are more general and have been discussed extensively elsewhere (see Emerson et al, 1991, Grös and Thygesen, 1992, and Masson, Krueger and Turtelboom, 1997, and references therein). Some of these issues will be touched upon briefly.

2. A committee of officials was established by the government of Iceland in 1997 to examine the impact of EMU on the Icelandic economy and the options for the future. In their report, as is the case here, the main focus was on the appropriateness of Iceland's current exchange rate regime in the light of the advent of the euro and the possible enlargement of the euro area to include the United Kingdom, Denmark, and Sweden. Over the medium term, Iceland will have to decide whether it will continue with the existing arrangements or will instead consider bringing the country closer to EMU. Any decision will inevitably have to balance, on the one hand, the need for maintaining and enhancing credibility in pursuing monetary policy goals, against the desirability of retaining exchange rate flexibility to adjust to external shocks. The committee considered four options for the exchange rate regime: (i) a unilateral peg to the euro; (ii) a bilateral peg, equivalent to participation in ERM II; (iii) a currency board; and finally, (iv) the unilateral adoption of the euro as a legal tender. However, only the first two options were considered feasible and explored at some length. The unilateral peg to the euro was not deemed suitable for Iceland, as "The credibility of such an arrangement ... would hardly exceed that of the existing arrangement". The report commented favorably on the possibility of a bilateral arrangement with the European Central Bank (ECB) under which both parties, the ECB and the Central Bank of Iceland, would be obliged to intervene to limit the fluctuations in the krona/euro exchange rate.

3. This chapter discusses these choices and concludes that, in terms of an exchange rate regime, the two most realistic options for Iceland are: continue with the existing arrangement or adopt a unilateral peg to the euro. However, it is argued that both options entail the need for enhancing the independence of the central bank, which will require reforming the Central Bank of Iceland Act. In addition, it is argued that the objective of monetary policy has to be more clearly defined and included in the revised act. There are two more options besides exchange rate peg: inflation targeting and participation in the European and Monetary Union

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[1]Prepared by Zenon Kontolemis.

by joining the European Union. It is argued that these also will require changes in the Central Bank Act.

A. The Present Monetary Framework

4. Inflation in Iceland remained very high in the 1970s and 1980s. After an impressive disinflation performance, inflation was lowered to less than 2 percent in 1998 (Figure 1). Why did inflation remain so high for so long and what are the implications for the current and future policy arrangements? Andersen and Guðmundsson (1998) argue that the main source of inflation during the 1970s and early 1980s was a combination of adverse external shocks and large devaluations that followed. These developments in turn set a price-wage spiral that led to an acceleration in inflation. Agnarsson et al. (1998) argue that the government used the exchange rate to affect the level of prices in order to achieve full employment and that this tool still exists: "It is not difficult to imagine a macroeconomic downturn which is sufficiently large to call for exchange rate adjustments." That possibility, according to Agnarsson et al. (1998), induced reckless behavior on the part of unions and firms in setting wages, knowing that the exchange rate could always be used to bring about full employment. In fact, econometric studies of the inflation process in Iceland confirm that it is mainly driven by imported inflation and wages (see Andersen and Guðmundsson, 1998, Petursson, 1998, and Chapter 2 of this report).

5. Under the present arrangement, price stability is the focus of monetary policy, with the exchange rate being an intermediate target. According to its statute, the central bank's aim is to maintain monetary stability and ensure the full and efficient utilization of productive capacity. Monetary stability is interpreted as price and exchange rate stability.

6. The krona has been relatively stable in the years since the adoption of the fixed exchange rate system in 1989. The exchange rate of the krona, defined in terms of a basket of currencies, was allowed to fluctuate within a band. The two devaluations since 1989 were aimed at absorbing external shocks without causing a devaluation-inflation spiral of the type observed in the past. The first devaluation of the currency, by 6 percent, took place in November 1992 following the turmoil in the European currency markets, and the second, by 7.5 percent in June 1993, was in the face of adverse supply shocks in the fishing industry. Between 1993 and 1995 this exchange rate band remained fairly narrow, ± 2.5 percent around a central point, but it was widened in 1995 to ± 6 percent. The exchange rate has remained close to the center of the band after its widening, implying that the credibility of the system remained strong. The widening of the band was intended to limit incentives for speculation against the krona and to provide the authorities with additional flexibility to pursue desired policies.

7. Until December, the basket consisted of 16 currencies and trade shares determined the weight of each currency. The introduction of the euro meant that the basket was adjusted

Figure 1. Iceland: Inflation 1970 -1998

Sources: International Monetary Fund, *International Financial Statistics*.

8. with the weights of the euro area countries combined into one. As a result of this technical adjustment, the euro has become the most important currency in the basket (Box 5 of SM/99/90). If the United Kingdom, Sweden, and Denmark adopt the euro, the euro's share will rise to just below 60 percent.

B. A Simple Model for a Small Open Economy

9. The following simple model attempts to capture, with a view to motivate the discussion, the current monetary policy framework in Iceland. The ideas embedded in this type of model are standard in the literature (see Barro and Gordon, 1983, and Persson and Tabellini, 1994, and references therein). The main ingredients can be summarized as follows: the authorities dislike exchange rate instability, as indicated by the first quadratic exchange rate term of equation (1), but they also have an incentive to create inflation surprises to reduce the product wage and thus raise output. This second term can be derived from a standard Lucas-supply function where output deviates from the natural rate when $\pi \neq \pi^e$, implying a short-run tradeoff between inflation and output.

$$L = -\frac{\alpha}{2}\Delta\epsilon^2 + \beta(\pi - \pi^e) \quad (1)$$

$$\epsilon = \theta\epsilon_1 + (1-\theta)\epsilon_2 \quad (2)$$

where L is the objective function of the authorities, ϵ is the official (trade-weighted) exchange rate, π and π^e are the actual and expected rates of inflation respectively with the standard inflation surprise term (π-π^e). It is further assumed that the official exchange rate index is composed of two currencies ϵ_1 and ϵ_2 and the weight θ is determined by trade shares—usually taking into account both imports and exports. For simplicity, equation (3) expresses inflation as a negative function of the official exchange rate index ϵ and a parameter γ.

$$\pi = -\gamma\Delta\epsilon \quad (3)$$

10. The model presented above illustrates the well-known time-consistency problem: given its preferences and the public's expectations of "low inflation", the government has an incentive to raise output above its natural rate. This drives inflation expectations and pushes inflation permanently higher. Given the objective function, which places a weight on output stabilization, and the expectations for inflation, a promise to keep inflation at that low level is time-inconsistent because the authorities have an incentive to, and will, renege upon their announced promise.

11. This is shown as follows: the policymaker chooses ϵ to minimize the loss function. The result is a time-consistent inflation rule, equation (4), and is based on the assumption that expectations of inflation are given, and thus treated as exogenous. In this case the exchange rate will be set as follows:

$$\Delta\epsilon = -\frac{\beta\gamma}{\alpha} \tag{4}$$

and inflation will be given by :

$$\pi^* = \frac{\gamma^2\beta}{\alpha} \tag{5}$$

12. This is equal to the exchange rate depreciation given by equation (4), weighted by the parameter γ of the inflation equation. The government has thus an incentive to create surprise inflation. Although the government keeps the exchange rate fixed, it can nevertheless allow it to depreciate within the band or devalue if it wishes.

13. This simple model raises two policy questions for Iceland, both of which are discussed and analyzed from a "European" or "euro" perspective in the next sections. The first question deals with the intermediate target and the final objective of monetary policy and what constitutes appropriate policy in the light of the adoption of the euro in the EU. Choosing a different exchange rate index will have an effect on the inflation rate but the basic issue of the inflationary and devaluation bias is central to either case. So the second issue deals with the statute of the Central Bank of Iceland. This model suggests that it is best to remove the inflation bias completely by delegating monetary policy to an independent Central Bank, which has price stability as its only objective.[2]

A peg to the euro?

14. What is implied by a peg to the euro? In terms of the simple model described earlier, suppose that the policy focuses on ϵ_1 (say the euro) but the inflation equation is unchanged. Then it is easy to show that if

$$L=-\frac{\alpha}{2}\Delta\epsilon_1^2 + \beta(\pi-\pi^e) \tag{6}$$

---

[2]More precisely, it is stability of inflation at a low level. Price stability would require a large deflation to follow a large positive price shock.

then the exchange rate depreciation and inflation rate are given by:

$$\Delta\epsilon_1 = -\frac{\beta\gamma\theta}{\alpha} \tag{7}$$

$$\hat{\pi} = -\gamma\Delta\epsilon = \frac{\gamma^2\beta\theta^2}{\alpha} - \gamma(1-\theta)\Delta\epsilon_2 \tag{8}$$

Note that if $\theta=1$, then the second term is zero and inflation is only a function of the parameters in the objective function—which determine the preferences of the policymaker with respect to exchange rate stability and output—and the responsiveness of inflation to changes in the exchange rate. This is the usual inflationary bias term that stems from the fact that the policymaker has an incentive to create surprise inflation, by devaluation in this case, to raise output. The second term, which is a function of ϵ_2, is important in this model. It is a result of the composite exchange rate index: an appreciating ϵ_2 ($\Delta\epsilon_2>0$) implies that inflation will be even smaller. So when $\theta<1$, the variance of the inflation rate will be larger. Note however that the inflation-bias term is reduced slightly, by θ^2, since a fall in ϵ_1 will have a less inflationary impact than a fall in ϵ. Consequently, the effect on inflation is not clear-cut although the expected variance will be higher.

15. Trade shares (Table 1) show that the bulk of the trade, about 68 percent of the total, is conducted with the European Economic Area (EEA). However, only about 31 percent of total trade is carried out with the euro-11 area. Given the close trade links between the United Kingdom and Iceland, that share rises to 45.5 percent when the United Kingdom is included in the euro area. Hence, the Icelandic authorities have concluded that a closer link with the euro should be considered only if a wider EMU were to emerge, comprising the United Kingdom and perhaps Denmark and Sweden. Indeed, this conclusion seems to be consistent with the objective of minimizing the variance of the official index.
However if one takes into account of Norway and other European countries that maintain exchange rate pegs to the euro, this (implied share of the euro) rises to more than 50 percent, (if one adds Denmark it is closer to 60 percent) even without adding the UK. Thus a peg to the euro would certainly also imply considerable exchange rate stability.

16. However, the key argument in favor of a euro peg is based on the credibility of the system and its effect on inflation expectations. A (single) currency peg to a low-inflation currency, the euro in this case, is transparent and provides a clear anchor for inflation expectations. Given that the European Central Bank (ECB) is likely to acquire considerable credibility, a peg to the euro would enhance the credibility of the anti-inflation policy. The inflation bias, illustrated with the aid of the simple model, will be minimized as any scope for discretionary policy is greatly reduced.

Table 1: Foreign Trade by countries

(percentage share)

		Exports	Imports	Trade /1
Total		100	100	100
euro-11		32.4	29.4	30.9
euro-12 2/		51.3	39.5	45.4
euro-14 2/		58.1	54.8	56.5
EEA		66.1	69.6	67.9
	Austria	0.1	0.6	0.4
	Belgium	1.1	2	1.6
	Denmark	5.7	8.6	7.2
	Finland	1.1	1.6	1.4
	France	6.3	3.3	4.8
	Germany	13.1	11.8	12.5
	Greece	0.6	0.1	0.4
	Ireland	0.2	1.2	0.7
	Italy	1.8	3.2	2.5
	Liechenstein	0	0	0.0
	Luxembourg	0.2	0.1	0.2
	Netherlands	3.3	6.5	4.9
	Norway	5.6	11.5	8.6
	Portugal	2.6	0.7	1.7
	Spain	4.4	1.6	3.0
	Swenden	1.1	6.7	3.9
	UK	18.9	10.1	14.5
Other, Europe		7.3	7.1	7.2
USA		13.9	9.4	11.7
Japan		6.6	4.9	5.8
other		6	9	7.5

1/ Equal to the average of exports and imports

2/ Euro 12 includes the UK, while euro 14 includes, in addition, Denmark and Sweden

A bilateral agreement with the ECB?

17. The debate in Iceland has also considered the possibility of a bilateral exchange rate agreement with the ECB. Under such an agreement, the ECB would provide liquidity support for the agreed exchange rate peg. Article 109 of the Maastricht Treaty specifies that " ...the Council may, acting unanimously on a recommendation from the ECB or from the Commission, and after consulting the ECB in an endeavor to reach a consensus consistent with the objective of price stability, after consulting the European Parliament ... conclude formal agreements on an exchange rate system for the ECU in relation to non Community currencies." Thus, the treaty makes it clear that bilateral arrangements with non-EU countries are possible. However, such arrangements must be "approved" by the ECB. It is considered unlikely that such an arrangement could be reached while Iceland remains outside the EU. Moreover, if it is perceived that a bilateral agreement with Iceland might inhibit the ECB's ability to pursue its goals effectively, an ERM II-type agreement between Iceland and the EU is unlikely to materialize.

Business cycle synchronization

18. The traditional prerequisite for closer integration with the euro area, either through membership or exchange rate coordination, is sufficient synchronization with the business cycles of the euro area. The available empirical evidence suggests that Iceland's business cycles have not been very synchronized with those in the Euroland (Figure 2)—and have been more volatile (see Agnarsson et al., 1998, and Central Bank of Iceland, 1997). Table 2 shows that very little of the variation in GDP growth, terms of trade, and export growth can be explained by the variation of these quantities in a "narrow euro area," consisting of Germany, France, the Netherlands, Luxembourg, Belgium, Finland, Ireland, and Austria. It also shows that the variance of GDP growth in Iceland is the highest compared with this group. Table 3 shows the simple correlations of a number of variables. In fact, a number of studies suggest that most recessions in Iceland during the last 40 years can be explained to a large extent by price and demand developments in major export markets (see Table 4). Only few recessions were propagated by domestic shocks, including fluctuations in the fish catch (see Agnarsson et al., 1998, and references therein).

19. The lack of synchronization would suggest that there would be a cost associated with a peg to the euro, or EMU membership, since monetary policy would be determined by the ECB based on economic conditions in the Euroland as a whole. Indeed, the idiosyncratic business cycle in Iceland and the frequency of supply shocks argue for a flexible exchange rate. It should be noted, however, that monetary independence and exchange rate flexibility in the 1970s and 1980s did not diminish Iceland's business cycle fluctuations.

Figure 2. GDP growth

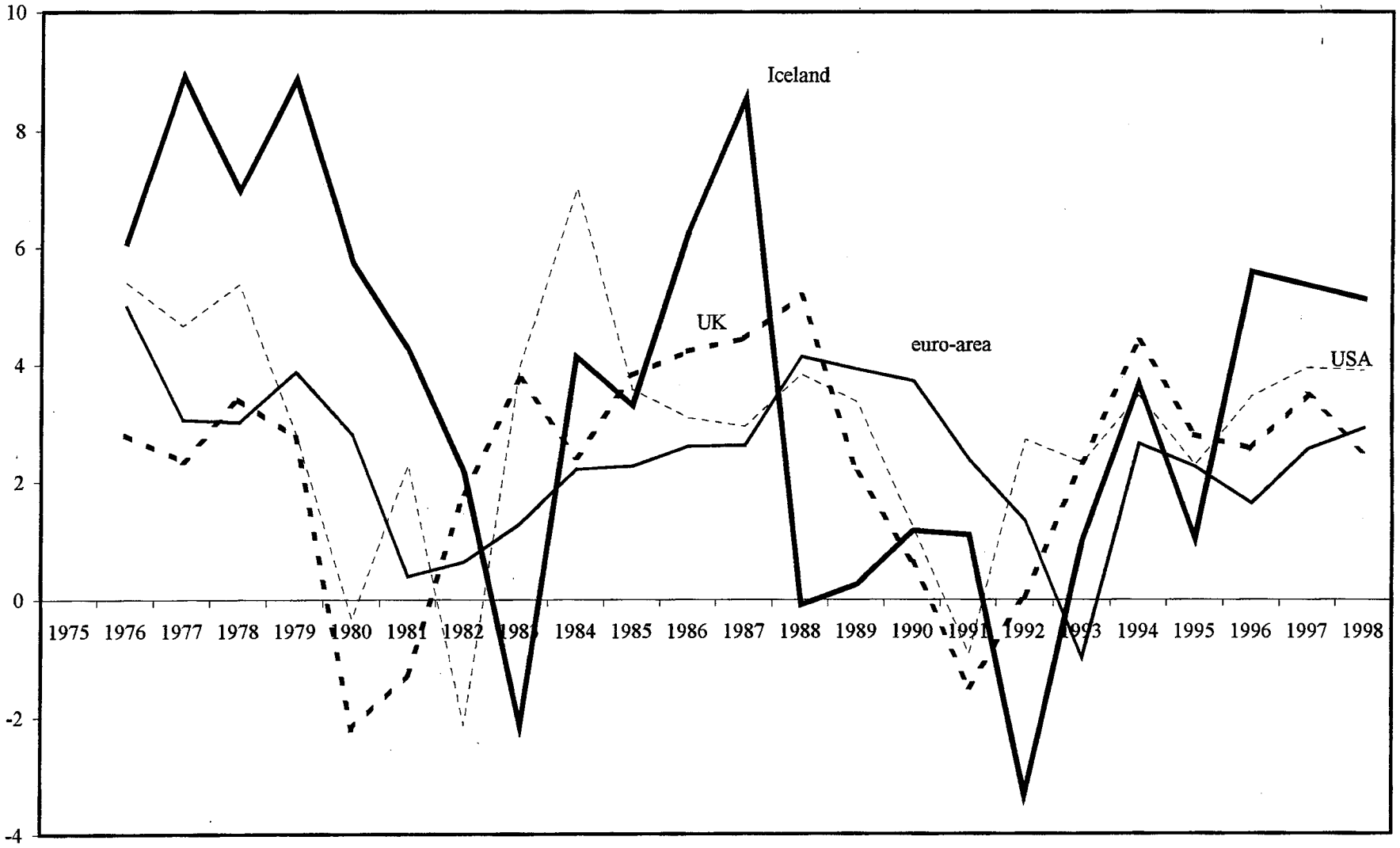

Table 2. Iceland: Symmetry of Business Cycles with Respect to a Narrow EMU Area 1961-1995

(In percent)

Countries	GDP Growth		Terms of Trade		Real Export Growth		Export Purchasing Power Growth	
	Total Variation	Ratio of Symmetric Variation	Total Variation	Ratio of Symmetric Variation	Total Variation	Ratio of Symmetric Variation	Total Variation	Ratio of Symmetric Variation
Austria	1.9	61.4	3.7	55.0	4.2	59.8	3.8	54.2
United States	2.1	19.2	10.4	37.3	5.5	25.3	5.3	31.3
Belgium	2.2	72.6	3.2	84.1	4.6	58.9	5.0	57.1
United Kingdom	2.1	17.3	5.1	0.0	3.6	32.6	3.3	15.9
Denmark	2.3	41.5	8.0	53.5	2.8	37.3	3.4	35.3
Finland	3.2	22.8	4.5	42.2	6.3	17.7	6.2	24.2
France	2.0	71.1	10.5	57.2	4.5	67.2	5.4	75.3
Greece	3.6	40.0	6.2	28.9	8.1	3.5	8.8	10.7
Netherlands	2.4	77.4	2.7	44.9	4.0	66.3	4.3	71.4
Ireland	2.2	8.4	7.2	35.3	4.5	1.2	6.0	14.2
Iceland	4.0	5.1	8.6	7.1	7.7	0.4	9.7	17.4
Italy	2.5	41.8	9.2	39.0	4.9	19.8	5.8	21.0
Japan	3.4	49.7	22.5	56.3	7.2	37.6	8.6	32.9
Luxembourg	3.0	29.9	4.3	39.6	6.3	51.1	8.4	44.6
Norway	1.7	3.1	11.8	1.3	3.3	17.4	6.0	5.2
Portugal	3.3	41.8	8.6	51.0	9.9	8.2	11.1	26.1
Spain	3.0	49.8	12.1	38.6	12.3	6.4	14.2	18.4
Switzerland	2.6	47.0	8.5	0.1	3.8	48.2	3.9	34.8
Sweden	2.1	35.8	8.1	41.6	4.8	21.1	4.8	35.4
Germany	2.2	89.0	6.2	66.7	4.1	80.0	4.1	81.3

Source: Central Bank of Iceland

Note: Narrow EMU is defined as: Germany, France, Netherlands, Luxembourg, Belgium, Finland, Ireland and Austria. The total variation of a single economic variable is measured in terms of its standard deviation. The symmetric part of the total variation is the ratio of the standard deviation of the relevant economic variable that can be explained by variation in the EMU area, estimated by R^2 of the regression of the relevant vartianble on the corresponding variable for the EMU area.

Table 3. Iceland: Correlation with Respect to EMU Area 1970-1995

(In percent)

Countries	Correlation with Respect to Narrow EMU Area						Correlaton with Respect to Wide EMU Area					
	GDP Growth	Terms of Trade	Export Growth at Constant Prices	Export Purchasing Power Growth	Growth of Industrial Production at Constant Prices	Unemployment	GDP Growth	Terms of Trade	Export Growth at Constant Prices	Export Purchasing Power Growth	Growth of Industrial Production at Constant Prices	Unemployment
Austria	82	96	81	75	86	98	67	89	70	68	59	97
United States	39	82	56	60	65	30	57	85	55	60	28	29
Belgium	84	94	75	72	91	97	71	87	79	61	67	97
United Kingdom	43	-1	51	33	60	92	78	25	75	61	42	95
Denmark	47	86	67	61	71	93	71	84	63	76	82	94
Finland	34	69	37	44	36	66	53	59	50	52	34	65
France	84	98	80	85	90	98	80	97	73	90	54	97
Greece	55	65	26	47	49	90	57	68	27	50	15	92
Netherlands	88	76	78	82	95	90	75	76	79	78	66	88
Ireland	34	71	16	43	46	93	30	67	34	67	61	91
Iceland	33	49	14	60	27	59	33	36	21	61	5	62
Italy	75	73	39	38	86	91	73	83	50	57	59	88
Japan	67	96	58	51	85	94	64	93	42	47	29	91
Luxembourg	46	65	69	63	79	95	55	57	78	46	58	94
Norway	13	-16	42	16	37	71	21	-12	39	16	47	70
Portugal	80	87	40	54	51	60	75	83	51	64	23	60
Spain	67	81	34	64	57	97	68	80	46	79	50	98
Switzerland	64	-3	67	53	74	68	57	-1	62	57	43	66
Sweden	45	86	42	55	42	60	56	84	68	68	49	59
Germany	94	98	89	90	94	100	77	92	74	71	37	98
Average	59	68	53	57	66	83	61	67	57	62	45	82

Source: Central Bank of Iceland.

Table 4. Iceland: External Shocks 1963-1997

(Fall in export revenue exceeding 2 percent)

Period	Change in Export Revenue	Volume Change	Terms of Trade Change	Number of Years
1967-1968	-21	-19	-2	2
1974-1975	-18	0	-18	2
1982	-10	-9	-1	1
1988-1992	-14	-8	-6	5
Average	-15.5	-9	-7	2.5

Source: Central Bank of Iceland

C. Central Bank Independence

The case for independence

20. Full independence for the Central Bank of Iceland and the announcement of a statutory objective of price stability would maximize the benefits of a currency peg to the euro, EU membership or inflation targeting. The formal model suggests that the presence of the second term in the objective function creates an inflation bias, which can be eliminated by setting $\beta=0$. This can be achieved by delegating monetary policy to a fully independent central bank with preferences (statutes) that specify price stability as the only policy objective.

21. Moreover, closer links with the EU, either through an exchange rate arrangement in an initial stage or full participation in the EU, requires countries to have an independent central bank prior to entry. Given that the Statute of the ECB envisages a very important role for the governors of the National Central Banks (NCBs)—they are members of the ECB's Governing council—in the formulation of monetary policy, it is a precondition for NCBs to be independent prior to adopting the euro. For this reason it was considered very important that the national legislation, including the statutes of the NCBs, be compatible with the Treaty and the Statute, the so-called legal convergence. According to the convergence report prepared by the European Monetary Institute (EMI) in March 1998 (page 12) "Central Bank independence is essential for the credibility of the move to Monetary Union and, thus, a prerequisite of Monetary Union".

22. This chapter distinguishes between political and economic independence (Grilli et al., 1991). Political independence is defined as the ability of a central bank to make decisions which are not influenced or sanctioned in anyway by the government. The first element is a guarantee of a lengthy term in office for the governor and the board of directors. This eliminates or minimizes the involvement of the government in the appointment of the management of a central bank. In addition, it is important that no government official be involved in the monetary policy decision making process and no government approval is required for decisions regarding monetary policy. Finally, a statutory requirement that the central bank pursue monetary (preferably price) stability, amongst its goals, is an important element of political independence. Economic independence refers to the ability of a central bank to use, without restrictions, monetary policy instruments in order to achieve specific goals. More specifically, the central bank has instrument independence and is not constrained in any way, in pursuing its policies, by any obligation to finance public deficits.

23. It is useful to compare in terms of these institutional characteristics the Central Bank of Iceland with those in other European countries and the ECB. Tables 5 and 6 list a number of these factors that determine the degree of political and economic independence for Iceland, the ECB, and other countries. All these characteristics refer to the statutes of the central banks and not to actual practice in each country.

Table 5. Political Independence

	1	2	3	4	5	6	7	Index /8
Canada	*	*				*	*	4
ECB		*		*	*	*	*	5
Iceland		*		*	*	*		4
Norway		*			*		*	3
Sweden	*	*	*	*	*	*	*	7
UK					*	*	*	3
USA				*	*	*	*	4

1/ Governor not appointed by the government.
2/ Governor appointed for more than 5 years.
3/ All board not appointed by the government.
4/ All board appointed for more than 5 years.
5/ No mandatory participation of government representative in the board.
6/ Statutory requirements that Central Bank pursues monetary stability amongst its goals.
7/ Legal requirements that strengthen the Central Bank's position in conflicts with the government are present.
8/ Sum of 1-7
Iceland: 1-4. The 3-member Board of Governors, which determines monetary policy, is appointed by the Minister of Commerce.

Source: Grilli, Masciandaro and Tabellini (1991); other sources include national Central Banks

Table 6: Economic Independence

	1	2	3	4	5	6	7	Index /8
Canada	*	*	*	*		*	**	7
ECB	*	*	*	*	*	*	**	8
Iceland		*	*	*			**	5
Norway	*	*	*	*		*	**	7
Sweden	*	*	*	*	*	*	**	8
UK	*	*	*	*	*	*	**	8
USA	*	*	*	*	*	*	*	7

1/ Direct credit facility: not automatic.
2/ Direct credit facility: market interest rate.
3/ Direct credit facility: temporary.
4/ Direct credit facility: limited amount.
5/ Central Bank does not participate in primary market for public debt.
6/ Instrument Independence.
7/ Banking supervision not entrusted to the Central Bank (**) or Banking supervision not entrusted to the Central Bank alone (*).
8/ Sum of 1-7

Source: Grilli, Masciandaro and Tabellini (1991); other sources include national Central Banks

The European Central Bank (ECB)

24. According to Article 2, the ECB " [...] when exercising the powers and carrying out the tasks and duties conferred upon them by this Treaty and this Statute, neither the ECB, nor a national central bank, nor any member of their decision making bodies shall seek or take instructions from Community institutions or bodies, from any government of a Member State or from any other body. The Community institutions and bodies and the governments of the Member States undertake to respect this principle and not to seek to influence the members of the decision making bodies of the ECB or of the national central banks in the performance of their tasks."

25. The Statute of the ECB and the Maastricht Treaty make it clear that " [...] the primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, it shall support the general economic policies in the Community [...] " (Article 2). To support these objectives, the Statute does not allow any overdraft facilities or any other type of credit facility with the ECB or with the NCBs. They also provide for instrument and goal independence and shield the bank from any political pressure stemming from the European or national level.

26. Given the complexity of the European System of Central Banks (ESCB), the Statute also makes it virtually impossible for the NCBs to exert any pressure stemming from the political establishment in each country. Article 14 states that " [...] each Member State shall ensure, at the latest at the date of the establishment of the ESCB, that its national legislation, including the statutes of its national central bank, is compatible with this Treaty and this Statute [...] The statutes of the national central banks shall, in particular, provide that the term of office of a Governor of a national central bank shall be no less than five years. A Governor may be relieved from office only if he no longer fulfils the conditions required for the performance of his duties or if he has been guilty of serious misconduct. A decision to this effect may be referred to the Court of Justice by the Governor concerned or the Governing Council on grounds of infringement of this Treaty or of any rule of law relating to its application [...]".

27. Since this was drafted in the early 1990s, a number of Central Banks in the EU have revised their statutes after having been granted independence by their governments. Two important examples are the Central Banks of the United Kingdom and Sweden. Tables 5 and 6 suggest that the Central Bank of Sweden and the ECB have the highest scores in terms of political and economic independence.

The Central Bank of Iceland

28. The Central Bank of Iceland appears to lag behind these countries in a number of ways. First, it seems politically less independent if compared with a number of countries, including the ECB. The main weaknesses arise from the role of the government in appointing the Board of Governors. Article 4 of the Statute of the Central Bank of Iceland states that

"The Central Bank shall in all its activities maintain close co-operation with the Government and present to the Government, its views on policy in economic affairs and the implementation thereof. In the event of significant disagreement with the Government the Board of Governors of the Central Bank may state so publicly and explain its views. It shall nevertheless, consider it as one of its main objectives to endeavor to implement such policy as the Government ultimately laid down." Moreover, although the Statute states that the central bank pursues monetary stability among its goals, price stability is not explicitly mentioned. In terms of economic independence, the two important issues are the overdraft facility to the Treasury which is permitted by the statutes -- although this is closed after an agreement with the Treasury -- and instrument independence of the Bank.[3] As regards the latter, the extract from the Statute indicates that since the government sets the goals and requires the Bank to act according to these goals, the government can, if it wishes, stop the Central Bank from independently changing monetary policy. Thus, in the event of a disagreement between the Central Bank and the government, the latter's opinion would prevail.

D. A Case for Inflation Targeting

29. Exchange rate targeting has the advantage of providing a clear anchor for exchange rate expectations in stabilizing the prices of traded goods. However, a fixed exchange rate system should also lead to wage moderation so as to ensure price stability and maintenance of competitiveness. If this is not the case, the peg will eventually be abandoned. Real exchange rate variability may be exacerbated if Iceland's business cycle becomes less synchronized with its partners. Therefore, close integration with the main trade-partners is essential to maintain a successful peg.

30. It is well known that several countries—among them New Zealand, the United Kingdom, Canada, Sweden—adopted inflation targeting in recent years. In some cases, this can reflect a disillusionment with monetary targeting, as money demand functions became unstable in the face of widespread financial innovation and the relationship between the central bank's policy instrument, a discount rate or short-term interest rate of some kind, and the price level or rate of inflation became unreliable, undermining the basis for the strategy. In other cases, where an exchange rate target had already been embraced for some of the same reasons, speculative crises in the foreign exchange markets undermined the ability of the central banks concerned to stick to the strategy, notably in the case of the ERM crisis of 1992 and the crises affecting the Scandinavian currencies in the same year.

31. The experience of countries that have adopted inflation targeting—though not of long standing—has been reviewed in Leiderman and Svensson (1995) and Haldane (1995). In

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[3] The overdraft facility was closed recently after an agreement between the Treasury and the Central Bank. According to the statutes however "The Central Bank shall act as banker to the Treasury...[and] ... may advance short-term loans to the Treasury" (Article10).

terms of the relationship of the strategy to the declared ultimate objective of price stability, inflation targeting appears to be logical. Inflation targeting may have a drawback as compared with monetary targeting in that it cannot be monitored so readily. If monitoring of the inflation strategy is interpreted as involving a comparison of inflation realizations with the pre-announced target, then the lags in impact of policy indeed make this so (see Cukierman,1996, for a model of this type). However, if inflation-forecast targeting is the stated policy, this problem disappears (Svensson, 1999a, for example).

32. Inflation targeting involves: (1) an explicit quantitative inflation target, (2) a framework for policy decisions and an institutional commitment to price stability, and (3) a high degree of transparency and accountability. "Flexible" inflation targeting (FIT) gives some weight to output variability in the economy and it involves (in technical terms) minimization of an (intertemporal) loss function represented by:

$$L_t = \frac{1}{2}\left[(\pi_t - \pi_t^*)^2 + \lambda y_t^2\right]$$

where π^* is the inflation forecast and y is the output gap. With "strict" inflation targeting (SIT), λ is set equal to zero. Under these circumstances, such a loss function implies that the conditional inflation forecast becomes the intermediate target at an appropriate time horizon (say 18-24 months, depending on the country and the transmission mechanism). Additionally, FIT implies a more gradual adjustment toward the inflation target. The central bank's role is to compute conditional forecasts for inflation and the output gap and to set its policy instrument so that the target is achieved. To enhance clarity and communication with the public, many countries publish inflation reports with forecasts of inflation and other important information.

33. For a small open economy like Iceland, the exchange rate is a very important channel for the transmission mechanism of monetary policy. As discussed earlier, the exchange rate affects import prices directly and almost instantaneously and consequently affects the CPI. It also affects aggregate demand with a lag, and output and the CPI through second round effects. On the supply side, there are also very short-term effects on production costs and longer term effects through wages. However, the exchange rate is influenced by exogenous disturbances, among other things, and the credibility of the inflation targeting regime. Since the exchange rate contributes to absorbing foreign disturbances, it has a stabilizing effect on the CPI. According to Svensson (1999b), the FIT regime provides considerable exchange rate stabilization compared with the SIT regime. Under SIT, the loss function is minimized when the CPI is stabilized at a very short horizon. Since it is the exchange rate that has a sizable impact on inflation at very short horizons, SIT relies on exchange rate movements to stabilize inflation. This results in higher variability in the exchange rate and output. In contrast, placing some weight on output under FIT implies targeting inflation at longer lags and allows greater stabilization of the exchange rate. In addition, under FIT some weight can be placed on exchange rate stability as well:

$$L_t = \frac{1}{2}\left[(\pi_t - \pi_t^*)^2 + \lambda y_t^2 + \lambda_q q_t^2)\right]$$

where q_t could be the deviation of the real exchange rate from equilibrium or desired level. Abstracting from any implementation problems that this approach may have it could lead to some stabilization of the exchange rate.

34. In the event of adopting an inflation target, a number of the institutional changes will have to be made as described above. In addition, the Central Bank of Iceland must begin publishing, on a regular basis, inflation forecasts for longer horizons than it does now (12 months ahead - see Autumn Statement of the Central Bank of Iceland, 1998) and explain these projections. Publication of an inflation report, along the lines of those published by the Bank of England and the Central Bank of Sweden, would enhance the credibility of the system.

Conclusions

35. The main focus of this chapter is on the appropriateness of Iceland's current exchange rate regime in the light of the adoption of the euro by 11 European Union (EU) countries and the possible enlargement of the euro area to include the United Kingdom, Denmark, and Sweden. Over the medium term, a decision will have to made whether to move closer to the EU, by focusing on monetary developments in the euro area, or, whether to continue with the existing exchange rate arrangement. Any decision will inevitably have to balance the need for acquiring and maintaining credibility in pursuing monetary policy goals, against the desirability of maintaining flexibility to deal with external shocks.

36. The present monetary framework has acquired considerable credibility in recent years but has not been fully tested yet. Following the unstable economic environment of the 1980s, the recent period of financial stability has helped to change attitudes, but institutions of policy-making may also need to be adapted in the future to meet the challenges of a shifting external environment. In terms of an exchange rate peg, there are two realistic options for Iceland: continue with the existing framework or adopt a unilateral peg to the euro. There is also the option of adopting an inflation target. It is argued that all of these alternatives would entail greater and formal independence for the central bank, something which will probably require reforming the Central Bank of Iceland Act. In addition, it is argued that the objective of monetary policy has to be clearly defined and included in the legislation.

REFERENCES

Alesina, A. and Grilli, V. (1992), The European Central Bank: reshaping monetary politics in Europe, in Canzoneri, M.B., V. Grilli and P.R.Masson, *Establishing a central bank: issues in Europe and lessons from the US*, Cambridge: Cambridge University Press

Andersen, P.S and Guðmundsson, M. (1998), "Inflation and Disinflation in Iceland", BIS Working Paper No.52.

Agnarsson, S., A.Hall, T.T.Herbertsson, S. Ignolfsson, G.Magnusson and G.Zoega (1998), "EMU and the Icelandic Labor Market", Institute of Economic Studies, University of Iceland Working Paper 98:13.

Barro, R.J. and Gordon, D. (1983), "Rules, Discretion and Reputation in a model of Monetary Policy", *Journal of Monetary Economics*, 101-121.

Cukierman, A. (1996) "The Economics of Central Banking", Tel Aviv University Working Paper 36-96.

Central Bank of Iceland (1986) *Central Bank of Iceland Act No 36*, May.

Central Bank of Iceland (1997), *Report on European Monetary Union.*

Central Bank of Iceland (1998), *Autumn Statement*, http://www.sedlabanki.is.

Emerson, M. D. Gros, A. Italianer, J.Pisani-Ferry and Reichenbach, (1991), *One market, one money*, Oxford University Press.

European Central Bank, *Protocol (No. 3) on the Statute of the European System of Central Banks and of the European Central Bank*, http://www.ecb.int.

European Central Bank, *Rules of Procedure of the European Central Bank*, http://www.ecb.int.

European Monetary Institute (1998), *Convergence Report : Report Required by Article 109j of the Treaty Establishing the European Community*, http://www.ecb.int.

Giavazzi, F. and Pagano, M. (1988), "The Advantage of Tying One's Hands: EMS Discipline and Central Bank Credibility", *European Economic Review*, 32, 1055-1082.

Grilli, V., Masciandaro, D. and Tabellini, G. (1991), "A Political and monetary institutions and the public financial policies in the industrial countries", *Economic Policy*, no 13.

Gross, D. and N. Thygesen (1992), *European Monetary Integration*, Longman.

Haldane, A.G.(1995), *Targeting Inflation*, Bank of England.

Leiderman, L. and Svensson L. (1995) (eds.), *Inflation Targets*, London:Centre for Economic Policy Research.

Masson, P., T.H.Krueger, and B.G. Turtelboom (1997), *EMU and the International Monetary System*, IMF: Washington DC.

Persson, T. and Tabellini, G. (1994) (eds.), *Monetary and Fiscal Policy: Volume 1 on Credibility*, MIT Press.

Petursson, T.G. (1998), "Price Determination and Rational Expectations", *International Journal of Finance and Economics*, 3:157-167.

Svensson, L. (1999a), "Monetary Policy Issues for the Eurosystem", unpublished paper, http://www.iies.su.se/leosven/.

Svensson, L. (1999b), "Open-Economy Inflation Targeting", *Journal of International Economics*, forthcoming, http://www.iies.su.se/leosven/.

II. A Scandinavian Forecasting Model for Inflation in Iceland[1]

37. This Chapter provides a description of a very simple forecasting exercise for inflation. The aim is to provide an equation that does not only provide a good fit to inflation over the sample period but also has desirable statistical properties. This exercise abstracts from issues related to the presence of unit roots and co-integration between the variables. The estimated equation is based on the so-called Scandinavian model. This is a two-sector model that distinguishes between internationally traded and nontraded goods (see Aukrust, 1977, Edgren, Faxen, and Odhner, 1973, Lindbeck, 1979, for example).

A. The Basic Scandinavian Model

$$\dot{P}_T = \dot{P}_w - \dot{e} \tag{1}$$

$$\dot{W}_T = \dot{P}_T + \dot{q}_T \tag{2}$$

$$\dot{W}_N = \dot{W}_T \tag{3}$$

$$\dot{W}_N = \dot{P}_N + \dot{q}_N \tag{4}$$

$$\dot{P} = \alpha\dot{P}_T + (1-\alpha)\dot{P}_N \tag{5}$$

$$\dot{q}_N = \theta\dot{q}_T \; ; \quad 1>\theta>0 \tag{6}$$

38. The basic model equations are (1) - (6). A dot over a variable denotes percentage change (log-difference) and the subscript T and N identify the traded and nontraded sector variables; P_w is the world price index (in dollars); e is the dollar/krona exchange rate; and q productivity; P and W are the price and wage indices. In the simple versions of the basic Scandinavian model, there is perfect commodity arbitrage for tradables; equation (1). Wage inflation is determined by sectoral price and productivity changes; equation (2). Given the commodity arbitrage condition, the wage equation is determined by the world price of tradables expressed in the domestic currency. In the simplest version of the model, it is also assumed that wage inflation is identical across the tradable and non-tradable sectors;

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[1] Prepared by Zenon Kontolemis

equation (3). Similarly, wages in the nontraded sector are set as a mark-up over prices and productivity changes; equation (4). An inflation equation can be written as follows:

$$\dot{P} = (\dot{P}_W - \dot{e}) + (1-\alpha)(1-\theta)\dot{q}_t \tag{7}$$

Domestic inflation is determined by world inflation, expressed in the domestic currency, and productivity growth in the traded goods sector. Note that the assumption of a given, exogenous, exchange rate is not unrealistic for the case of a very small economy.

39. Alogoskoufis (1986) extends this simple model by allowing for the possibility that tradables can be imperfect substitutes. This means that changes in the domestic price of tradables will also depend on domestic conditions — for example, wages and productivity. Equation (1) can be rewritten as:

$$\dot{P}_T = \beta_1(\dot{P}_W - \dot{e}) + \beta_2\dot{w}_T - \beta_3\dot{q}_T \qquad 0 \le \beta_1, \beta_2, \beta_3 \le 1 \tag{8}$$

and the inflation equation is given by:

$$\dot{P} = \phi_1(\dot{P}_W - \dot{e}) + \phi_2\dot{W}_T + \phi_3\dot{q}_T \tag{9}$$

According to this extended model, ϕ_3 is now negative since, according to equation (8), productivity growth in tradables affects inflation in both sectors negatively. We can impose $\phi_2 = -\phi_3$ and use unit labor costs also, if that time series is more easily available.

$$\dot{P} = \phi_1(\dot{P}_W - \dot{e}) + \phi_2(\dot{W}_T - \dot{q}_T) \tag{10}$$

B. Empirical Estimates

40. In this section, we attempt to estimate the basic inflation equation (10). The data used in this simple analysis are annual, cover the period 1971–98, and comprise the consumer price index (P); unit labor costs in manufacturing (W_u); import prices (P*) estimated using the import unit value (IUV) in dollars and the krona/dollar exchange rate; GDP (Y). The estimated inflation equation is given by:

$$\Delta P = 0.65\Delta W_u + 0.36\Delta P^*$$

Table 7. Estimated Inflation Equation: Instrumental Variables

1. Modeling Reduced Form for DLCPI

Variable	Coefficient	Std.Error	t-value
DPm	0.57588	0.061794	9.319
DLULCM_1	0.38878	0.15007	2.591
DLCPI_1	0.11476	0.21458	0.535
DPm_1	-0.081948	0.12858	-0.637

R^2 = 0.984563 RF \sigma = 3.66728 DW = 2.41
* R^2 does NOT allow for the mean *
RSS = 309.3259416 for 4 variables and 27 observations

2. Modeling Reduced Form for DLULCM

Variable	Coefficient	Std.Error	t-value
DPm	0.41016	0.11284	3.635
DLULCM_1	0.52919	0.27404	1.931
DLCPI_1	0.49637	0.39185	1.267
DPm_1	-0.47886	0.23480	-2.039

R^2 = 0.945255 RF \sigma = 6.69685 DW = 2.28
* R^2 does NOT allow for the mean *
RSS = 1031.499794 for 4 variables and 27 observations

3.Inflation equation

The present sample is: 1972 to 1998

Variable	Coefficient	Std.Error	t-value	t-prob
DLULCM	0.65266	0.10428	6.259	0.0000
DPm	0.36580	0.093883	3.896	0.0006

Additional Instruments used:
DLULCM_1 DLCPI_1 DPm_1

\sigma = 3.53276 DW = 2.19
RSS = 312.0095406 for 2 variables and 27 observations

Instrument validity $\chi^2(2)$ = 5.6871 [0.0582]
Testing $\beta=0$:$\chi^2(2)$ = 536.36 [0.0000] **

where ΔW_u is log change in unit labor costs and ΔP^* is import price inflation (changes in import unit value and changes in the krona/dollar exchange rate). The equation was estimated over the period 1971–98 with instrumental variables. Table 1 shows the results of the estimation. The lagged ΔW_u, inflation and import prices were used as instruments along with

the other exogenous variables in the first stage of the estimation—see equations (1) and (2) in Table 7. The validity of these instruments is tested with the standard specification test, which does not reject the null hypothesis that the instruments used are valid (see Hendry and Doornik ,1996, for details). Equation (3) in Table 7 is the final equation for inflation in Iceland. Figure 3 shows the actual and fitted values. The model diagnostics, not reported here, are acceptable and the equation residuals are random and normally distributed.

C. Excess Money Demand ?

41. A natural extension to the model is to allow demand to enter the price equation independently. This can be achieved by extending the model to include an excess monetary growth variable (m^e)—for example, by writing equations (1) and (4) as follows:

$$\dot{P}_T = \gamma_1(\dot{P}_W - \dot{e}) + \gamma_2\dot{W}_T - \gamma_3\dot{q}_T + \gamma_4 m^e \tag{11}$$

$$\dot{P}_N = \delta_1\dot{P}_T + \delta_2\dot{W}_N - \delta_3\dot{q}_N + \delta_4 m^e \tag{12}$$

$$0 \le \gamma_1,\gamma_2,\gamma_3,\delta_1,\delta_2,\delta_3 \le 1,\ 0 \le \gamma_4,\delta_4$$

The inflation equation can be written as:

$$\dot{P} = \psi_1(\dot{P}_w - \dot{e}) + \psi_2\dot{W}_T + \psi_3\dot{q}_t + \psi_4 m^e \tag{13}$$

where

$$\begin{aligned}
\psi_1 &= [(1-\alpha)\delta_1 + \alpha] > 0 \\
\psi_2 &= [(1-\alpha)\delta_1 + \alpha]\gamma_2 + (1-\alpha)\delta_2 > 0 \\
\psi_3 &= -[(1-\alpha)\delta_1 + \alpha]\gamma_3 - (1-\alpha)\theta\delta_3 < 0 \\
\psi_4 &= [(1-\alpha)\delta_1 + \alpha]\gamma_4 + (1-\alpha)\delta_4 > 0
\end{aligned}$$

42. The convenience of this general formulation is that it encompasses the simple and extended Scandinavian models as well as a simple monetary model as special cases. Excess demand is defined as the difference between the actual money stock and predicted values obtained from a money demand equation estimated as follows:

$$M^d = \zeta_1 Y_t - \zeta_2 i_t + \zeta_3$$

The estimated money demand equations for Iceland are:

$$M_t^1 = 0.95Y_t - 1.30i_t - 1.76$$

$$M_t^3 = 1.01Y_t - 0.87i_t - 1.11$$

43. However, adding an excess money demand variable in the inflation equation proved statistically insignificant for both measures of money. Table 8 shows the estimated inflation equation with excess money growth defined with the wider monetary aggregate (M^3). The addition of the variable does not provide any additional information and is statistically insignificant. Essentially the same result is obtained with M^1. Thus we proceed with the estimated equation of Table 7, without an excess money demand variable, to provide forecasts for CPI inflation for 1999.

Table 8: Does excess monetary growth matter?

The present sample is: 1972 to 1997

Variable	Coefficient	Std.Error	t-value	t-prob
DLULCM	0.67333	0.10992	6.126	0.0000
DPm	0.34644	0.099100	3.496	0.0019
Exmoney3	-0.11190	0.10562	-1.059	0.3004

Additional Instruments used:
DLCPI_1 DPm_1 DLULCM_1

\sigma = 3.65145 DW = 2.08
RSS = 306.6610753 for 3 variables and 26 observations
2 endogenous and 2 exogenous variables with 5 instruments
Reduced Form \sigma = 3.76831
Specification Chi^2(2) = 4.3083 [0.1160]
Testing \beta=0:Chi^2(3) = 472.17 [0.0000] **

D. Forecasting Inflation

44. Inflation during 1998 was 1.7 percent against a change in unit labor costs of 6.2 percent (9.5 percent wage increase, 3.3 percent productivity). Import prices declined slightly, as the unit value of imports dropped by 2 percent (compared with a decline of 8.7 percent for industrial countries), while the krona-dollar exchange rate appreciated somewhat during 1998. For the projection of inflation for 1999, it was assumed that unit labor costs would increase by 5.2 percent in 1999, based on a 5.6 percent increase in wages and a 2 percent wage drift and 2.4 percent productivity growth. It was further assumed that there would be no change in the exchange rate, although two alternative assumptions for import unit values were made : no change and a 2 percent increase.

Table 9: Forecasts based on estimated and fixed (assumed) weights

	IUV = 0 percent	IUV=2 percent
Estimated equation	3.4	4.1
Fixed weights	2.6	3.6

45. Table 9 shows the inflation forecast for 1999. The two different forecasts shown in columns 2 and 3 are based on different assumptions about the import unit values for 1999. The second row shows the predicted value based on the econometric equation, while the last row assumes equal (one-half) coefficients for the same equation. Given that productivity growth is expected to slow down in 1999 while wage inflation will continue to grow, the unit labor costs will rise briskly. Thus with no change in import prices (column 1 of Table 9), inflation is expected to range between 2.6 percent and 3.4 percent in 1999. The expected acceleration in inflation in 1999 is the result of a productivity slowdown and persistently high wage inflation combined with less favorable external developments. The krona/dollar exchange rate is expected to remain unchanged in 1999 compared with some appreciation in 1998. The model does not include dynamics of inflation as these proved insignificant. In a quarterly model, dynamics may prove to be significant providing more persistence in inflationary expectations. Given the low inflation that has prevailed in recent years, such a model may imply a slower acceleration of inflation than suggested by the estimated equation of Table 7 and the forecasts provided in Table 9.

REFERENCES

Alogoskoufis, G.S. (1986), "On the Determinants of Consumer Price Inflation in Greece", *Greek Economic Review*, pp:245-266.

Alogoskoufis, G.S and A. Spanos, (1985), "On the Determinants of annual Consumer Price Inflation in an Open Economy", mimeo, Birbeck College, London.

Andersen, P.S and Guðmundsson, M. (1998), "Inflation and Disinflation in Iceland", BIS Working Paper No.52.

Aukrust, O. (1977), "Inflation in the Open Economy: A Norwegian Model", in Krause L.B. and W.S. Salant (eds), *Worldwide Inflation*, Washington DC, The Brookings Institution.

Edgren, G., K.O. Faxen, and C.E. Odhner, (1973), *Wage Formation and the economy*, London, Allen and Unwin.

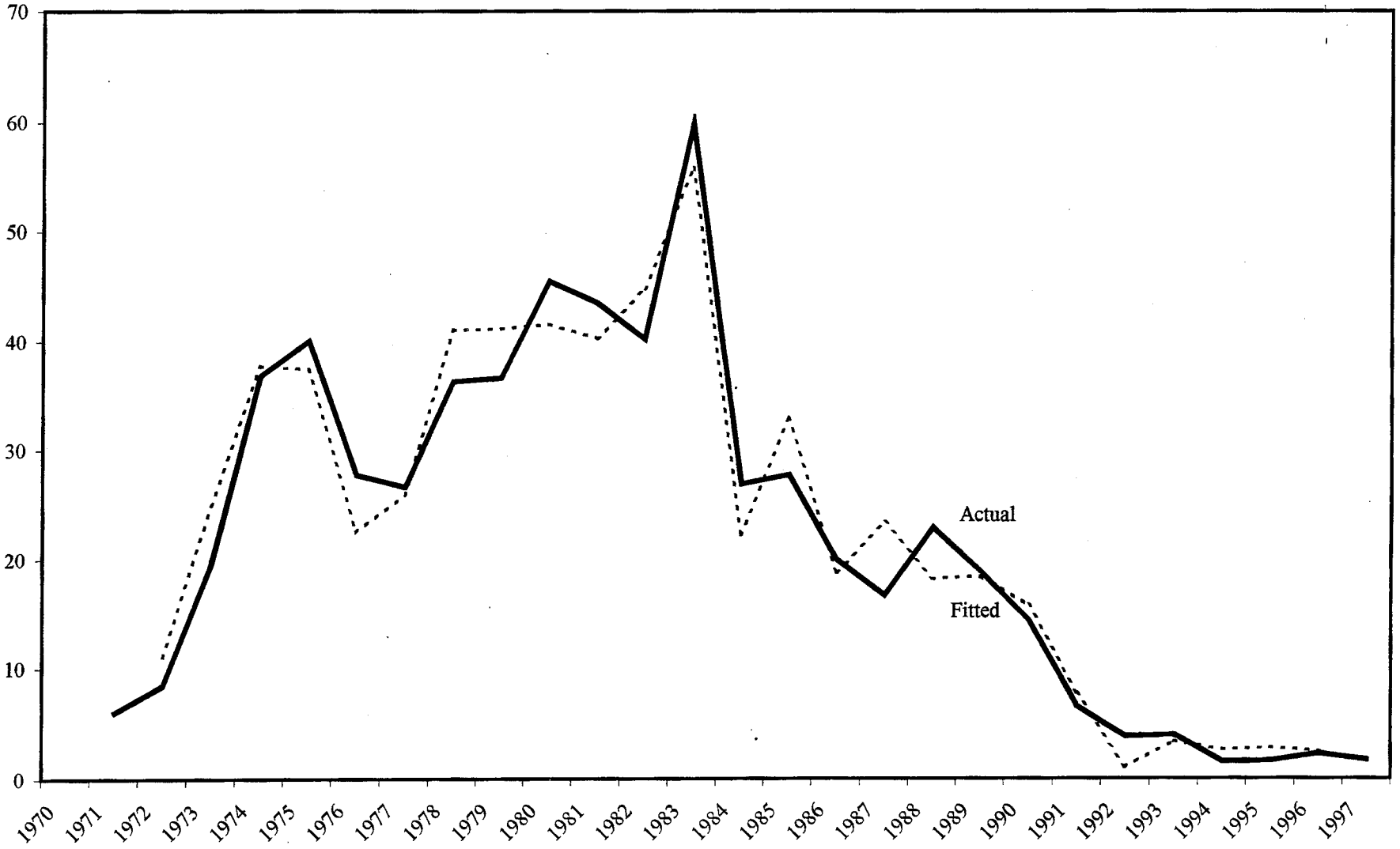
Hendry, D.F. and J.A. Doornik, (1996), *Empirical Econometric Modelling Using PcGive 9.0 for Windows*, International Thomson.

Lindbeck, A. (1979), "Imported and Strucural Inflation and Aggregate Demand: The Scandinavian Model Reconstructed", in Lindbeck, A. (ed), *Inflation and Employment in Open Economies*, Amsterdam, North Holland.

Petursson, T.G. (1998), "Price Determination and Rational Expectations", *International Journal of Finance and Economics*, 3:157-167.

Stock, J.H. (1987), "Asymptotic properties of least squares estimators of cointegrating vectors", *Econometrica*, 1987.

Figure 3. Iceland: Actual and fitted inflation



III. Assessing the External Position[1]

A. Introduction

46. The dominant feature of the external accounts in1998 was the sharp widening of the current account deficit from 1.4 percent of GDP in 1997 to 5.7 percent of GDP in 1998. The rather abrupt deterioration of the current account balance reflects the buoyant state of the economy, with a surge in private consumption and investment contributing to exceptionally strong import growth. Indeed, rapid and sustained growth of domestic demand in recent years has led to the re-emergence of current account deficits after a rare string of current account surpluses in 1993-95. The current account deficit for 1998 is large historically and relative to other OECD countries—only New Zealand had a higher deficit last year (Figure 4).

International Comparison of Current Account Balances

(Average 1994-1998; in percent of GDP)

	Iceland	Australia	Canada	New Zealand	Norway
Trade balance	0.4	-0.7	3.4	1.4	5.8
Nonfactor services balance	0.4	-0.1	-1.2	-0.9	0.2
Factor income balance	-2.2	-3.8	-3.4	-7.2	-1.0
Current transfers, net	-0.1	0.0	0.0	1.8	-1.2
Current account balance					
Average 1994-98	-1.5	-4.6	-1.2	-4.8	3.8
1998	-5.7	-4.9	-2.1	-6.9	-0.1

Sources: World Economic Outlook database and data provided by the authorities.

47. Against this backdrop, this chapter offers a few thoughts on Iceland's external position from a macroeconomic balance perspective, with reference to the position of several similarly situated OECD countries (Australia, Canada, .New Zealand, and Norway, all of which have had current account positions in excess of 2 percent of GDP in the past five years). Section B presents an assessment of the sources and sustainability of external imbalances, focusing on the medium-run determinants of saving and investment in Iceland. The remainder of this introduction summarizes the evolution of the balance of payments in 1998 (Figure 5) and provides the basic data (Table 10).

[1] Prepared by Christopher Clarke.

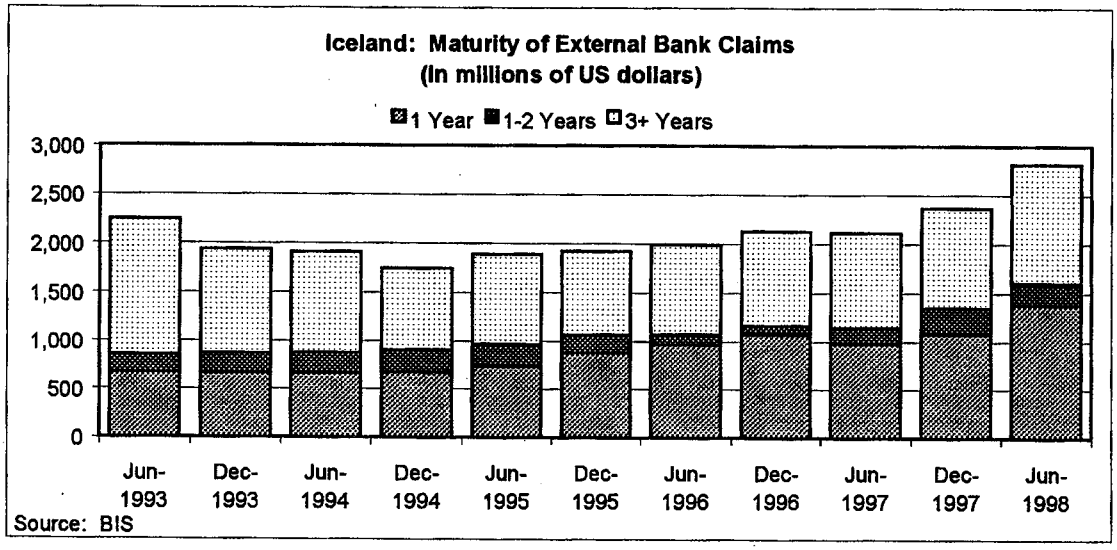
Background

48. External conditions were generally favorable for Iceland in 1998, notwithstanding difficulties faced in a number of key export markets. Prices for marine export products, which represent more than 70 percent of Iceland's merchandise exports, have risen steadily since mid-1997 as a result of good market conditions in the United States and Western Europe and declining world supplies of important species. At the same time, conditions in the waters around Iceland have been favorable in recent years, facilitating a sustained recovery of cod stocks, the most important of the many marine species harvested commercially. With commodity and oil prices having fallen sharply in 1998, the terms of trade improved by 5½ percent.

49. Given the generally favorable external environment, the performance of exports in 1998 was somewhat disappointing. The volume of marine exports fell by over 5 percent, owing in part to a strike in the fisheries sector early in the year. Exports to Asia and Russia have been hit especially hard by the contraction in demand but for the most part were successfully diverted to other markets. Ferrosilicon exports were adversely affected by the decline in market prices and production problems connected with the expansion of existing capacity, while the coming on stream of new capacity in two aluminum smelters contributed to a 40 percent increase in export volumes, which was partially offset by weak aluminum prices. Strong growth in the export of air transport and other services more than compensated for the contraction in merchandise exports, with total exports registering growth of 2 ½ percent for the year.

50. Brisk growth was recorded in almost all categories of imports in 1998 but was most pronounced in investment goods. Estimates prepared by the authorities suggest that imports connected with construction of new plants or the expansion of existing capacity in aluminum, ferrosilicon, and associated power plants increased by nearly two thirds last year, amounting to 6 percent of all merchandise imports. Lumpy transactions, such as the purchase of aircraft, added to the spike in imports. Large increases were also recorded in consumer goods imports, as might be expected in view of the gains in real household disposable income over the past few years, with especially robust growth in passenger motor cars and consumer durables. In Iceland, these consumption patterns also reflect the aging of the passenger car fleet in recent years and the intensification of retail competition, respectively. Nonfactor services tell a similar story, led by increases in both transportation and travel expenditures.

51. The capital and financial account recorded a surplus of $533 million in 1998, driven largely by heavy foreign borrowing by commercial banks and private enterprises. Private institutions accumulated some $884 million in new foreign debt, and drew down their foreign assets by a further $85 million, while the public sector reduced its foreign debt by $133 million.



52. Portfolio investment in Iceland remains negligible, reflecting in part the small size and limited liquidity of the Icelandic Stock Exchange, which currently trades in the shares of 67 firms, with a market capitalization equivalent to 39 percent of GDP.[2] Outward portfolio investment has surged by $550 million over the past two years, as pension funds and other institutional investors moved to capitalize on the relatively recent liberalization of capital flows. Foreign direct investment in Iceland, which mainly reflects the activities of multinationals involved in aluminum and ferrosilicon smelting operations, was offset last year by the growing overseas investments of Icelandic fishing firms.

53. Strong capital inflows during the year resulted in considerable upward pressure on the króna, which ended the year 0.7 percent higher notwithstanding sizable net purchases of foreign exchange by the central bank. Gross international reserves rose by $32 million during 1998 and stood at $430 million at year end (Table 11). Measured in terms of current imports of goods and services, which reached a peak in 1998, international reserves declined slightly to the equivalent of 1.6 months of imports. Net international reserves declined slightly, reflecting drawings on short-term credit lines by the central bank toward the end of the year, which were reversed in January 1999.

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[2] Financial sector issues are discussed more fully in Chapter V.

B. Assessing the Current Account

54. The widening of the current account deficit by 4 ¼ percent of GDP in 1998 was associated with a sharp increase in external borrowing, particularly at the short end of the maturity spectrum, a rapid expansion of bank credit, and a modest deterioration in external competitiveness. Experience in other countries suggests that market sentiment toward countries with relatively limited exchange rate flexibility can change rapidly in response to changes in these and related indicators, with potentially damaging macroeconomic consequences. Accordingly, this section explores the source and sustainability of Iceland's external imbalances on the basis of standard indicators of external sustainabilty as well as an analysis of medium-term saving and investment patterns, drawing on methodology developed within the Fund to support its exchange rate assessments.

Sources of external imbalances

55. Chronically weak national savings lie at the heart of Iceland's current account deficits. The trend decline in national savings over the past two decades largely reflects the persistence of fiscal imbalances, far outstripping modest increases in private savings (Figure 6). In the mid-1990s, however, as fiscal consolidation began to take hold, the sectoral contributions to savings were reversed. The sharp fall in private savings in recent years more or less mirrors a decline in household savings, which coincided with the acceleration of financial deregulation and sizable gains in disposable income, which may have induced households to reassess their permanent income.

56. This saving pattern is consistent with the experience of other industrial countries, particularly the Nordic countries, where personal savings rates turned negative following the lessening of liquidity constraints in the 1980s.[3] With the easing of liquidity constraints in Iceland, household debt rose from 116 percent of disposable income in 1994 to a peak of 135 percent in 1998, while household savings fell to 3 percent. The evidence from other countries is not entirely clear about the extent to which observed declines in private savings are likely to be permanent, but it seems reasonable to assume a certain amount of "overshooting" of consumption in the early stages of financial liberalization as households adjust to the new financial environment. Certain provisions of the tax system in Iceland are also likely to encourage the accumulation of debt, such as the widespread availability of interest rebates for home buyers.

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[3] Andersen and White (1996).

Iceland: International Comparison of Savings and Investment

(Average 1994-1998; in percent of GDP)

	Iceland	Australia	Canada	New Zealand	Norway
Gross private savings	13.0	13.6	16.5	13.2	17.1
Household saving ratio	5.9	3.2	4.5	1.5	6.0
Gross public savings	3.2	3.2	0.8	3.2	11.2
Gross capital formation	17.8	21.4	18.7	21.2	24.3
Current account balance	-1.6	-4.6	-1.4	-4.9	4.1

Source: World Economic Outlook database and data provided by the authorities.

57. Investment has followed a similar path but has been higher than national savings in all but four of the past twenty years, underpinning a long history of current account deficits. The decline in investment could also reflect the transition to higher real interest rates in the disinflation process, implying that the required rate of return on new investment has also risen.[4] The low level of savings itself may have constrained investment, particularly in the years prior to the full opening of the capital account in 1995, with adverse implications for future growth.

58. Private investment may also have been inhibited by historical factors, such as the pervasive role of the state in the economy and the absence of financial stability. The initiation in recent years of structural and regulatory reforms and the intensification of domestic competitive pressures would therefore tend to support a somewhat higher investment ratio.[5] In other OECD countries dependent on commodity exports, savings and investment have been substantially higher, each amounting to over 22 percent of GDP on average over the past twenty years (Figure 7).

59. With the sharp spike in investment since 1996 in support of large energy-intensive projects, recent current account deficits have essentially been a reflection of private sector decisions. There is also some evidence that investment spending in recent years has largely been directed toward sectors that can reasonably be expected to generate higher export revenue (Figure 8). With a larger share of investment destined for the manufacturing sector, which is dominated by export-oriented firms, investment spending in both agriculture and housing

[4] National Economic Institute (1999).

[5] Group of Ten (1995).

construction has declined. Investment in the highly profitable fisheries sector has also declined, but this is a welcome trend, given the extent of over capacity. While investment in key export sectors is likely to pay dividends in terms of higher future export revenue, the remaining current account deficits must nevertheless be financed by borrowing abroad, adding to Iceland's external debt and debt servicing burden, which are higher than most countries in its credit rating class.

Iceland: Selected External Debt Indicators for Similarly Rated Countries
(Figures in percent of GDP)

	Sovereign Credit Rating		International Investment Position		
	Moody's	S&P	Net Investment Position	Net External Debt	Current Account
Australia	Aa2	AA	-59.0	-36.2	-4.9
Belgium	Aaa	AA+	17.7	21.2	5.0
Canada	Aa2	AA+	-39.8	-43.6	-2.1
Denmark	Aa1	AA+	-23.1	-28.0	-1.0
Finland	Aaa	AA	-42.3	-31.9	5.1
Iceland	**Aa3**	**A+**	**-49.5**	**-55.9**	**-5.7**
Italy	Aaa	AA	-2.8	-5.2	2.4
New Zealand	Aa2	AA+	-72.6	-42.5	-6.9
Portugal	Aaa	AA	-11.4	-5.4	-3.0
Spain	Aaa	AA	-19.0	-1.5	0.2
Sweden	Aa2	AA+	-41.4	-43.9	2.0
Average excluding Iceland			-29.4	-21.7	-0.3

Sources: Credit ratings are for long-term foreign currency issues by the sovereign, and are taken from Moody's Investors Service web site and Standard and Poor's *CreditWeek*. Data on international investment positions are for 1996 for all countries other than Iceland, as presented in *International Financial Statistics*; 1998 GDP and current account data are from the World Economic Outlook database. Iceland data provided by the authorities.

Sustainability of external imbalances

60. Standard indicators of external vulnerability often cited in the literature provide a mixed picture (see Table below).[6] Despite increasing cost pressures on its competitive position, Iceland's favorable terms of trade and relatively small position in world markets bode well for the recovery of export revenues. Export volumes should pick-up from the more subdued pace of the past two years with the coming on stream of new capacity in aluminum and ferrosilicon, and assuming no disruptive industrial disputes in the fisheries sector.

[6] See, for example, Milesi-Ferretti (1996) and Kaminsky et al (1998).

Iceland: Selected External Indicators

	1994	1995	1996	1997	1998
			(percent change)		
Exports	10.0	-2.1	10.0	5.7	2.6
Terms of trade	-0.1	1.0	-3.2	2.7	5.6
Real effective exchange rate (CPI)	-5.5	0.1	0.3	0.9	1.5
Real effective exchange rate (ULC)	-6.4	3.9	2.7	2	4.5
			(percent of GDP)		
Current account balance	1.9	0.8	-1.6	-1.4	-5.7
Inward direct investment	0.0	0.2	0.8	2.0	1.2
Inward portfolio investment	0.1	0.1	0.1	0.1	0.1
Other capital inflows	-1.3	1.4	4.9	5.3	9.8
Net external debt	54.0	51.9	49.5	50.6	55.9
			(millions of US dollars)		
Long-term external debt	3,502	3,577	3,625	3,634	4,714
Short-term external debt	648	806	908	999	1,020
Short-term external debt (BIS)	592	743	851	858	1,103
International reserves	298	315	462	386	430
Reserve-related liabilities	138	177	76	75	131
			(percent)		
Short-term external debt to reserves	218	256	197	259	237
Broad money to reserves (eop)	560	555	369	409	382
Official reserves in months of imports	1.8	1.7	2.1	1.8	1.6
Debt service to exports	34.0	28.2	22.1	18.9	20.7
Interest payments to exports	9.6	8.8	7.8	7.0	6.9

Sources: Central Bank of Iceland, National Economic Institute, and Bank for International Settlements (BIS data for 1998 are for end-June).

61. Iceland remains highly dependent on short-term capital flows to finance its current account deficit, with the result that the stock of short-term debt (as reported by the BIS) has nearly doubled in the past five years. Relative to other industrial countries, Iceland's short-term debt represents a large share of the country's international reserves. The debt service burden is also among the heaviest but has been kept in check by steadily declining interest payments, reflecting Iceland's active debt management and improving access to capital markets abroad. The trend decline in net external debt over the past few years has come to an end, and was subsequently reversed in 1998, as more limited foreign direct investment flows covered only a small fraction of the current account deficit. With the completion of large

foreign-financed industrial projects, and considerable uncertainty surrounding the scale and timing of future projects, Iceland's ability to attract non-debt creating capital flows to non-traditional sectors, such as biotechnology and information technology, is likely to be tested.

62. Nevertheless, at a time of heightened financial market sensitivity, the fact remains that Iceland has remained largely unaffected by external financing pressures facing a number of other countries. Indeed, Moody's recently confirmed its already high sovereign credit rating for Iceland (Aa3), highlighting the fact that Iceland enjoys relatively easy access to international capital markets on favorable terms.

A macroeconomic balance approach

63. The current account deficit can also be assessed from a medium-term perspective in terms of the underlying savings and investment patterns of the economy. As employed in the Fund, the macroeconomic balance approach focuses on the consistency ex ante of (i) projections for the equilibrium saving-investment balance based on medium-run determinants of saving and investment and (ii) estimates of the underlying current account position—that is, the position that would prevail at prevailing exchange rates if all economies were operating at potential. [7] Given that by accounting convention the saving-investment balance and the current account balance must be identical ex post, sharp differences in these model-based estimates, which are subject to important limitations, can help to inform judgments about external sustainability based on traditional indicators of international competitiveness and other country-specific considerations.[8]

Underlying current account position

64. The widening of the deficit in 1998 can be attributed in large part to the surge in import-intensive investment in large-scale industrial projects, which has had a profound impact on the small Icelandic economy. Much of this investment is being wound down, and no additional projects are envisioned in 1999. Nevertheless, after taking into account the lagged effect on the trade balance of recent exchange rate changes and the cyclical position of the economy, which is running well ahead of potential as well as most of Iceland's trading partners, the underlying current account deficit is close to 2 ½ percent of GDP. It bears noting

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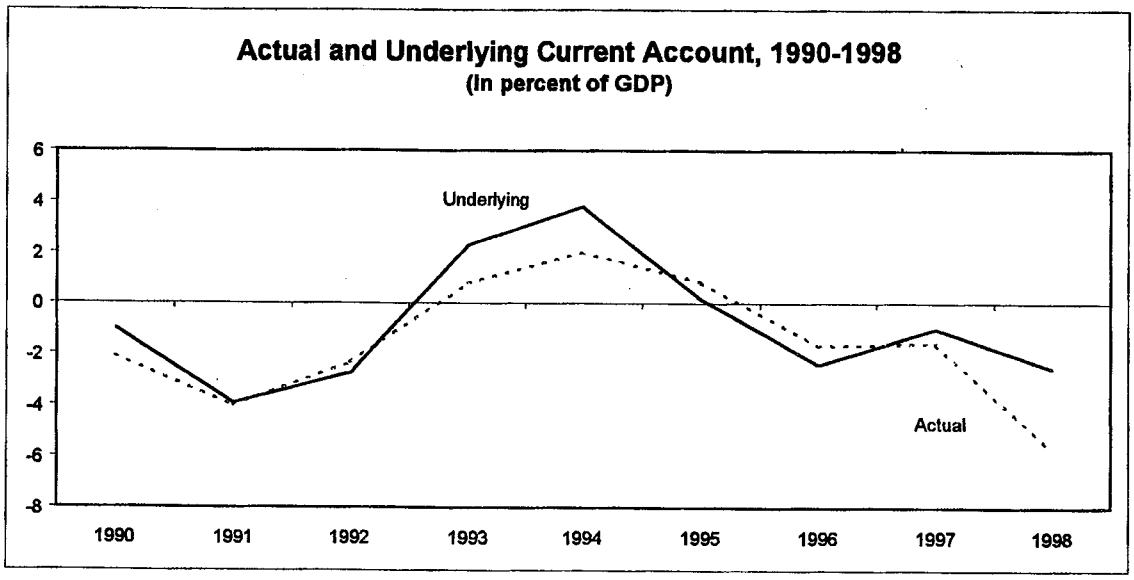
[7] Isard and Faruqee (1998). The Annex to this Chapter provides additional information on the application of the macroeconomic balance approach to Iceland.

[8] The framework developed within the Fund represents a significant advance over other macroeconomic balance approaches in that it provides a global and mutually consistent set of trade equations and saving-investment norms. Like all such approaches, however, its numerical estimates stem from a simplified analytic framework. In order to draw meaningful conclusions from the estimates, country-specific judgments need to be made about cyclical and other factors. The application of this framework is also limited by the considerable uncertainty surrounding the specification and parameters of the equations for the underlying current account and the saving-investment norm.

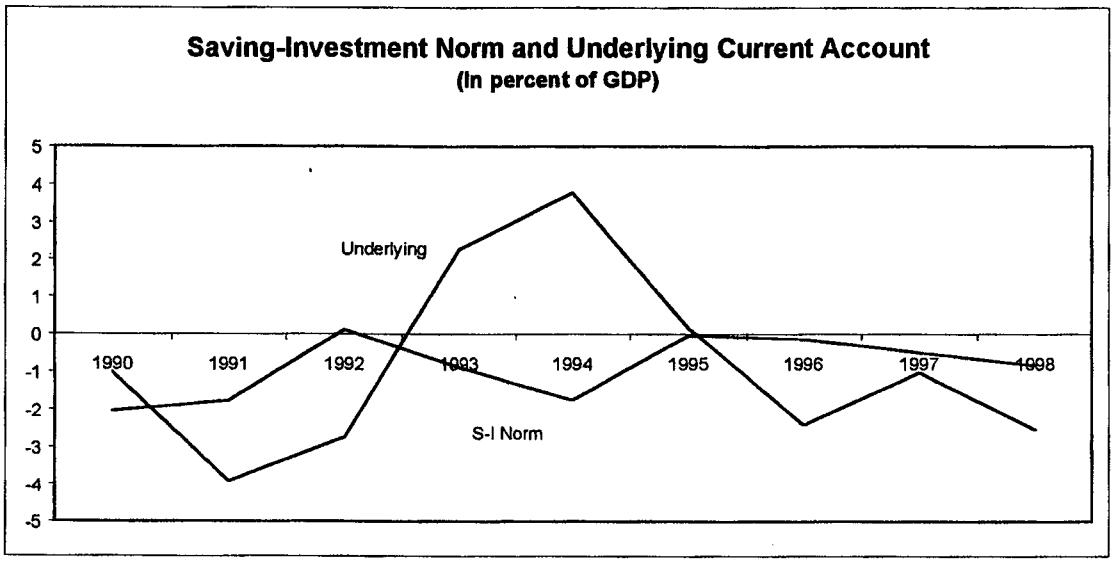
that this investment has largely been directed toward the establishment or expansion of aluminum and ferrosilicon smelting facilities, export sectors in which Iceland has a sizable comparative advantage given its vast and largely untapped supply of cheap hydro and geothermal energy; indeed, these two metals are expected to account for 40 percent of the projected increase in export revenue in 1999.



Saving-investment norm

65. Drawing on the insights of the permanent income/life-cycle literature, the model underlying the Fund's macroeconomic balance approach summarizes a wide range of plausible medium-run determinants of saving-investment balances in three key variables. First, the stance of *fiscal policy*, as measured by the structural balance of the general government, can reasonably be expected to have an effect on national savings in the absence of Ricardian equivalence. Second, the *age structure of the population*, with the working population defined as those aged 20-64 years, can be shown to have a bearing on the level of savings and, albeit less strongly, investment. Third, the current account balance is closely associated in most cases with the *stage of economic development*, specified here as per capita income. Given the multilateral focus of the underlying model, the three variables are expressed as deviations from the average of a broader group—in this case, Iceland's industrial country trading partners. The corresponding data for Iceland and its trading partners for each of these variables during 1990-98 are illustrated in Figure 9.

66. The application of the model to Iceland using data for 1998 offers support for the view that the current account deficit is somewhat out of line with medium-run fundamentals. In particular, the model-based estimates indicate a modest current account deficit of about ¾ percent of GDP last year, against an underlying deficit of 2 ½ percent of GDP. These results and their interpretation are, as noted above, subject to considerable uncertainty, all the more so as Iceland was not one of the countries used to derive estimates for the basic equations of the model.



67. Based on the factors assumed to be driving the medium-run external balance, the results for Iceland would be consistent with the following interpretation, which would need to be supplemented by an assessment of other country-specific factors affecting Iceland's external position:

- Iceland's fiscal stance is strong relative to the average of other industrial countries, although the gap is narrowing. Other things being equal, this would be consistent with a relatively strong current account position.

- Iceland's demographic profile fares poorly against other industrial countries in terms of its contribution to savings. Iceland has a relatively young population, with few Icelanders of retirement age, factors that would tend to support a high level of savings. However, the youth of Iceland is concentrated relatively heavily in the non-working wages, implying lower savings and a weaker current account position.

- Iceland's per capita income, which lost some ground relative to the United States during the recession in the early 1990s, may also have contributed to its low savings rate. The experience in other industrial countries suggests that saving tends to accelerate rapidly during the early stages of economic development and generally level off, or even decline, when the economy matures.[9] As a small open economy with easy access to international capital markets, Iceland's low saving and long history of current account deficits would be consistent with the need to build up its capital stock while maintaining longer-run consumption levels.

[9] International Monetary Fund (1995).

Table 10. Iceland: Balance of Payments

	1994	1995	1996	1997	1998
		(In millions of US dollars)			
Current Account	122	61	-120	-108	-472
Balance on goods and services	327	256	47	46	-360
Balance on goods	282	207	18	4	-353
Merchandise exports, fob	1,613	1,803	1,890	1,854	1,925
Marine products	1,215	1,297	1,392	1,323	1,399
Aluminum and ferro-silicon	194	240	239	267	309
Merchandise imports, fob	-1,332	-1,597	-1,871	-1,851	-2,278
Investment goods	-441	-539	-696	-717	-961
Other goods	-891	-1,058	-1,176	-1,134	-1,318
Balance on Services	45	49	29	42	-7
Exports of services	641	690	769	844	959
Transportation	260	268	338	364	438
Travel	152	186	176	174	206
Other receipts	230	237	255	306	315
Imports of services	-596	-641	-740	-802	-966
Transportation	-173	-207	-259	-266	-355
Travel	-256	-281	-308	-324	-395
Other expenditures	-167	-153	-174	-212	-216
Balance on Income	-196	-190	-160	-150	-98
Receipts	75	92	116	128	200
Expenditures	-271	-282	-276	-277	-297
Current transfers, net	-9	-5	-7	-3	-14
Capital and Financial Account	-110	0	111	174	533
Capital transfers, net	-6	-4	0	0	-5
Financial Account	-104	5	111	174	538
Financial account excluding reserves	-257	9	264	129	570
Direct investment, net	-24	-13	-4	101	-1
Abroad	-24	-26	-65	-49	-101
In Iceland	0	13	62	150	100
Portfolio investment, net	-71	-80	-56	-208	-318
Assets	-74	-72	-60	-230	-320
Liabilities	4	-9	5	22	2
Other capital, net	-162	101	323	236	889
Assets	-83	6	-34	-162	84
Monetary authorities	-51	-17	-1	-1	-1
General government					
Deposit banks	-17	46	-40	-85	51
Other sectors	-15	-23	7	-76	34
Liabilities	-79	95	358	398	805
Monetary authorities	98	37	-99	0	55
General government	161	229	106	-53	-133
Deposit banks	-163	-54	318	307	472
Other sectors	-175	-116	32	145	412
Reserve assets	153	-4	-153	45	-32
Net errors and omissions	-12	-61	9	-66	-61
Memorandum items:					
International reserves	298	315	462	386	430
Reserve-related liabilities	138	177	76	75	131

Sources: Central Bank of Iceland, *International Financial Statistics,* and staff estimates.

Table 11. Iceland: Foreign Reserves of the Central Bank

	1993	1994	1995	1996	1997	1998	1998 January	1999 January
				(In millions of dollars, end of period)				
Foreign assets	430.6	356.5	398.0	540.5	461.0	506.9	459.6	455.7
Gross foreign reserves	428.8	295.4	310.7	456.5	386.3	429.2	383.5	409.7
Gold	2.4	2.5	2.6	2.7	2.6	2.8	2.6	2.8
SDRs	--	--	--	--	--	--	--	--
Reserve position in IMF	14.4	15.3	15.6	15.1	14.2	14.7	14.3	14.5
Deposits and securities	412.0	277.6	292.5	438.7	369.5	411.7	366.5	392.4
Other foreign assets	1.8	61.1	87.3	84.0	74.7	77.7	76.1	46.0
Short-term liabilities	36.8	137.5	176.5	75.5	75.1	130.9	77.9	82.8
Net foreign assets	393.8	219.0	221.5	465.0	385.9	376.0	381.7	372.9
				(In months of imports of goods and non-factor services)				
Gross foreign reserves	3.1	1.8	1.7	2.1	1.8	-1.5	...	...
Net foreign assets	2.8	1.3	1.2	2.1	1.8	-1.5	...	...

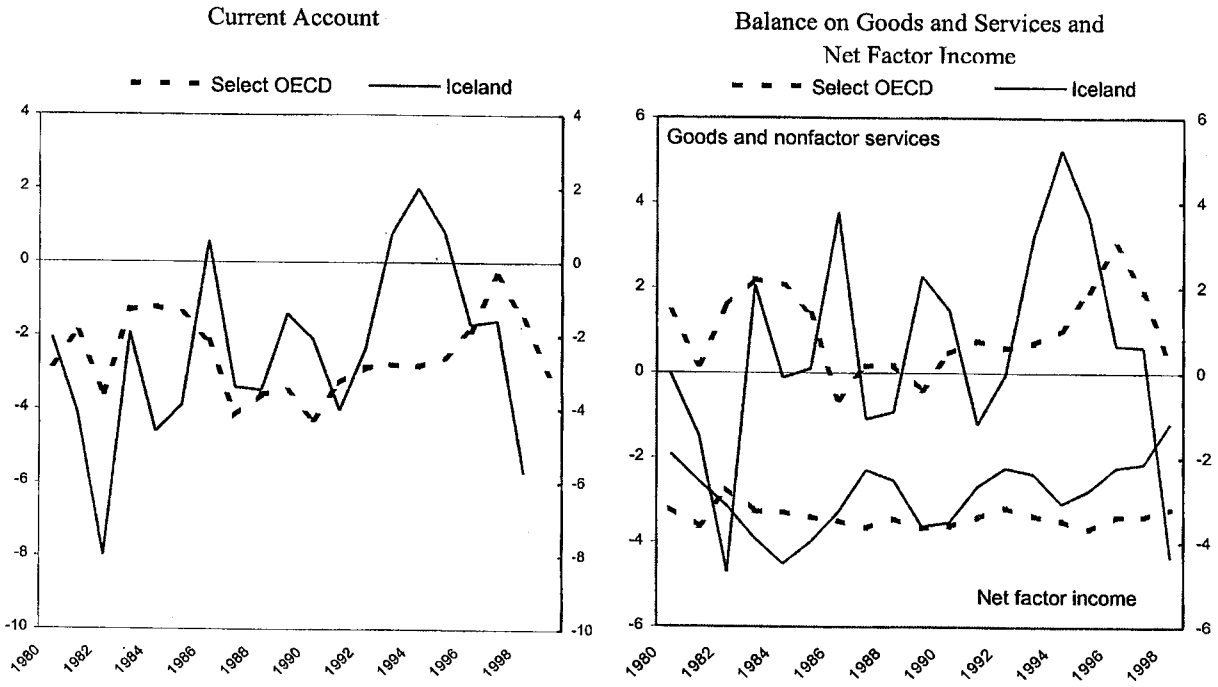
Source: IMF, International Financial Statistics.

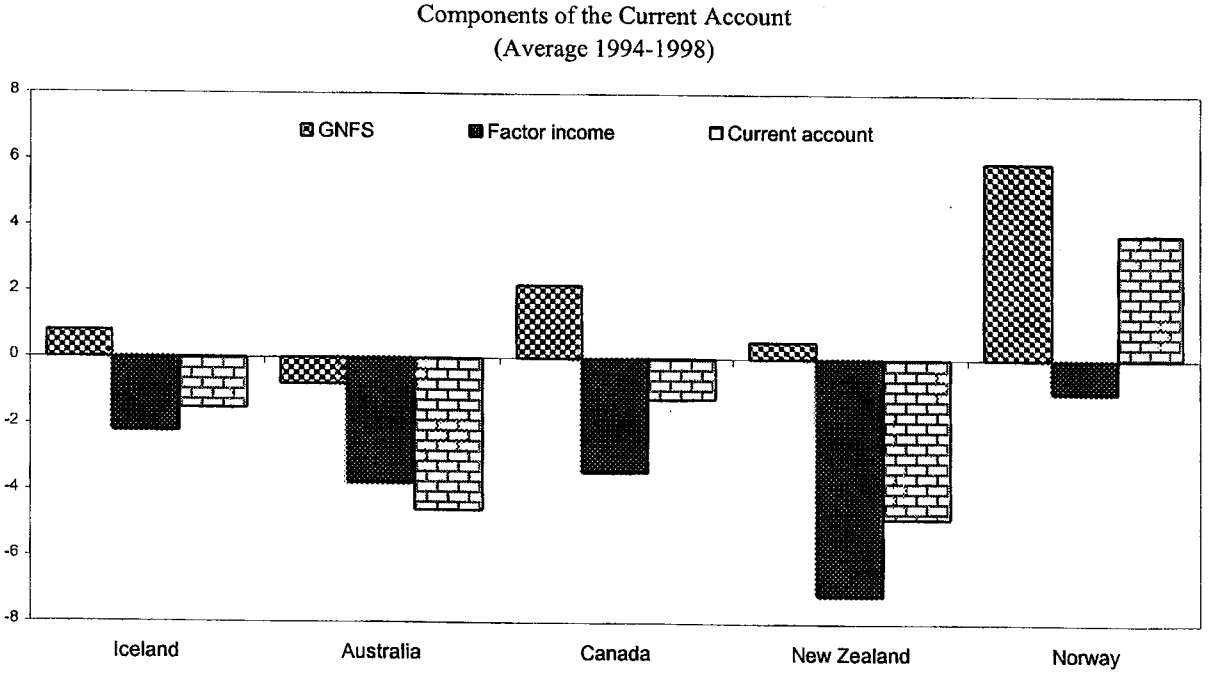
Table 12. Iceland: Merchandise Trade by Area

	1990	1991	1992	1993	1994	1995	1996	1997
	(In percent of total)							
Exports, f.o.b.	100	100	100	100	100	100	100	100
Western Europe	76.4	74.4	76.0	68.8	66.3	68.2	68.1	69.2
Of which:								
Germany	12.7	12.1	12.5	11.0	12.8	13.7	12.9	13.1
Italy	2.9	3.5	2.8	2.0	2.3	2.0	1.9	1.8
Portugal	3.6	4.7	2.9	1.6	1.3	1.8	2.6	2.6
Spain	5.0	4.8	5.1	4.9	4.7	3.7	3.9	4.4
Switzerland	4.2	4.0	2.5	3.7	1.8	2.2	2.0	3.0
United Kingdom	25.3	23.4	25.1	21.6	20.5	19.3	19.1	18.9
Other Europe	3.0	0.8	0.9	0.5	0.8	0.8	1.3	2.1
Of which: Russia	2.5	0.5	0.3	0.4	0.6	0.6	1.0	1.8
Other	20.6	24.8	23.1	30.7	32.9	31.1	30.5	28.7
Of which:								
United States	9.9	12.6	11.4	15.9	14.4	12.3	11.7	13.9
Japan	6.0	7.9	7.5	9.3	14.0	11.3	9.8	6.6
Imports, c.i.f.	100	100	100	100	100	100	100	100
Western Europe	66.2	67.7	73.6	72.1	73.9	71.2	71.4	71.8
Of which:								
Germany	12.6	12.7	12.4	11.9	11.2	11.4	10.9	11.8
United Kingdom	8.1	8.0	8.5	9.0	9.9	9.6	10.2	10.1
Other Europe	6.7	4.0	3.1	3.4	3.1	4.1	5.0	3.6
Of which: Russia	5.0	3.3	1.6	2.5	2.2	2.3	2.5	2.5
Other	27.1	28.2	23.3	24.5	23.1	24.7	23.7	24.6
Of which:								
United States	14.4	12.6	8.3	9.3	8.9	8.4	9.4	9.4
Japan	5.6	7.2	5.8	5.5	4.0	4.4	4.0	4.9
	(In millions of SDRs)							
Memorandum items:								
Exports, f.o.b.	1168	1134	1083	1003	1125	1188	1302	1345
Imports, c.i.f.	1221	1258	1195	967	1024	1157	1409	1468

Source: Statistics Iceland.

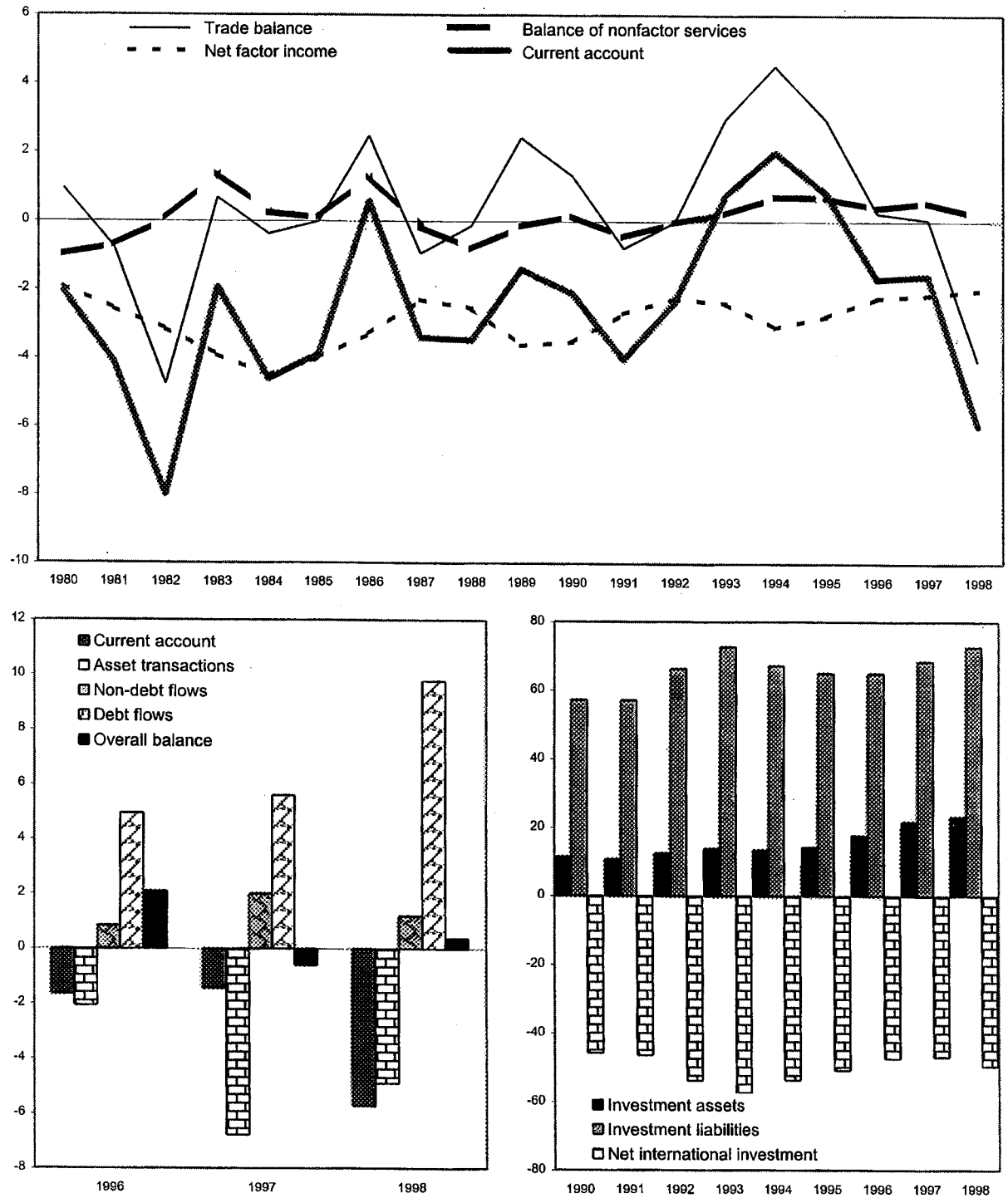
Figure 4: Iceland: International Comparison of Current Account Balances, 1980-1998
(In percent of GDP; relative to Australia, Canada, New Zealand, and Norway)





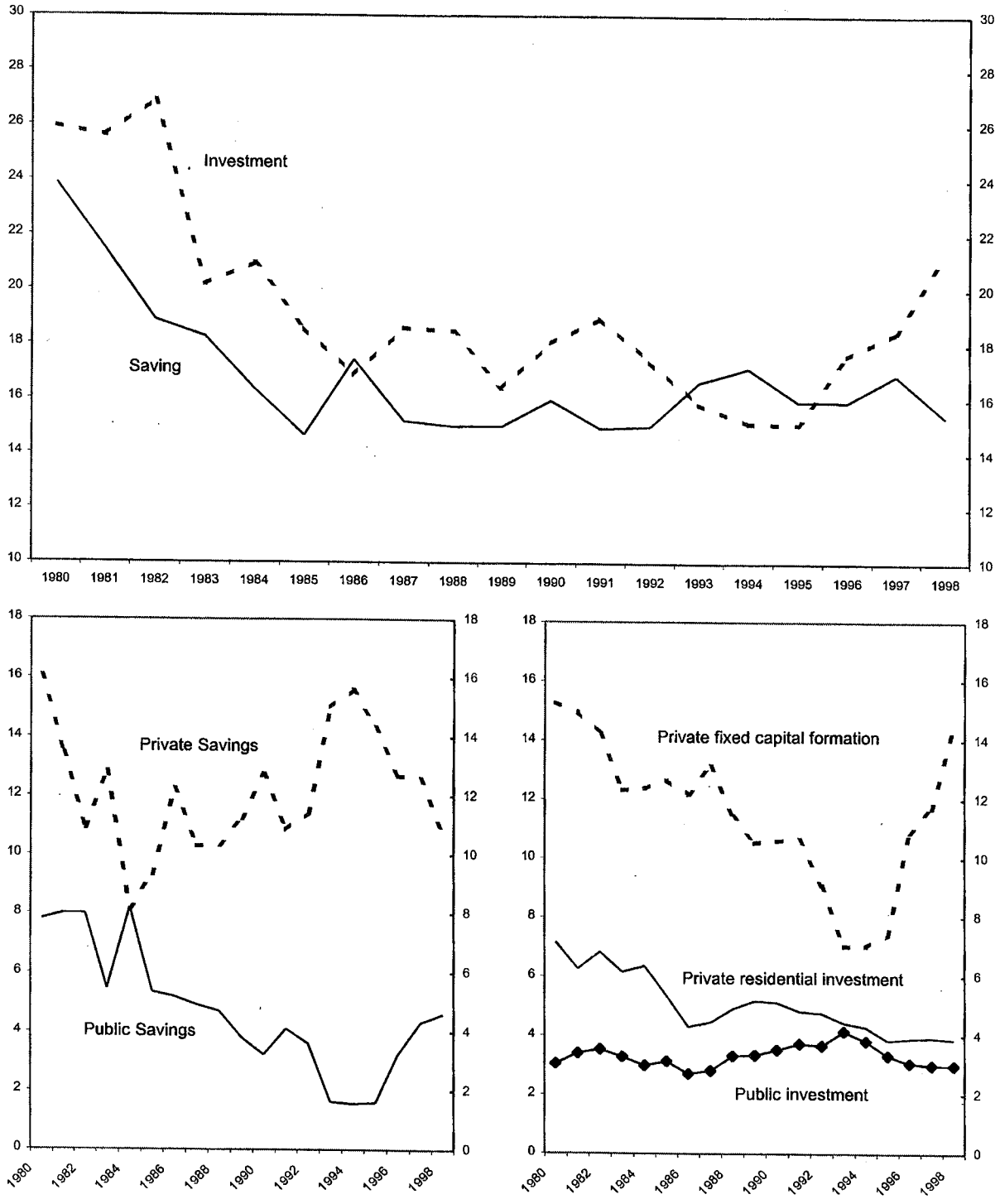
Source: World Economic Outlook database and data provided by the authorities.

Figure 5: Iceland: Current Account, External Financing, and Investment Position, 1980-1998
(In percent of GDP)



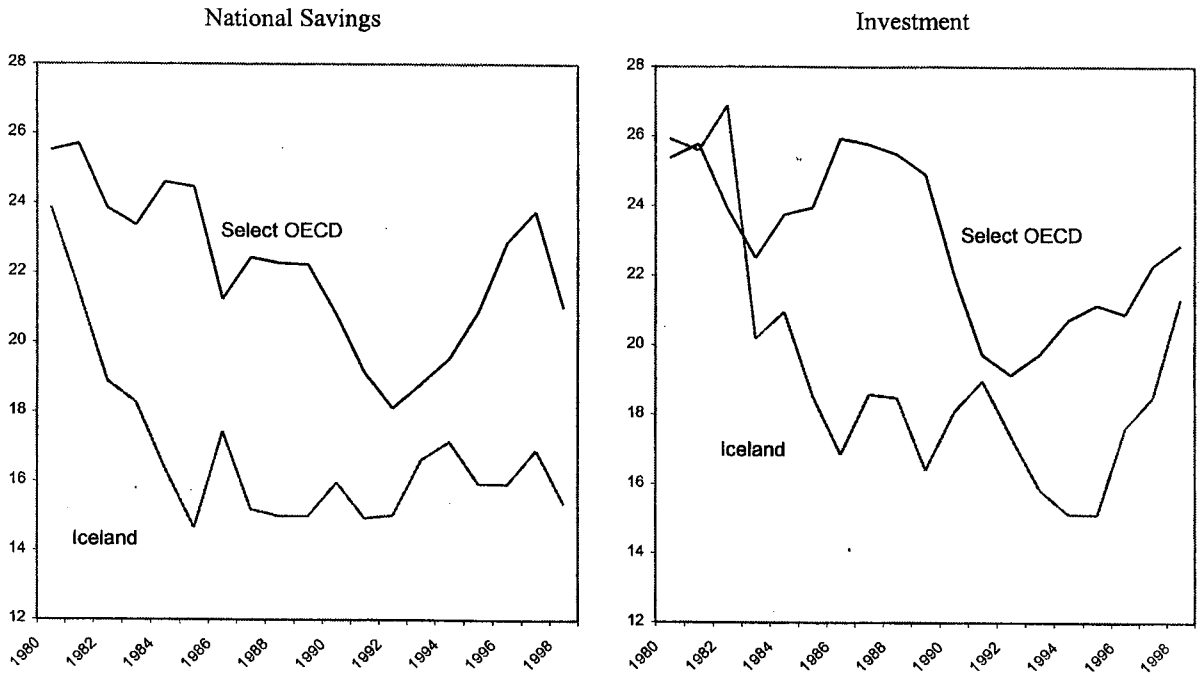
Sources: World Economic Outlook database and data provided by the authorities.

Figure 6. Iceland: Savings and Investment, 1980-1998
(In percent of GDP)

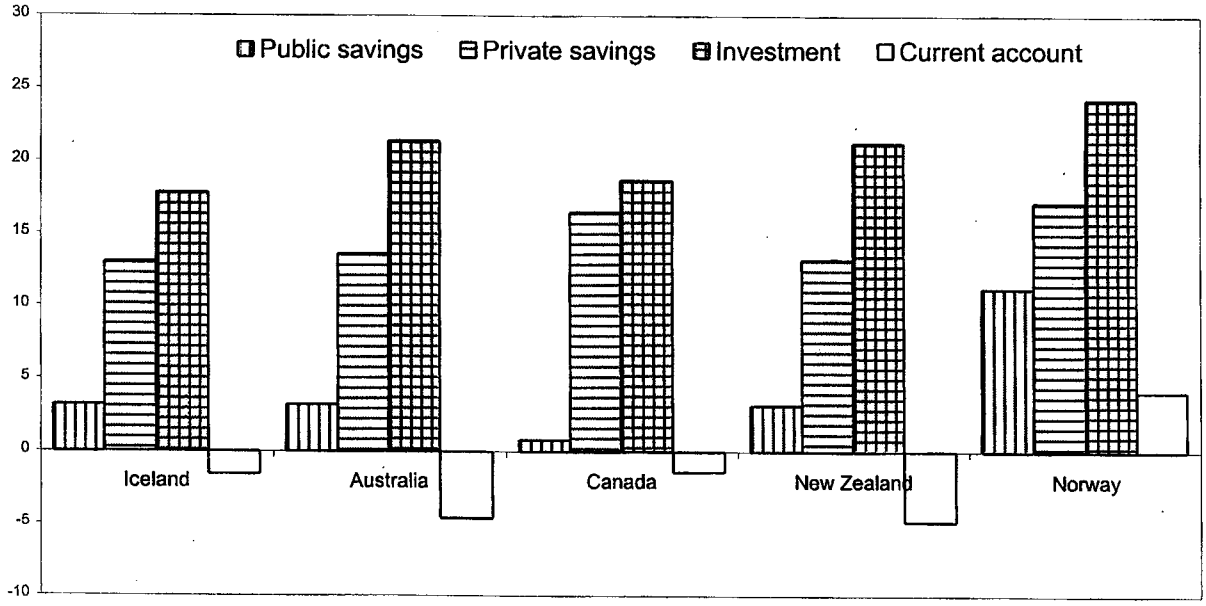


Sources: World Economic Outlook database and Central Bank of Iceland, *Economic Statistics*.

Figure 7. Iceland: International Comparison of Savings and Investment, 1980-1998
(In percent of GDP; relative to Australia, Canada, New Zealand, and Norway)

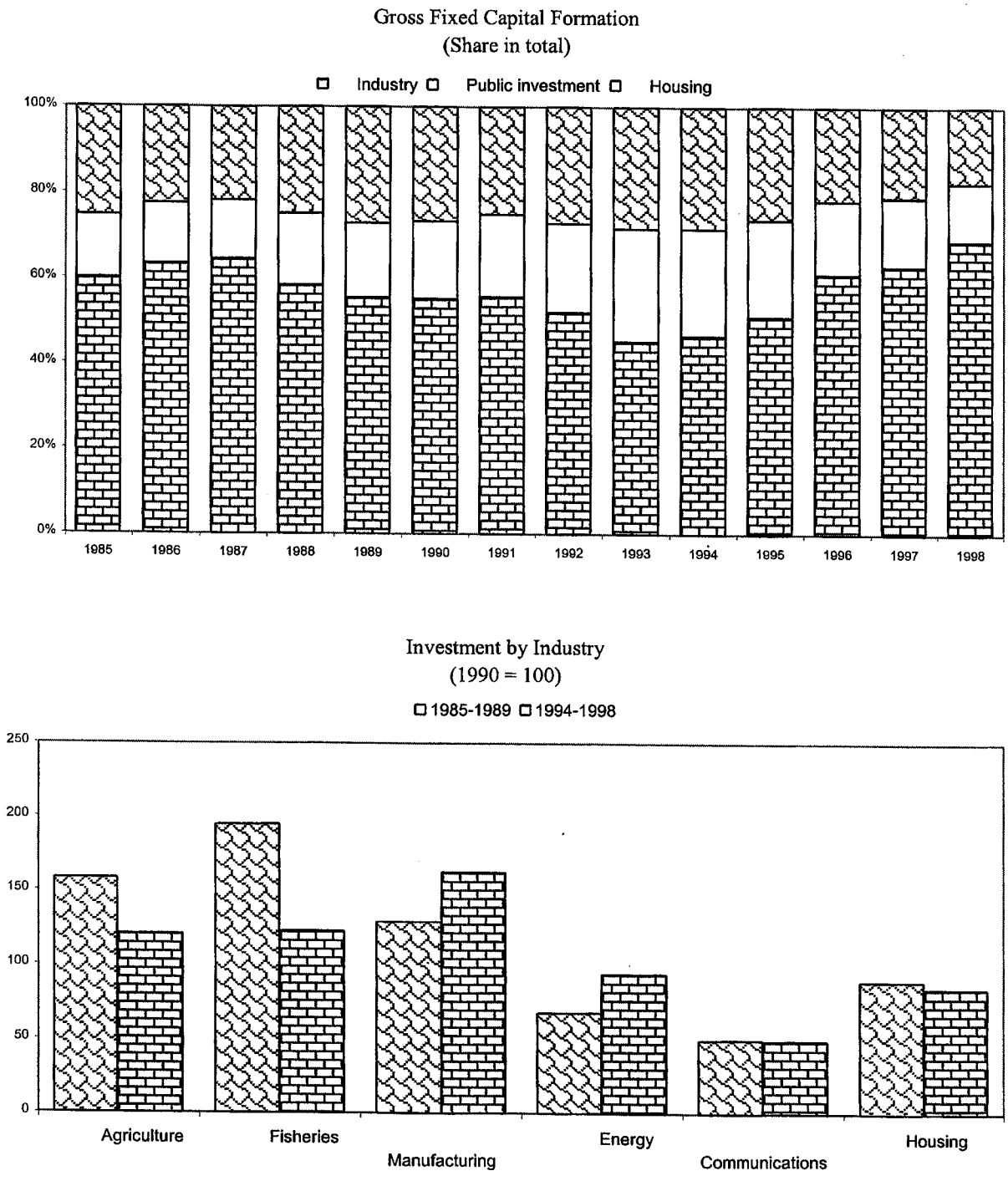


Saving, Investment, and Current Account Balances
(Average 1994-1998)



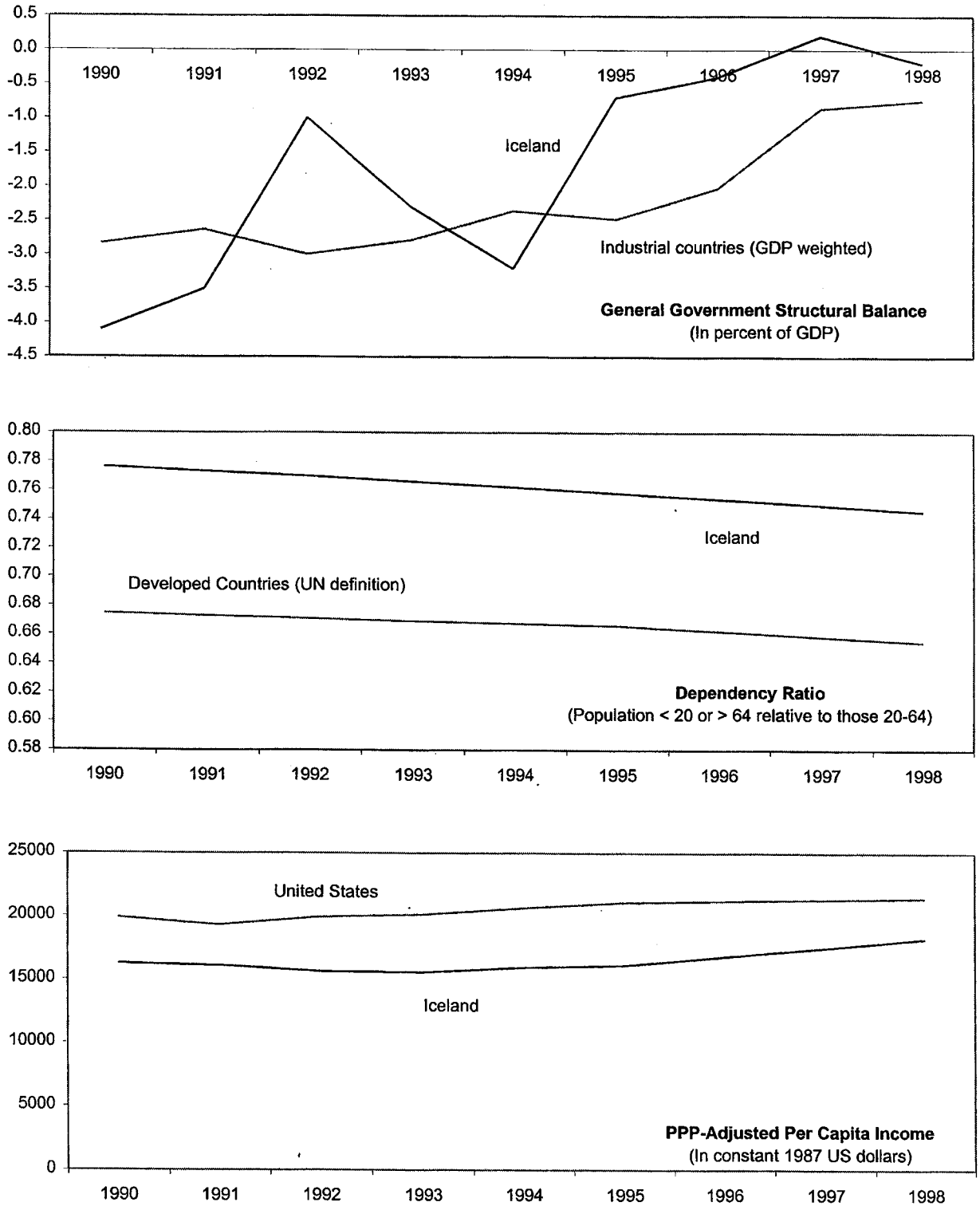
Source: World Economic Outlook database

Figure 8. Iceland: Investment, 1985-1998



Sources: Central Bank of Iceland, *Economic Statistics*.

Figure 9. Iceland: Saving-Investment Norm Determinants, 1990-98



REFERENCES

Andersen, Palle S. And William R. White, 1996, "The Macroeconomic Effects of Financial Sector Reform: An Overview of Industrial Countries," in *Macroeconomic Policies and Structural Reform*, Organization for Economic Cooperation and Development, Paris, pp. 59-97

Central Bank of Iceland, 1998, Autumn Statement (November) (http://www.sedlabanki.is)

Group of Ten, 1995, *Saving, Investment and Real Interest Rates: A Study for the Ministers and Governors by the Group of Deputies*, Istituto Poligrafico E Zecca Dello Stato (October)

International Monetary Fund, 1995, *World Economic Outlook, May 1995: A Survey by the Staff of the International Monetary Fund*, World Economic and Financial Surveys, International Monetary Fund, Washington, DC, pp. 67-89

Isard, Peter and Hamid Faruqee (Editors), 1998, *Exchange Rate Assessment: Extensions of the Macroeconomic Balance Approach*, Occasional Paper No. 167, International Monetary Fund, Washington, DC

Kaminsky, Graciela, Saúl Lizondo and Carmen M. Reinhart, 1998, "Leading Indicators of Currency Crises," Staff Papers, International Monetary Fund, Volume 45 (March), pp. 1-48

Milesi-Ferretti, Gian Maria, 1996, "Current Account Sustainability," Princeton Studies in International Finance, No. 81 (October)

National Economic Institute, 1999, "The Icelandic Economy: Developments 1998 and Outlook for 1999" (http://www.stjr.is/frr/thst)

Iceland - Application of Macroeconomic Balance Approach

A. Underlying current account

The underlying current account is a model-based estimate of the value the current account would take if output was at potential at home and abroad and if trade volumes and prices had responded fully to the prevailing exchange rate. In particular, differences between actual and underlying current accounts depend on (i) the difference between the current exchange rate and the average exchange rate in the base (current) year, (ii) changes in the exchange rate over the previous two years, and (iii) current deviations of output from potential. These relationships are illustrated in the following estimated equation:

$$
\begin{aligned}
&CA/Y_{und} = CA/Y_{act} \\
&-[(M/Y)\beta_m(X/Y)\beta_x)][(RCUR-R)+0.4(R-R_{-1})+0.15(R_{-1}-R_{-2}) \\
&+(M/Y)(RCUR-R) \\
&+(M/Y)\psi_m YGAP \\
&-(V/Y)\psi_x YGAPF
\end{aligned}
$$

where CA, M, X, and Y are nominal domestic currency values for the current account balance, imports, exports, and GDP, respectively; R is the logarithm of the average annual real effective exchange rate (defined so that an increase is an appreciation); RCUR is the current multilateral effective exchange rate; β is the long-run exchange rate elasticity for imports (β_m) and exports (β_x); ψ is the elasticity for real imports (ψ_m) and exports (ψ_x) with respect to activity; and YGAP is the logarithm of the ratio of real output to potential output for the domestic economy, and YGAPF is the trade-weighted average for competitors.

The absolute values for the elasticities are assumed to be the same for all industrial countries:

β_m	=	0.92
β_x	=	0.71
ψ_m	=	1.50
ψ_x	=	1.50

B. Saving-investment norm

The saving-investment norm is a model-based measure of the equilibrium (or "normal") current account position derived from the current values of variables that are widely thought to influence saving and investment behavior in the medium run. In this model, a country's saving-investment norm is assumed to depend on (i) per capita income, (ii) the dependency ratio, (iii) the fiscal position, (iv) the output gap, and (v) world interest rates. In the long-run version of the model, only the first three variables enter the estimated equation for the saving-investment norm:

$$S - I_{norm} = 0.65(SUR - SUR^*) - 0.20(DEM - DEM^*) + 0.9(YPCAP - YPCAP_{us})$$

where SUR is the general government structural balance as a percent of GDP; DEM is the dependency ratio, defined as the population aged 65 or older and 19 or younger to the population aged 20-64; and YPCAP is per capita GDP, adjusted for purchasing power parity. An asterisk (*) denotes variables for the GDP-weighted average of all industrial countries; per capita income is measured relative to that of the Unites States. A country-specific term (fixed effect) is set to ensure that the sum of the residuals (the difference between the fitted equation and the actual current account position) is equal to zero over 1990-98.[10]

[10] The procedure followed in this case is standard where there are no estimates of the country-specific effect from the panel regressions; Iceland was not included in the panel regressions from which these equations were estimated. The period over which the sum of the residuals is set to zero (1990-98) was chosen because it roughly coincides with the liberalization of the financial sector and the capital account and allows for the effect of two step devaluations in the mid-1990s. The calculation of the fixed effect is highly sensitive to the period chosen. Setting the fixed effect to zero would be appropriate if the economy had undergone a fundamental transformation, which is a plausible description of Iceland in the 1990s; based on data for 1998, this would imply a saving-investment norm in surplus by nearly ½ percent of GDP.

C. Data requirements and their sources

Underlying current account position

current account balance in krónur - WEO database
imports in krónur - WEO database
exports in krónur - WEO database
GDP in krónur - WEO database
average annual real effective exchange rate - INS database
current real effective exchange rate at end-year - INS database
Output gap (Iceland) - staff estimates
Output gap (foreign) - WEO database

Saving-investment norm

General government structural balance (Iceland) - data provided by authorities
General government structural balance (foreign) - WEO database
Dependency ratio - United Nations, *Sex and Age Distribution of the World Populations: The 1996 Revision* (not GDP-weighted)
PPP-adjusted per capita GDP at constant 1987 US dollars - World Bank

IV. DEVELOPMENT OF MONETARY POLICY INSTRUMENTS[1]

68. Changes in monetary policy instruments and increasing independence of the central bank have helped develop money markets and improve macroeconomic management. This chapter discusses the development of monetary policy instruments, with an emphasis on changes that have occurred in 1998. These changes did not affect the overall framework of monetary policy, but are intended to assist in achieving policy objectives while facilitating financial sector development. The chapter begins with a brief discussion of the Central Bank of Iceland's role in the financial market and in the conduct of monetary policy.

A. The Central Bank of Iceland

69. The Central Bank of Iceland, Seðlabanki Íslands, was established in 1961. Previously, central bank functions were carried out by the National Bank of Iceland (Landsbanki Íslands), at that time a fully state-owned commercial bank. The Board of Directors is elected by the Parliament for a term of four years and the Governors of the Bank are appointed by the Minister of Commerce and Banking. The Central Bank of Iceland performs all traditional central banking functions, including the conduct of monetary policy, and the management of the country's foreign exchange reserves. Its balance sheet at the end of 1998 is shown in the Statistical Appendix. The Bank also acts as the borrowing agent for the Republic of Iceland in the international capital markets. Prior to the formation of the new Financial Supervisory Authority on January 1, 1999, responsibility for the supervision of financial institutions had been held by the Bank Inspectorate in the Central Bank.

70. The Treasury and several government institutions have bank accounts with the Central Bank, which acts as banker, economic adviser and fiscal agent for the government. The Treasury had unlimited access to a short-term overdraft facility with the Central Bank until 1992 when an agreement on Central Bank credit accommodation was reached between the Central Bank and the Minister of Finance that terminated this facility, requiring the Treasury to meet all its borrowing needs in the financial market. In addition, the Treasury began to sell its bills and bonds at regular auctions conducted by the National Debt Management Agency. As a consequence, yields on Treasuries are market driven rather than decided by the government.

71. Monetary policy is conducted through market operations primarily in the money market and the interbank market for foreign exchange. The primary objective is price stability. The Central Bank has decisive influence, subject to government approval, in the formulation of the exchange rate policy. The exchange rate of the króna is determined in an interbank market. The Central Bank will use its instruments in the interbank market to keep the trade weighted exchange rate within a fluctuation band of ± 6 percent from a central rate. The

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[1]Prepared by Valerie Cerra.

degree of independence of the Central Bank of Iceland depends on the criterion used for measurement; Chapter I discusses this issue in more detail.

72. The Central Bank of Iceland has played a major role in the development of financial markets in Iceland. It established the Iceland Stock Exchange in cooperation with banks and securities houses and had supported the Exchange in various ways until it was able to cover its operational costs. The Bank has acted as a market-maker on the Exchange for long and short-term government securities, which has speeded up the development of both bond and money markets. In connection with this task the Bank has sometimes run into conflicts between the conduct of monetary policy on one hand and the need to have a liquid market for government securities on the other. This is particularly true for the bond market. At times the Bank invested considerable amounts in long-term bonds so as to steer long-term interest rates to levels it deemed appropriate. The Central Bank ceased its operations as a market maker for Treasury bonds and Treasury notes in early 1996 but still acts as a market maker for Treasury bills.

73. The Central Bank conducts active business with commercial and savings banks, being a lender of last resort, a clearing agent for checks and provider of liquidity. During the last decade banks' direct access to central bank accommodation has been reduced. The Central Bank imposes a reserve requirement on all commercial and savings banks, at the present amounting to 1.5 or 4.0 percent of total disposable funds, depending on maturity.

B. Monetary Policy Framework and Instruments

74. Current central bank legislation stipulates several goals for monetary policy. However, **price stability has become through consensus the primary objective of monetary policy. This goal is to be achieved by maintaining a stable exchange rate as an intermediate target.** In December 1989, the exchange rate of the króna was fixed against a basket of currencies in order to establish a nominal anchor. The Bank does not target base money or money supply aggregates in monetary management as the ability to control these variables is limited and their link to the exchange rate and prices is uncertain. The Bank has in this period placed emphasis on managing interest rates in order to achieve a stable exchange rate. Combined with a program of fiscal consolidation and wage restraint, the exchange rate anchor has succeeded in reducing inflation, which for a long time far exceeded the OECD average, to low single digits in recent years. In July 1997, the Central Bank passed its role as a market maker in the interbank foreign exchange market to several credit institutions. Therefore, market forces have become increasingly important determinants of the exchange rate, although the Central Bank is equipped to intervene through market operations. The currency basket is composed of 16 currencies, weighted in terms of the respective country's share in trade of goods and services. The basket is revised once a year based on the composition of the previous year's trade. Since 1989 the exchange rate has been devalued twice, first in the wake of the turbulence in international currency markets in late 1992, which led to a significant deterioration in Iceland's terms of trade, and then in mid-1993 in response to a prospective

deterioration of the real economy resulting from a sharp reduction in allowable fish catches for conservation reasons. Since mid-1993, the exchange rate has fluctuated very modestly around its central rate. In September 1995 the fluctuation band was widened from ± 2.25% to ± 6%.

75. **The chief operating targets of monetary policy are short-term interest rates.** The **main instruments** used to implement policy are: bond and money market operations, central bank credit facilities for financial institutions, central bank interest rates, intervention in the foreign exchange market, reserve requirements and a minimum liquidity ratio.The Central Bank sets its own interest rates independently but the use of some of its instruments is subject to Government consent.

Money market transactions

76. The central bank influences short-term interest rates through its transactions in the money market, specifically the market for Treasury bills. The Bank places non-competitive bids at auctions of Treasury bills and offers two-way prices on the secondary market for such bills. This market is the most important channel for the Bank in terms of traded volume, both for outright purchases of Treasury bills and for the sale of such bills. The deposit money banks (DMBs) make use of this market to adjust their most liquid reserves and to maximize their earnings on liquidity. The central bank offers the DMBs reverse repos of Treasury bills at predetermined interest rates. Also available to the DMBs are certain central bank notes, but usually these play a negligible role. The Bank would only make the notes attractive if for some reason Treasury bills were to lose their importance for the conduct of monetary policy. The above-mentioned transactions of the central bank are seen as a way of influencing interest rates, but at the same time the Bank is either providing or absorbing liquidity. The Bank does not make a clear distinction between these two roles. By monitoring several monetary aggregates, the Bank makes its decisions about its bid and offer yields in the secondary market. Changes in the yields are often based on a judgement that the direction of the flow of liquidity should change.

Limits on discount and other credit facilities

77. The central bank provides the economy with liquidity through (a) the purchase of foreign exchange, (b) the purchase of Treasury bills and government bonds, and (c) by granting financial institutions some access to central bank financing. The last channel includes limited discount facilities at low interest rates and repurchase agreements (repos) at predetermined interest rates which are slightly higher than the discount rate. Treasury bills are the most common instrument in repos with the DMBs. There is no formal limit. The maturity in each case is 14 days. The central bank has also granted limited repo facilities to securities houses which have assumed the role of market-makers in government bonds, in which case such bonds serve as the underlying securities and the maturity is 30 days. The central bank provides no privileged credit for private or public borrowers. Until 1985, however, the Bank

applied preferential rates when rediscounting loans which the banks had granted to certain business sectors.

Interest rates

78. Financial institutions can freely set all their interest rates. However, the central bank determines the so-called penalty interest rates on overdue payments according to a formula specified by law. There are no indications that interest rates are set by an agreement among financial institutions; such collusion is strictly forbidden by law. The large market share of a small number of banks may nevertheless have led to oligopolistic behaviour in the setting of bank rates.

Foreign exchange operations

79. The central bank may intervene in the foreign exchange market by buying or selling krónur so as to prevent the exchange rate from moving too far from the central rate. Since the fixed exchange rate policy was adopted, foreign exchange reserves have been adequate to maintain the exchange rate at the desired level. Government foreign borrowing has sometimes been helpful in supporting the reserve position, but is not used in any systematic way to regulate official reserves. The Central Bank follows a policy of maintaining reserves at three months' value of merchandise imports, at a minimum. Iceland presently has a quota of SDR 85.3 million in the Fund. Since 1962, the Central Bank has been a party to an agreement between the Nordic central banks which consists of an exchange of credit lines, allowing each of the banks to draw on the others on a short-term basis in times of temporary foreign reserve shortage. According to the current agreement the Central Bank of Iceland can draw up to 200 million euro. In addition, the Central Bank has access to secured interbank lines for a total amount of US$275 million and unsecured interbank lines with a number of international banks. Existing credit facilities total $600-800 million.

Reserve requirements

80. Deposit money banks are subject to reserve requirements that can be fulfilled only via deposits in blocked accounts with the central bank. The base for the reserve requirement includes not only deposits but also DMBs' bond issuance and other domestic liabilities. Since November 1993 the required reserve ratio has been lower for time deposits and outstanding bonds than for other liabilities. Prior to that no differentiation was made with regard to the type of liabilities. Marginal reserve ratios were applied in the 1960s and 1970s, but they have no relevance except when the (average) reserve ratio is being raised. Reserve ratios have been reduced sharply over the last decade at the same time as access to central bank financing by banks and the Treasury has also been reduced. Deposits on the required reserve account with the central bank have always been remunerated. There had also been a minimum liquidity ratio until March 1998, which was temporarily restored in February 1999. It is a secondary requirement that is fulfilled by holdings of cash, Treasury bills and free reserves as measured by an average during each month.

81. The development of monetary instruments has been gradual, but has moved toward arrangements that will improve financial markets. Credit ceilings were applied in the 1970s and early 1980s. Since the early 1980s, the Central Bank has not used direct or indirect quantitative controls on lending. The Bank's instruments and facilities were mostly based on arrangements put in place in 1987 when the Bank began a gradual lowering of reserve requirements. However, a liquidity ratio was introduced and then raised to offset the declining reserve requirements. The liquidity ratio also served to induce the deposit money banks to hold treasury bills and other government paper as these assets could be used to satisfy the liquidity requirement. At the same time, the Central Bank began engaging in repurchase transactions in treasury bills with deposit banks as well as transacting in treasury bills on the Stock Exchange. These measures resulted from the Bank's desire to support the development of the securities market and establish repo transactions in Iceland. Nonetheless, the arrangements were unnecessarily complicated in that they provided many routes for deposit money banks to secure liquidity from the Central Bank. This liberal access hampered the development of the interbank market for krónur as commercial and savings banks took advantage of the repo facility rather than approach each other for liquidity. Furthermore, the liquidity ratio gradually became ineffective as an instrument as deposit bank holdings of marketable securities rose. Many of the recent changes to monetary instruments, especially those in 1998, were intended to address these shortcomings.

82. Changes in the relationship between the Central Bank and the Treasury have also helped develop financial markets. Before 1992, the Treasury only sold bills on tap at a price decided by the Ministry of Finance. The Treasury started auctioning T-bills in 1992, and now regularly sells Treasury bills, Treasury notes and Government savings bonds at auctions. In the past, the Treasury also had unlimited access to a short-term overdraft facility with the Central Bank. Consequently, the Central Bank had a rather limited ability to influence short-term interest rates of commercial banks and savings banks. Following the 1992 agreement on Central Bank credit accommodation between the Government and the Central Bank, the Treasury meets all its borrowing needs in the financial market. As a result of this agreement, a significant money market has developed in only few years, the largest financial market in Iceland in terms of turnover. Interest rates on government securities are fully set by the market, and they now play a bigger role in the determination of general domestic interest rates. Through market operations, the ability of the central bank to influence short-term interest rates has been strengthened.

C. Recent Changes in Instruments

83. In first half of 1998, the Central Bank of Iceland made significant changes to its monetary policy instruments, in line with the decisions taken for the European Central Bank. The reform of monetary policy instruments was not intended to have impact on the monetary policy framework. The Bank's main instrument remains short-term, now fourteen day, money market interest rates which it controls by setting the yields in its repurchase

transactions. The Bank's intermediate target remains keeping the exchange rate within the announced fluctuation margins while price stability remains the overall objective. These changes did not imply any alteration of the monetary stance as instrument rates were left unchanged. The **main objectives** of the reform in the instruments of monetary policy include the following:

- equalize the operating conditions of credit institutions in the domestic market and harmonize their access to facilities at the Bank. The coverage and availability of the Central Bank instruments and facilities had been largely confined to deposit money banks. Yet, the financial market has changed dramatically over the last decade with new credit institutions emerging. The change in instruments was intended to ensure uniformity of treatment of different institutions and financial instruments.

- create operating conditions for domestic credit institutions similar to those prevailing in the European Economic Area. The changes in the monetary policy instruments were guided by the ECB's plans for instruments and facilities to the extent that they had been spelled out when the changes were implemented.

- simplify the instruments and enhance the Central Bank discretion in carrying out monetary policy.

- to stimulate the development of the money market, especially the interbank market and the secondary market for government securities.

Overview of the recent changes:

84. On March 1, 1998, the following changes to monetary instruments took effect:

- The secondary liquidity requirement (liquidity ratio) was replaced with weekly auctions of such agreements.

- The maturity of repurchase agreements was extended from 10 to 14 days and weekly auctions replaced tap-availability. The number of securities eligible as collateral in repos was expanded to include all government guaranteed securities registered on the Stock Exchange. Central Bank CDS will continue to qualify as well.

- The tap-sale of 45 day Central Bank CDS was abolished but the Central Bank reserved the option to auction 14 days CDS on the weekly auction when it wishes to reduce liquidity. CDS of 90-day maturity will continue to be available on tap.

- An overnight facility was established in the Central Bank for credit institutions subject to reserve requirements. The same securities can serve as collateral for overnight loans as in repurchase agreements.

85. The second phase of the changes became effective on May 21, 1998 when the following changes were implemented:

- The reserve base was expanded, both in terms of coverage of institutions and types of liabilities.
- The discount quota of deposit money banks was abolished.
- The foreign currency accounts of deposit banks at the Central Bank were closed.

86. The two most significant changes were the abolition of the liquidity requirement and the revision of regulations governing reserve requirements. The **liquidity requirement** had been introduced to offset declining reserve requirements and induce banks to hold government paper (Table 13). However, only deposit money banks were subject to the liquidity requirement and it was difficult to see how it could be applied to other credit institutions. In addition, the liquidity requirement had a distortionary impact on price formation for government paper as short-term and long-term government paper was not treated in the same manner.

87. **Reserve requirements** were expanded to include more institutions and additional forms of liabilities.To compensate for the expansion of the base, the reserve ratio for longer-term liabilities was lowered. This left the reserve requirement of the deposit taking institutions, already subject to reserve requirements, more or less unchanged. The remuneration of required reserves was also changed from indexed terms to nominal interest rates, leaving the expected nominal yield unchanged. This is in line with the official policy of reducing the scope of indexation in the financial system. Another important change is that institutions subject to reserve requirements will be able to meet their requirements on average during the reserve period instead of the reserves being held in frozen accounts at the Central Bank. This change makes it easier for credit institutions to manage their liquidity and should reduce the volatility of money market rates. The new regulations also allow one institution subject to reserve requirements to fulfil the reserve requirements on behalf of another or other institutions. This provision is intended for the savings banks which have long cooperated in the fulfilment of their liquidity ratio through Icebank Ltd.

88. The main changes to the **repurchase facility** are twofold. First the tap availability of repurchase contracts was discontinued, and second, the eligible collaterals were expanded to include all government registered securities on the Iceland Stock Exchange. This imposes a significant widening of the eligible collateral as only treasury bills had been eligible previously. In place of daily transactions, the Central Bank will hold weekly auctions of repurchase agreements, with advance notice of whether the auction will involve repurchase or resale agreements. The Bank can vary the auction form between a volume tender to fixed price auctions, the latter being the rule. This new agreement will enhance Central Bank discretion and stimulate interbank market activity. The older arrangement made the Central Bank the

Table 13: Required Reserve and Liquidity Ratios

Effective Date	Reserve Ratio		Liquity Ratio 1/
May 1, 1990		10.0	11.0
June 1, 1990		7.0	12.0
Nov. 1, 1991		6.0	12.0
Jan. 1, 1992		7.0	12.0
Nov. 1, 1992		6.0	12.0
Dec. 1, 1992		5.0	12.0
Nov. 1, 1993	4.0	2.5 2/	10.0
Oct. 1, 1996	4.0	2.5 2/	12.0
March 1, 1998	4.0	2.5 2/	0.0
April 1, 1998	4.0	1.5 2/	0.0
March 21, 1999	4.0	1.5 2/	1.5

Source: Central Bank of Iceland

1/ Abolished on March 1, 1998. Reinstated on March 21, 1999.

2/ The second ratio is for bonds and time deposits with maturities of at least one year.

hub for intermediation of short-term funds between credit institutions. With the repo window open only once a week the credit institutions are encouraged to enter the interbank market to take-up or place short funds.

89. The establishment of the **overnight credit facility** at the Central Bank effectively creates a corridor for short-term interbank interest rates by setting an upper limit to their movements, while the interest rate paid on current accounts of credit institutions at the Bank provides the lower limit. These limits prevent large deviations of money market rates from the Central Bank's instrument rates. Large fluctuations could cause uncertainty about the Bank's interest rate policy and lead to turbulence in currency and money markets.

90. The **discount quota** was a limited overdraft facility for commercial and savings banks. The purpose of the discount quota was to smooth fluctuations in the money supply which were connected to uneven revenue collection by the Treasury. The change in reserve requirements, including averaging over the reserve period, obviated the need for the discount quota.

91. Foreign currency accounts at the Central Bank were established in 1979 when deposit money banks were allowed to offer domestic foreign currency accounts. Their main purpose was to make it easier for smaller deposit money banks, which did not have access to foreign accounts, to manage foreign currency deposits. Cooperation among the savings banks has reduced the need for this service. Moreover, the foreign currency accounts at the Central Bank had a detrimental effect on the development of the money and currency markets because the accounts channeled funds to the Central Bank that otherwise would have found their way onto the markets.

92. On February 23, 1999, **the Central Bank temporarily introduced new liquidity restrictions** on credit institutions. The rules were introduced partly as a prudential measure and partly as a short-term monetary policy instrument that will effectively restrain credit growth. The new liquidity rules differ from previous rules that were abolished in March 1998. Two specific measures were introduced: (i) liquidity should never be negative, and (ii) on a monthly average basis, the liquidity ratio should be 1.5 percent or greater. Liquid assets are defined as the sum of net deposits of credit institutions in the central bank, and domestic and foreign credit institutions with a maturity of 90 days or less, T-bills, and cash held in krónur or foreign currency. The base for the ratio is the same as the base for reserve requirements—total liabilities of credit institutions after deducting equity and interbank debt. Credit institutions will be allowed an adjustment period until these restrictions become fully effective in July 1999. The new rules are expected to increase the liquid position of credit institutions by 25-30 billion krónur. During the adjustment period, the new rules may also reduce trading volume in certain markets such as short-term foreign debt and the interbank market. The Central Bank intends to develop alternative provisions for prudential regulation of credit, in conjunction with the financial institutions and the Financial Supervisory Authority, under whose jurisdiction the rules fall. The alternative provisions will likely replace the liquidity

restrictions, and be based on a maturity analysis of the balance sheet of banks in order to provide more flexibility. However, new legislation will be required for provisions related to maturity analysis and will not take effect until approved by Parliament, following its return in autumn 1999.

REFERENCES

The Central Bank of Iceland, Autumn Statement 1998.

"Deregulation of the Financial Sector", in *OECD Economic Surveys, Iceland, 1998*, pp.56-75.

Economic Statistics Quarterly, 1999, Central Bank of Iceland.

The Economy of Iceland, Autumn 1998, Central Bank of Iceland.

Gudnason, Eirikur, 1996, "The Icelandic financial system", in *Changing Financial Systems in Small Open Economies*, BIS Policy Papers No. 1, Basle, Switzerland, pp. 62-90.

V. FINANCIAL SECTOR STRUCTURE AND REFORMS[1]

A. Introduction and Overview

93. Financial markets in Iceland have developed rapidly over the past decade. Some nonbank financial institutions have grown, and a recent effort to privatize public credit institutions has gathered momentum. The regulatory environment has been aligned more closely with that of the EEA. At the same time, the capital account has been liberalized and measures have been taken to develop financial markets. This chapter will examine changes that have occurred in each of these areas, including how reforms were intended to improve economic performance. This chapter also discusses whether there are signs that these changes have increased financial vulnerability along the lines of other, notably Nordic, countries following financial liberalization.

94. Following a brief overview, Section B discusses the evolving structure of the financial sector, focusing on the main institutional players. The framework for supervision and regulation of the financial sector is presented in Section C and some indicators of recent prudential performance of banks are examined. The development of financial markets and reforms are outlined in Section D. Finally, Section E assesses macroeconomic performance in Iceland following financial and capital account liberalization.

95. A process of liberalization and legislative reform has created conditions in which market forces play an increasing role in Iceland. The current Central Bank Act was adopted in 1986 and at the same time deregulation of interest rates was completed. In the mid-eighties the Iceland Stock Exchange was established, securities companies emerged and the first mutual funds were established. Towards the end of the decade a process of rationalization in the banking sector took place through mergers. The Basle standard for rules on capital adequacy of commercial and savings banks was implemented at the beginning of 1993. In connection with the European Economic Area (EEA) Agreement,[2] new legislation was enacted in 1993, including acts governing the operations of commercial and savings banks, other credit institutions, securities transactions, mutual funds and the Iceland Stock Exchange. The legislation was aimed at imposing stricter rules on the minimum capital ratio and exposure to risk to ensure the economic health of banks and other financial institutions, and to strengthen banking supervision. A new Foreign Exchange Act became effective in November 1992, implementing a policy of a phased elimination of foreign exchange restrictions by the beginning of 1995. Changes in monetary policy instruments and increasing independence of the Central Bank of Iceland, discussed in Chapter IV, have also helped develop financial

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[1]Prepared by Valerie Cerra.

[2]An agreement between the member countries of the EU and European Free Trade Association (excluding Switzerland) on the free movement of goods, services, capital and labor.

markets. With the deregulation of markets, there has been a rapid increase in the issuance of new bonds and other financial instruments. The Government, banks and other financial institutions have become active in this market. Financial institutions have also started to offer financial services not previously available in Iceland.

B. Financial Institutions

96. This section describes the main institutions in the financial market. An overview of the structure of the financial system as of 1996 is presented in Table 14.

Commercial banks and savings banks

97. Iceland's banking sector is dominated by the four commercial banks. *Íslandsbanki hf.*, the only fully private limited liability commercial bank was established on January 1, 1990 with a merger of four banks. The merger was a major step in the restructuring of the banking industry in Iceland, which had been completely state-owned from the 1930s through 1990, and had been incurring large losses at the end of the 1980s. The four merging banks were the Union Bank, Ltd., established in 1970, the Industrial Bank of Iceland, Ltd. (1953), The Fisheries Bank of Iceland, Ltd. (1930), and Iceland Bank of Commerce, Ltd. (1961). The *National Bank of Iceland* (Landsbanki Íslands), the largest commercial bank, and the *Agricultural Bank Ltd.* (Búnaðarbanki Íslands) had been fully state-owned banks until 1998. They were turned into limited liability companies at the beginning of 1998, and a public offering of 15 percent new equity for each bank came to market in autumn 1998. The Minister of Commerce is authorized to sell new equity up to 35 percent of the former equity position. The Government has announced its intention to seek parliamentary approval for a full privatisation of the bank in 1999. The main objectives of this privatization program are to increase competition and improve financial services in all sectors and regions, and to increase private domestic and foreign ownership. These three commercial banks perform all the traditional banking operations. The two partly privatized state banks will not incur state guarantees on new obligations.

98. The fourth commercial bank, *Icebank Ltd.* (Sparisjódabanki Íslands hf.), is owned by the 26 savings banks in Iceland. As the central bank of the Icelandic savings banks, its operations are fundamentally different from those of other commercial banks, although still governed by commercial banking legislation. It functions as a service bank for the savings banks and their subsidiaries. It handles foreign exchange transactions and other overseas activities for the savings banks, acts as their clearing bank and fulfills the required reserve deposits with the Central Bank on their behalf. The operations of Icebank allow the savings banks to take on larger lending operations which would, due to size or extent of borrowing requirement, otherwise be beyond their individual capacity, by sharing risk and by syndicating loans within the savings banks group and to other financial institutions.

Table 14: Structure of the Financial System, 1996

Institution	Number of			Assets		
	Institutions	Branches	Employees	Total	Financial	
				(billions of kronur)		(percent)
Central bank	1	1	131	60	60	5.6
Other monetary institutions	33	182	2552	303	291	27.1
Commercial banks	4	131	2096	245	235	21.9
Foreign-owned banks	-	-	-	-	-	-
Savings banks	29	51	456	58	56	5.3
Co-operative banks	-	-	-	-	-	-
Other financial institutions	17	18	206	369	369	34.4
Mortgage credit institutions	3	3	56	239	239	22.3
Development credit institutions	1	2	32	7	7	0.7
Finance companies	12	12	96	87	86	8.1
Others	1	1	22	36	36	3.4
Insurance institutions	81	81	554	355	352	32.9
Insurance companies	15	15	438	49	47	4.4
Pension funds and foundations	66	66	116	307	306	28.5
All financial institutions	132	282	3443	1,088	1,072	100.0

Source: OECD Bank Profitability, 1998

99. **Savings banks** provide some competition to the commercial banks, but are individually quite small on average. However, the 26 savings banks together form a group that controls about one fourth of the banking market, with 51 outlets throughout Iceland. Since the savings banks have avoided major contributions to loan-loss reserves, total equity has grown much faster than the commercial banks. Savings banks are owned by holders of the bank's guaranteed capital, provided by the original depositors. However, these owners have the right to elect only 60 percent of the Board of Directors with the remainder appointed by the local government of the region in which they each serve. Moreover, distribution of bank profits and transfer of ownership require approval of the board and there are additional restrictions on the residency and total share of each owner. This has led to a pattern of self-ownership without declaration of dividends. The Icelandic savings banks cooperate closely in the areas of marketing, technology, and training and operate a joint computer center. In addition to Icebank, they also jointly own an investment bank and securities firm, a life insurance company, a leasing company, and shares of two credit card companies.

100. In addition to commercial and savings banks there are two other types of deposit-taking institutions, namely the savings departments of cooperatives and the Post Giro.

101. There have been major changes in **balance-sheet items of deposit money banks** over the last two decades (Table 15 and Figure 10). Banks' total assets have increased as a percentage of GDP. New items have appeared, such as bonds sold to the public and marketable securities held as assets, while others have disappeared, such as produce loans and loans repurchased by the Central Bank. In fact, the Central Bank numbers have decreased considerably in the balance sheet of the banks—required reserves and other funds held at the Central Bank have dropped from a peak of about 15 percent of total assets to a stable 3 percent of total assets. This decline coincides with reductions in required reserve ratios. Foreign debt other than produce loans had been declining steadily until 1995, after which it rose sharply to the highest level of the period. Net liquid domestic and foreign assets have dropped in the most recent two years, both becoming negative in 1998. The outcome for 1998 may reflect the abolition of liquidity requirements in March. The sectoral distribution of credit has also been changing significantly (Figure 11). The proportion of total credits granted to households has increased at the proportional loss of lending to the business sector. The rise in lending to the central government through 1995 has been reversed as fiscal consolidation in the past several years permitted the Treasury to repay debt.

102. Total **credit** of deposit money banks has expanded sharply relative to total deposits since 1995—the growth has been particularly rapid in 1998. Part of the explanation for the steep increase in lending is related to the method chosen to partially privatize the two state banks. The issuance of 15 percent new equity in these banks, rather than the sale of existing shares, provided additional capital that allowed the banks to expand lending activities. Moreover, the incentive existed to increase lending in advance of the share issuance in order to enhance the return on equity and other ratios thought to make the stock more attractive to the public.

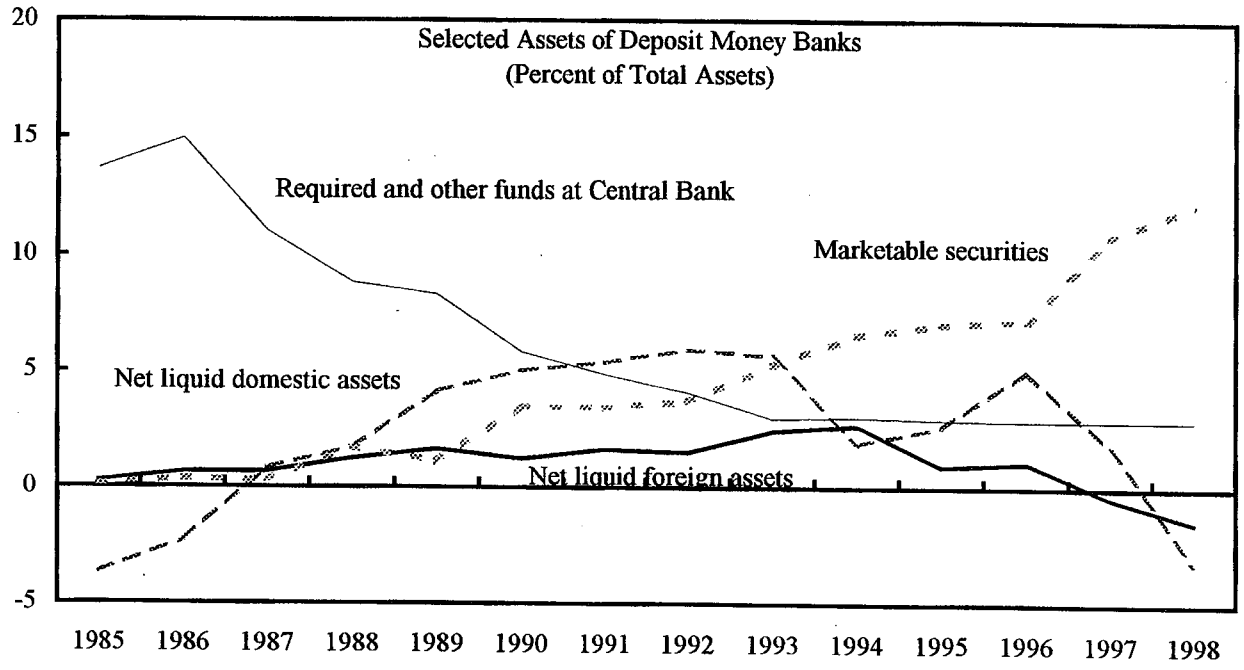
Table 15: Accounts of deposit money banks

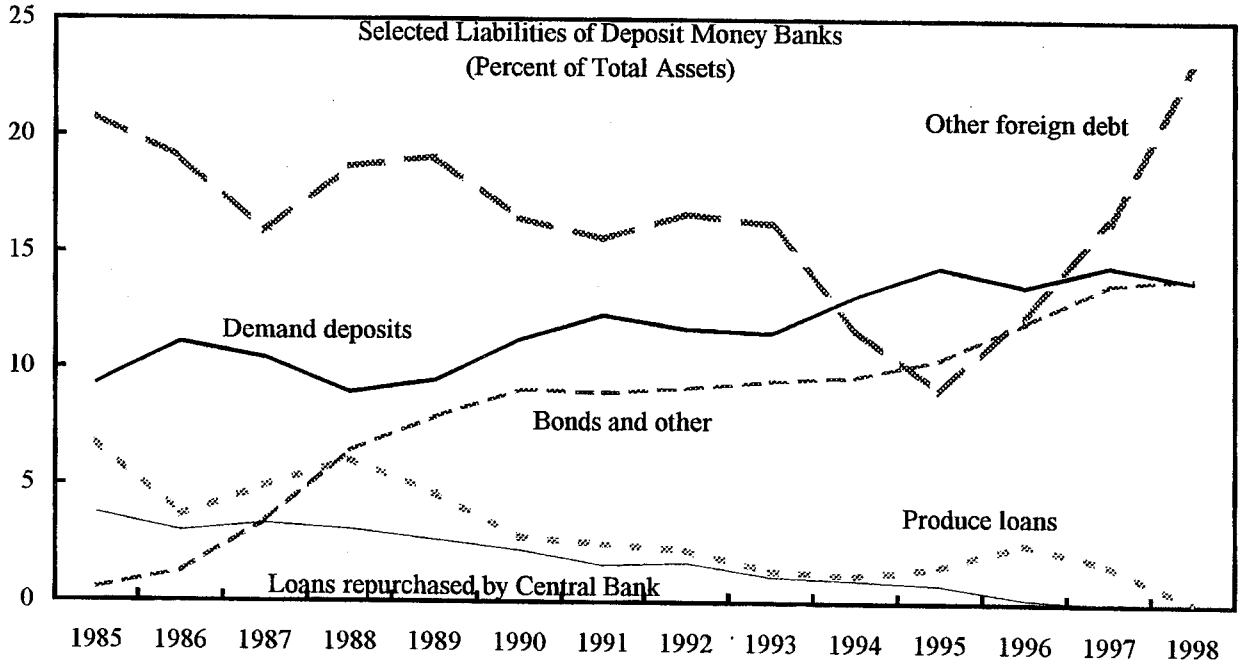
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
							(Billions of krónur)							
Liquid assets, net														
Foreign	0.1	0.5	0.7	1.7	2.9	2.4	3.5	3.4	5.9	6.2	2.1	2.9	-1.3	-5.4
Domestic	-2.2	-1.7	0.9	2.4	7.3	9.7	11.5	13.4	13.6	4.5	6.1	13.6	5.3	-11.7
Required and other funds at CBI	8.0	10.8	11.2	12.2	14.7	11.2	10.4	9.3	7.2	7.1	6.9	7.7	8.6	10.7
Credit	52.4	62.2	88.6	119.4	150.6	162.6	181.5	191.2	200.8	198.1	199.6	222.5	250.2	327.3
Marketable securities	0.1	0.3	0.3	2.4	2.0	6.8	7.4	8.4	12.7	15.2	16.2	19.3	31.8	44.3
Total assets	58.4	72.1	101.5	138.1	177.6	192.7	214.3	225.6	240.2	231.0	231.0	266.0	294.7	365.3
Deposits														
Demand	5.4	8.0	10.6	12.3	16.8	21.6	26.3	26.4	27.7	30.3	33.2	36.1	42.6	50.6
Other	32.5	43.3	58.9	74.0	93.3	105.2	118.9	124.2	132.6	133.0	133.3	141.8	151.0	172.6
Bonds, etc.	0.3	0.9	3.5	8.9	14.0	17.5	19.2	20.6	22.7	22.3	24.1	32.0	40.4	51.2
Loans repurchased by CBI 1/	2.2	2.1	3.4	4.2	4.7	4.2	3.3	3.8	2.6	2.2	1.7	0.5	0.0	0.0
Foreign debt														
Produce loans	3.9	2.6	5.0	8.4	8.2	5.3	5.3	5.0	3.2	2.6	3.5	6.8	4.9	0.2
Other	12.1	13.7	16.1	25.7	33.8	31.7	33.4	37.5	38.9	27.1	20.9	33.2	48.3	84.1
Other items net	2.0	1.5	4.2	4.6	7.0	7.3	8.0	8.3	12.5	13.4	14.2	15.5	7.4	6.7
Memorandum item:														
Total assets as percent of GDP	48.3	44.7	48.5	53.8	57.6	52.9	54.0	56.7	58.4	53.1	51.1	54.7	55.7	62.0

Source: Central Bank of Iceland

1/ Produce loans, bonds and SDR quota.

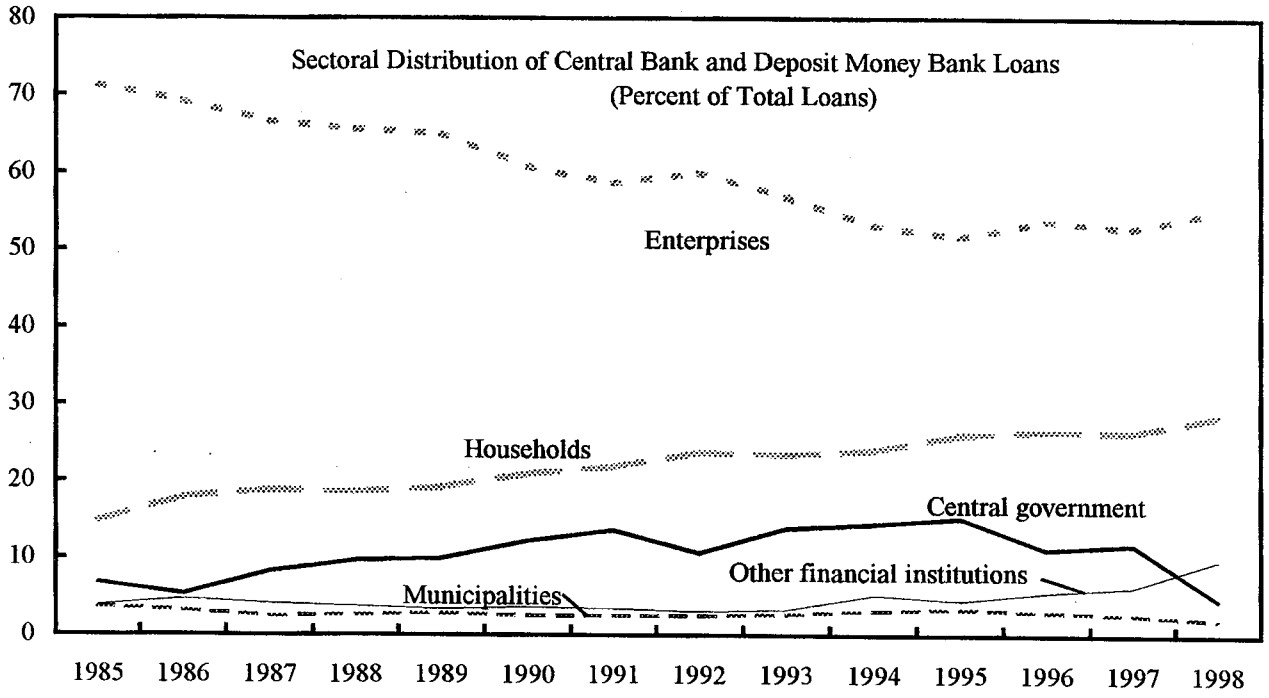
Figure 10. Iceland: Balance Sheet Composition of Deposit Money Banks, 1985-1998

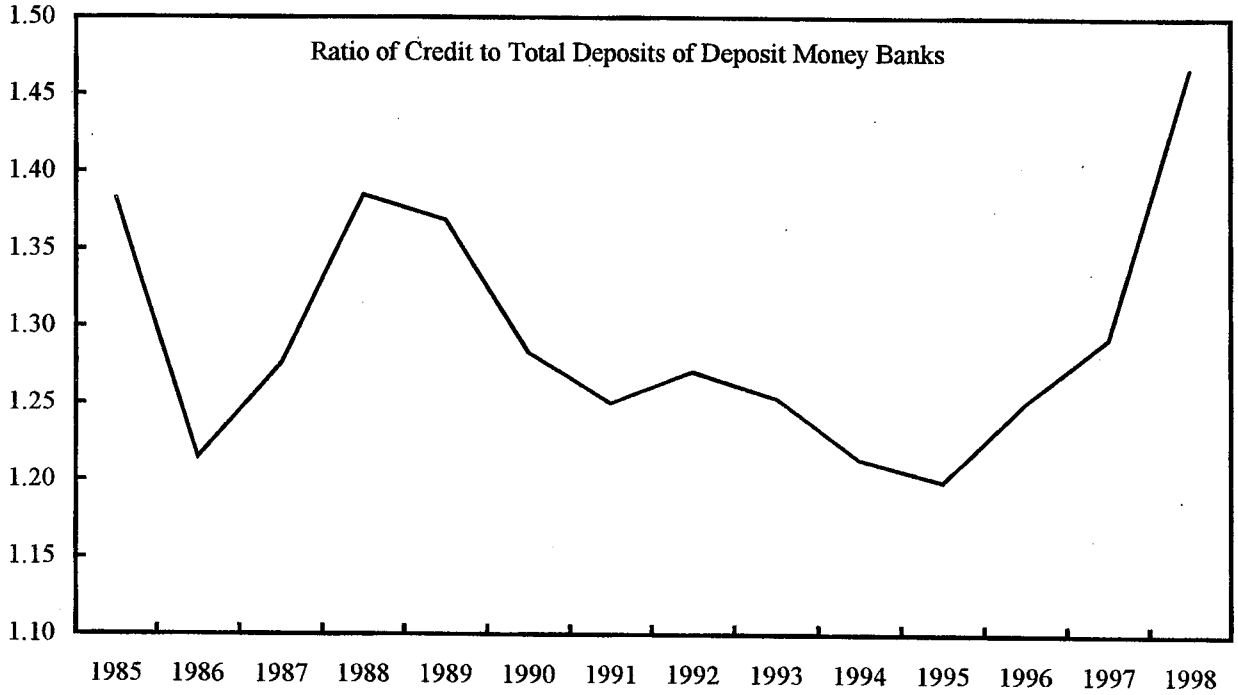




Source: Central Bank of Iceland

Figure 11. Iceland: Credit and Sectoral Lending





Source: Central Bank of Iceland

103. An international comparison of **bank profitability** indicators by Malkämaki and Vesala (1996) and OECD Bank Profitability (1998) data show that operating expenses in Iceland's banking sector have been more than double the average of OECD countries over the period 1980-94 (Table 16). High costs likely reflect the large number and dispersion of savings banks across Iceland, and the lack of significant competition for financial services until recent years. Lack of competition and high operating costs have also resulted in a spread between lending and deposit rates of more than double the OECD average. In the 1980s, real loan growth surged and pre-tax profitability was higher than the OECD average. This period of rapid lending growth, combined with a recession in the early 1990s, led to sharp increase in provisions for bad debt in 1992-94 and a corresponding deterioration of profitability.

Investment credit funds

104. In addition to commercial banking, the Icelandic government has been heavily involved in credit markets though financial institutions known as **investment credit funds**. There have been around a dozen investment credit funds (ICFs) in Iceland in recent years. ICFs have played an important role in the Icelandic financial system with regard to long-term financing, providing housing finance, and channelling credit to the various business sectors of the economy (Table 17). New legislation took effect as of January 1, 1998 which merged four investment credit funds (the Fisheries Investment Fund, the Industrial Loan Fund, the Industrial Development Fund, and the Export Credit Fund) into two new entities; the *Icelandic Investment Bank Ltd.* (Fjárfestingabanki atvinnulífsins or FBA) and the *New Business Venture Fund.* A 49 percent share offering was held in mid-November 1998 for the Iceland Investment Bank Ltd. The remaining 51 percent is expected to be sold in 1999. These institutions will not be authorized to take deposits. The FBA will provide all sectors of the economy with long-term credit and will develop a broader range of advanced banking services, such as non-recourse project finance, securitization, and securities underwriting. There will be no state guarantees on new obligations. The New Business Venture Fund, a state-owned institution, is expected to play an active role in the early stages of venture capital and projects financing, consistent with the government's view that state involvement needs to be redirected from traditional to more complex financial services that would not be provided by the market. The government will only guarantee new obligations of the Export Loan Insurance Department.

105. There were three **government-owned housing funds** in 1998 with roughly equal shares of the market—the State Housing Fund, the Housing Bond Department, and the Workers Building Fund. These funds represented a relatively small source of lending until 1980, but they experienced a rapid expansion following the indexation of nearly all long-term debt instruments and the progressive increase in the supply of funds from pension funds. Their assets grew to more than double the size of the other industrial investment credit funds. Legislation approved by the Parliament in June 1998 is aimed at rationalizing the existing state housing fund system, and establishing a new State Housing Fund in the beginning of 1999.

Table 16: Bank Profitability: International Comparisons
(In percent of balance sheet total; average)

	Net interest income	Non-interest income	Operating expenses	Pre-tax profit
		1980-84		
Belgium	1.65	0.32	1.43	0.28
Denmark	3.13	1.09	2.80	1.48
Finland	2.52	1.65	3.42	0.30
France	2.50	0.46	2.01	0.37
Germany		0.51	1.69	0.63
Iceland	**5.48**	**1.20**	**5.18**	**1.23**
Italy	2.91	1.09	2.57	0.62
Netherlands	2.17	0.71	1.84	0.39
Norway	3.63	0.93	3.17	0.83
Portugal	2.04	1.07	1.87	0.47
Spain	3.90	0.67	3.06	0.69
Sweden	2.24	0.78	1.74	0.29
Switzerland	1.25	1.08	1.33	0.62
United Kingdom	3.10	1.42	3.18	0.88
Mean (excluding Iceland)	2.56	0.99	2.32	0.60
		1985-89		
Belgium	1.61	0.44	1.37	0.31
Denmark	2.49	1.09	2.05	0.81
Finland	1.94	1.81	2.85	0.37
France	2.25	0.41	1.80	0.32
Germany	2.13	0.57	1.73	0.59
Iceland	**5.71**	**1.86**	**6.04**	**0.78**
Italy	3.06	1.18	2.73	0.94
Netherlands	2.16	0.78	1.94	0.67
Norway	3.16	1.07	2.90	0.23
Portugal	3.01	0.69	2.08	0.55
Spain	3.87	0.81	2.98	1.02
Sweden	2.68	1.04	2.06	0.56
Switzerland	1.32	1.29	1.44	0.68
United Kingdom	3.03	1.74	3.10	0.81
Mean (excluding Iceland)	2.52	0.99	2.23	0.60
		1990-94		
Belgium	1.39	0.43	1.26	0.30
Denmark	3.44	0.17	2.38	-0.19
Finland	1.61	1.78	3.00	-1.14
France	1.59	0.70	1.52	0.24
Germany	1.96	0.60	1.63	0.52
Iceland	**4.99**	**2.10**	**5.09**	**0.10**
Italy	3.22	1.15	2.66	1.09
Netherlands	1.73	0.70	1.65	0.50
Norway	3.48	0.93	2.88	-0.33
Portugal	3.69	1.10	2.35	1.07
Spain	3.39	0.89	2.56	0.93
Sweden	2.69	1.79	2.42	1.12
Switzerland	1.54	1.58	1.65	0.58
United Kingdom	2.57	1.85	2.87	0.64
Mean (excluding Iceland)	2.48	1.05	2.28	0.41

Source: Malkamaki and Vesala (1996); OECD Bank Profitability, 1998

Table 17: Balance sheet of investment credit funds 1/

Year-end	Assets								Liabilities		
	Loans					Cash and deposits	Other, net	Total assets	Debt		Capital
	Central govt.	Municipalities	Industries	Housing	Total				Domestic	Foreign	
	(Billions of krónur)										
1980	0.1	0.2	1.7	0.7	2.6	0.1	0.3	3.1	1.5	0.4	1.2
1981	0.2	0.2	2.8	1.8	5.1	0.2	0.3	5.5	2.8	0.6	2.2
1982	0.3	0.5	5.4	3.4	9.6	0.3	0.5	10.5	4.9	1.7	3.8
1983	0.4	0.9	9.8	6.4	17.4	0.7	0.9	19.1	8.6	3.3	7.1
1984	0.5	1.2	14.2	9.2	25.1	1.6	1.1	27.7	11.7	6.4	9.6
1985	0.7	2.5	18.1	15.4	36.6	2.6	1.2	40.4	16.8	9.0	14.6
1986	0.7	3.1	23.2	20.8	47.7	2.6	1.5	51.8	21.9	11.2	18.7
1987	0.7	2.3	31.0	29.8	63.8	2.8	1.9	68.5	30.0	14.2	24.3
1988	0.9	3.0	42.9	41.0	87.7	3.2	2.4	93.3	42.0	20.8	30.5
1989	1.5	8.8	53.8	57.9	122.0	2.2	3.8	128.1	59.4	31.4	37.2
1990	0.8	8.6	54.6	79.0	143.0	5.2	3.6	151.8	76.6	34.4	40.8
1991	0.5	9.9	57.0	107.1	174.5	3.6	2.6	180.7	101.7	35.7	43.3
1992	0.4	10.9	63.7	124.8	199.8	6.2	4.0	210.0	122.4	44.0	43.6
1993	0.4	11.5	69.7	142.5	224.0	9.1	4.1	237.2	140.2	53.5	43.6
1994	0.2	9.9	70.9	161.9	242.9	4.7	7.3	254.9	164.8	46.6	43.6
1995	0.6	9.8	72.7	180.1	263.2	2.0	3.1	268.3	183.0	40.8	44.5
1996	0.1	9.2	74.4	198.5	282.2	2.8	2.5	287.5	200.8	42.4	44.4
1997	0.1	6.5	82.3	216.9	305.8	3.0	14.4	323.2	227.9	45.7	49.5
Nov.'98	1.6	8.9	84.0	232.5	327.0	2.3	37.1	366.5	261.4	61.2	43.9

Source: Central Bank of Iceland

1/ Kaupþing hf. is included as of December 1997. In October 1998, the Commercial Loan fund merged with Íslandsbanki hf., one of the commercial banks.

2/ Preliminary.

Institutional investors

106. Although the financial structure has been dominated by the banks and government credit and housing funds, **institutional investors** have increased in prominence. The rise of institutional investors is expected to provide a disciplining effect to corporate managers by creating large, influencial shareholders, and also will provide a mechanism whereby private savings can be channelled more efficiently into equity investments. They may also provide competition for financial services that will encourage banks to reduce their operating costs.

107. Currently there are 65 **pension funds** in Iceland. They are now among the largest financial institutions in Iceland and are the most important source of long-term finance in the country. The pension funds receive payments from employers and employees and also extend credit to members. They have typically channelled a large share of their assets to the housing sector of the economy through the government guaranteed housing funds. They also traditionally invested in bonds issued by the Treasury, other financial institutions, municipalities and companies (Table 18). In recent years the pension funds have started to invest in foreign securities. Holdings of foreign assets grew by more than 80 percent in 1998 to 11½ percent of net assets at year-end. Foreign assets were roughly evenly distributed between equities, equity funds and bond funds. Pension funds have scope to increase their holdings of foreign assets as the law limits their exposure to 40 percent of net assets. The increase in foreign asset holdings will diversify household wealth and potentially reduce its correlation with shocks to domestic income. Pension funds also expanded their holdings of domestic equities by 22½ percent in 1998.

108. Mutual funds were first established in Iceland in 1985. There are now eleven closed-end mutual funds in operation. They are limited liability companies, and nine of them are quoted on the Iceland Stock Exchange. There are eight open-end mutual funds that are operated in 32 divisions. One credit institution, Kaupþing, also operates mutual funds quoted on the Luxembourg Stock Exchange.

109. There are now 15 **insurance companies** licensed to operate in Iceland. Three of them are life-insurance companies, representing only 4.5 percent of total assets of the companies. One reason for the relatively small share of life insurance can probably be traced to the employees' compulsory membership in pension funds. About half of the insurance companies' portfolio consists of marketable securities, which make them fairly sizeable investors in the Icelandic securities market. In addition, 126 foreign insurance companies have licenses to provide services in Iceland, of which two have established branches.

110. Several well established domestic **securities companies** are active in Iceland. They perform services such as arranging new issues and private placements, and fund management. They have been advisors and provided placement services in the government's privatization program. Some of the securities houses also operate mutual funds, or unit trusts, including funds which invest partly or solely in foreign securities.

Table 18: Balance sheet of pension funds

	1993	1994	1995	1996	1997	1998 1/
			(Billions of krónur)			
Cash and deposits	5.37	5.53	5.53	5.69	7.08	8.75
Credits and securities holdings	216.02	241.38	241.38	286.81	341.99	389.97
Market securities and mutual funds	103.12	125.87	125.87	156.65	189.31	215.72
Central Government	17.10	18.68	18.68	23.40	20.40	20.64
Municipalities	8.37	11.11	11.11	13.06	16.25	15.26
Deposit money banks	14.18	17.01	17.01	20.52	25.21	32.67
Investment credit funds	51.14	62.17	62.17	74.31	95.22	90.62
Leasing companies	2.85	3.73	3.73	4.20	5.66	4.94
Industries	6.13	7.86	7.86	11.75	11.77	12.39
Mutual funds	2.51	4.54	4.54	8.43	13.39	36.96
thereof foreign	0.00	0.93	3.85	7.45	9.60	15.15
Other foreign bonds	0.84	0.77	0.77	0.97	1.42	2.25
Other securities, total	107.33	108.13	108.13	115.86	114.86	116.31
Central Government	2.17	1.87	1.87	3.62	3.21	3.23
Municipalities	0.96	1.51	1.51	2.27	1.85	1.60
Deposit money banks	1.00	1.77	1.77	2.11	2.48	2.52
Investment credit funds	63.18	59.88	59.88	56.19	50.53	46.33
Other credit institutions	0.94	0.11	0.11	0.36	0.05	0.18
Industries	3.59	5.40	5.40	12.82	18.55	22.13
Pension fund members	35.50	37.61	37.61	38.50	38.20	40.33
Equity funds	--	--	--	--	8.06	15.26
thereof foreign	--	--	--	--	7.45	14.03
Shares	5.57	7.38	7.38	14.30	29.76	42.68
thereof foreign	0.06	0.38	0.38	1.21	7.13	14.95
Other assets, net	12.77	15.71	15.71	14.01	3.61	6.01
Assets, net	234.16	262.62	262.62	306.51	352.69	404.73

Source: Central Bank of Iceland

1/ Estimation based on sample of the largest pension funds.

Other

111. There are three **leasing companies** in Iceland at present, the first having been established in 1985. Their growth was rapid in the first few years of operation, but slowed when the economic downturn of the early 1990s led to a dropoff of investment in Iceland. Recently the leasing companies have diversified their activities to some extent by granting loans in addition to making conventional leasing contracts.

112. No incentives are offered to financial institutions to conduct **offshore** business in Iceland. The measures taken to insulate the domestic market from illegal offshore transactions are presumably the same as in neighboring countries. Money laundering, for example, is forbidden by law and the supervisory body has made an effort to educate financial sector agents in this respect.

C. Banking Soundness and Prudential Framework

113. This section discusses the framework for prudential supervision and regulation of Iceland's financial system, and examines some indicators of the current prudential behavior of banks.

Supervision of financial institutions

114. On January 1, 1999, a new supervisory authority, the Financial Supervisory Authority (FSA), was established to supervise the activities of financial institutions. This represents a merger between the two prior supervisory entities: the Bank Inspectorate, which had been a part of the Central Bank, and the Insurance Supervisory Authority, which was an independent government agency. The merger is thought to provide a more efficient use of supervisory expertise, and greater coordination in supervision, especially since the boundaries between participants in the financial sector have eroded over time. The main task of the FSA is to ensure that the activities of financial institutions are conducted in accordance with the relevant laws and regulations, and they remain sound in other respects. The field of supervision covers the whole range of financial institutions, including all credit and deposit-taking institutions, insurance companies, securities firms, mutual funds, stock exchanges and other regulated markets, central securities deposits, and pension funds. These institutions and firms are obligated to provide all the information considered necessary by the FSA and to permit access to their premises. The FSA can recommend corrective action for institutions in violation of laws and regulations, and is authorized to appoint an inspector at the expense of the party subject to supervision. In addition, the FSA can impose daily financial penalties and can recommend the withdrawal of license. Operational expenses of the FSA are met through quarterly fees paid by all institutions and firms subject to supervision. The FSA reports to the Ministry of Commerce. The Board of the FSA is composed of three members, appointed by the Minister of Commerce for a term of four years at a time. One board member is appointed on the recommendation of the Central Bank.

115. The enacting legislation specifies close cooperation with the Central Bank, including through regular consultative meetings. Moreover, the Central Bank has created a Financial Stability Committee for continued in-house oversight of the stability of the financial system. While the role of the FSA will be to ensure that individual institutions under its supervision operate within the legal and regulatory framework, the committe will act in an advisory capacity for the Central Bank Governors on all aspects of the stability and security of financial institutions and markets, the stability of the financial system as a whole, and the relationship between economic developments, economic management and financial system stability.

Banking regulations and supervisory practices

116. In connection with Iceland's participation in the European Economic Area, the Icelandic legislation and regulations regarding credit institutions and other financial institutions have been adapted to the various regulations and directives of the European Union. The current rules on capital adequacy for credit institutions and securities firms became effective in 1993 and are based on the Basle guidelines and the EU capital adequacy directive, which specify a minimum capital ratio of 8 percent. According to rules imposed by the Central Bank, commercial and savings banks are limited in their foreign exchange exposure and in their exposure to indexed assets and liabilities to 30 percent of equity as defined by the Capital Adequacy Directive. Appendix I presents details on the legal and regulatory framework for banking supervision.

Deposit insurance schemes

117. Parliament recently adopted changes in legislation and regulation of the banking sector to ensure full conformity with the EEA agreement. The Second EU Banking Directive provides the model for deposit insurance. The existing deposit insurance scheme requires banks to contribute an amount equal to 0.15 percent of their deposits annually to a fund until it reaches a minimum of 1 percent of total assets. There are separate schemes for the commercial banks and for the savings banks. The present law stipulates that the commercial banks' insurance fund is a government entity, while the savings banks own their insurance fund. According to a provisional Act, the two schemes will be merged in the near future.

118. The role of the Deposit Guarantee Funds is to guarantee depositors full payment of their deposits. However, in the event that the assets of the deposit guarantee funds are not sufficient to repay the total amount of guaranteed deposits in the relevant commercial bank or savings bank, the repayment from the funds will be divided between depositors in such a way that the total amount of deposits of each depositor up to 1.7 million krónur (linked to the exchange rate of the ECU as of January 3, 1995) will be fully compensated, but everything in excess of this sum will be compensated proportionally to the extent of the assets of the funds.

Payment and clearing systems

119. The banks, together with the central bank, operate a clearing system through the Banks' Data Centre.[3] The Centre facilitates the clearing of checks and the flow of payments, including giro payments. The same clearing system functions both as an interbank circuit and as a retail clearing system. The net results from the daily clearing are settled on the participants' current accounts with the central bank the same day. Cross-border payments are carried out almost exclusively via the SWIFT network and correspondent banking relations. The banks, including the central bank, are all SWIFT members connected via the Banks' Data Centre. In 1998, a working group was appointed to consider the present structure of the payments system and recommend changes. In December 1998, the working group delivered proposals for reforms to the payments system including the establishment of a clearer distinction between wholesale and retail payments systems. Some proposals are being debated, such as those that would affect the operations of the Icelandic Banks' Data Centre.

120. A Central Securities Depository (CSD) for dematerialized securities, which will also handle clearing and settlement, is due to begin operations in 1999. In accordance with the Act on Electronic Registration of Securities, which became effective on January 1, 1998, the CSD will use a book-entry only system and initially operate the central registry for all securities listed on the Iceland Stock Exchange. Securities will be held in separate accounts, as nominee accounts are not allowed. Ownership will be recorded through account institutions (banks, brokerage firms) which will be remotely linked to the CSD.

Indicators of financial sector vulnerability

121. Evidence on financial sector vulnerability is mixed, but recent trends point to an increase in some types of risks (Tables 19 and 20). **Credit** by deposit-taking banks surged by over 30 percent year-on-year at end-1998, compared to around 12 percent at end-1997.[4] [5] Loans to the real estate sector do not appear to represent a large share of total loans—this

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[3]For more information, see the report on Payment Systems in Iceland, BIS, Basle, May 1995, prepared by the Central Bank of Iceland and the Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries.

[4]Lending by deposit money banks increased by around 28 percent in 1998 after adjusting for the merger of an investment fund with one of the commercial banks during the year.

[5]Hardy and Pazarbasioglu (1998) find a persistent tendency for credit to the private sector to follow a boom and bust pattern in advance of banking crises, with a further decline in credit growth during the crisis. Sachs, Tornell, and Velasco (1996), Radelet and Sachs (1998b) and Corsetti, Pesenti, and Roubini (1998b) argue that the quality of bank loans is likely to deteriorate significantly when bank lending grows at a rapid pace in a relatively short period of time.

Table 19: Selected Financial Institution Indicators

	1995	1996	1997	1998 1/
Number of banks:	33	33	31	30
Majority state-owned (as a % of total assets)	56.8	54.2	53.2	52.6
Number of banks accounting for:				
25% of total assets	1	1	1	1
75% of total assets	3	3	3	3
Number of investment banks:	1	1	2	3
Majority state-owned (as a % of total assets)	-	-	-	72.5
Number of investment banks accounting for:				
25% of total assets	1	1	1	1
75% of total assets	1	1	2	2
Number of investment funds:	9	9	9	5
Majority state-owned (as a % of total assets)	87.4	87.5	88.6	100.0
Number of investment funds accounting for:				
25% of total assets	1	1	1	1
75% of total assets	4	4	3	2
Total assets (as a % of GDP)				
banks	58.5	62.2	68.0	77.1
investment banks	0.6	0.9	2.7	16.7
investment funds	16.0	15.5	15.3	3.6
Credit to private sector (as a % of GDP)				
banks	35.2	36.0	44.1	50.5
investment banks	0.4	0.7	1.2	10.2
investment funds	14.1	13.6	13.5	3.2
Total loans of banks (as a % of GDP)	45.9	47.1	48.0	53.7
Real estate loans (as a % of total loans)	8.2	8.3	7.9	7.5
Loans to fisheries (as a % of total loans)	20.4	22.8	23.9	22.4
Loans to households (as a % of total loans)	22.9	22.9	24.1	25.3
Foreign currency-denom. assets (as a % of total bank assets)	22.5	27.7	33.1	36.3
Foreign currency-denom. liabilities (as a % of total bank assets)	20.9	27.2	31.6	36.3
Contingent and off-balance sheet accounts (as a % of total bank assets)	12.4	12.5	13.3	9.1
Central bank credit to banks (as a % of GDP)	1.19	0.39	1.23	2.32
Average lending spread	6.9	6.4	6.1	5.8
Nonperforming loans, substandard or lower quality (as a % of total bank loans)	5.89	5.37	4.64	4.05
Total bank provisions for loan losses (specific plus general):				
as a % of nonperforming loans	76.7	75.3	67.8	68.2
of which, specific	58.7	58.1	47.7	48.0
of which, general	18.0	17.3	20.1	20.2
as a % of total loans	4.5	4.0	3.1	2.8
Risk-weighted capital/asset ratio				
banks	11.1	10.7	9.9	9.8
investment banks	14.5	14.1	16.3	14.9
investment funds	22.3	21.2	21.4	19.4
Bank stock price index	1.39	1.83	3.39	3.85

Source: Financial Supervisory Authority

1/ Some data for 1998 is at end-June or end-November.

Table 20: Commercial and Savings Banks, Profit and Loss Indicators

	1995	1996	1997	1995	1996	1997
	(in millions of kronur)			(percent of average assets)		
Interest income	23.3	25.3	29.0	9.2	9.2	9.1
Interest expense	11.7	13.3	16.0	4.6	4.9	5.0
Net interest income	11.6	12.0	13.0	4.6	4.4	4.1
Other income	5.6	6.3	7.2	2.2	2.3	2.3
Gross income	17.2	18.3	20.1	6.8	6.7	6.3
Operating expenses	12.1	12.8	14.0	4.8	4.7	4.4
Net income	5.1	5.5	6.2	2.0	2.0	1.9
Provisions for bad loans	2.9	2.9	2.4	1.2	1.1	0.8
Profit before taxes	2.2	2.6	3.7	0.9	1.0	1.2
Tax on income and net worth	0.7	0.7	0.9	0.3	0.3	0.3
Profit after taxes	1.4	1.9	2.8	0.6	0.7	0.9
Extraordinary items (-profit/+loss)	0.2	0.0	1.2	0.1	0.0	0.4
Net profit/loss	1.3	1.9	1.6	0.5	0.7	0.5
Return on equity (percent)	6.4	8.8	7.0			
End of period:						
Own funds according to law	21.1	23.9	26.0			
Risk weighted base	190.1	223.2	265.8			
Capital adequacy ratio	11.1	10.7	9.8			
Own funds excluding subordinated loans	18.9	20.5	21.6			
Capital adequacy ratio excluding sub. loans	10.0	9.2	8.1			

Source: Financial Supervisory Authority

sector accounts for roughly 7½ percent and the proportion has been trending down slightly over the past few years. However, banks have large **sectoral exposures** to households and to the fishing industry, which represent 25 percent and 22 percent of total loans, respectively, in 1998. The **net liquid position** of banks has fallen considerably in the most recent year—it stood at a *negative* 4¾ percent of total assets at end-1998. By end-January 1999, the net liquid foreign assets and net liquid domestic assets were each around -3¼ percent of total assets.

122. A large part of the credit expansion in 1998 was financed by **external borrowing**, increasingly at shorter maturities. Short-term external debt at end-1998 was more than twice as large as foreign exchange reserves. Direct foreign exchange exposure of the banks appears to be small—foreign currency linked assets and liabilities are nearly identical as most external borrowing by banks is relent in foreign currency loans or exchange rate indexed domestic loans. As an illustration of this typical relending activity, foreign currency liabilities accounted for 12 percent of total liabilities of commercial and savings banks at end-1996, of which the amount owed to non-residents was twice as large as the amount owed to residents (Table 21). However, foreign currency assets of the banks (14 percent of total assets) consisted mainly of claims on residents (12 percent of total assets). The export sector is responsible for a large part of the relent foreign loans. Nonetheless, the relending of foreign funds increased by about 55 percent year-on-year in 1998 when real export activity expanded by only around 3 percent. This development and other anecdotal evidence suggests that some of the expansion of relent foreign credit was directed to other resident firms and to individuals that are not naturally hedged to exchange rate movements through their income stream. Thus, the indirect foreign exchange exposure of banks may have increased through the credit risk of their customers that have taken on the exchange rate risk.

123. The average **lending spread** has declined in recent years, perhaps as a result of greater competitition between banks and other financial institutions. This has not resulted in lower profitability, however, as pre-tax **profits** have risen. The outcome is in part due to the attendant decline in operating costs. In addition to the positive trend in profitability, recent **credit ratings** have been favorable. In the past three years, Moody's Investor Service has twice upgraded Iceland's country ceiling for foreign currency debt and bank deposits, and recently gave Icelandic banks a stable credit outlook, citing good economic conditions and the strengthening of the banking system.[6]

124. Capital adequacy ratios of the commercial banks and largest savings have been above 8 percent in recent years, although they have generally been declining through June 1998. In some cases, however, capital adequacy ratios excluding subordinated loans have been below 8 percent. Although the Basle standard for capital adequacy is achieved at a ratio

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[6]Moody's currently rates three banks in Iceland: Landsbanki Islands, rated A3/P2 for deposits and D for financial strength; Íslandsbanki hf., rated A3/P2 and D+; and the Icelandic Investment Bank, rated A3/P2 and D.

Table 21: Assets and Liabilities of the Banking System, 1996 by Currency and Residency

	Residents	Non-residents	Total
	(in billions of kronur)		
Domestic currency assets	259	0	259
Foreign currency assets	36	7	42
Total assets	295	7	302
Domestic currency liabilities	262	3	265
Foreign currency liabilities	12	25	37
Total liabilities	274	28	302
	(in percent of total assets)		
Domestic currency assets	85.8	0.1	85.9
Foreign currency assets	11.9	2.2	14.1
Total assets	97.7	2.3	100.0
Domestic currency liabilities	86.8	1.0	87.8
Foreign currency liabilities	4.0	8.2	12.2
Total liabilities	90.8	9.2	100.0

Source: OECD, Bank Profitability, 1998

of 8 percent, it is only a minimum standard. A level significantly above 8 percent is typically considered prudent, especially for banks in less diversified and more volatile economies such as Iceland. Savings banks in Iceland have typically maintained higher ratios on average than the commercial banks, especially the state-owned banks. Moreover, banks could use their increased profitability of the last few years to strengthen the capital base. Rules permitting (up to a total of 35 percent) new share issuance in the partially-privatized state banks may help facilitate an increase in the core capital base.

125. Nonperforming loans have declined over the past four years to 4 percent of total bank loans.[7] Total **provisions** for loan losses have also receded in recent years, to under 3 percent of total loans in 1998. This downward trend follows a peak in net provisions in 1992, which occurred after a substantial boom in real lending growth in the late 1980s (Figure 12). On the basis of the experience of the last two decades, there appears to be a lag of a few years between real lending growth and provisions for bad debt. This is consistent with the argument that rapid lending growth can result in a deterioration of loan quality, although the performance of the loans may not decline immediately and likely also depends on overall economic conditions. In fact, the peak of net provisioning in 1992 occurred at the same time as a major recession in Iceland.

D. Financial Market Policies and Reforms

126. Reforms initiated in the mid 1980s aimed at reducing state involvement in financial markets, making room for market forces to play an increasing role in the development of the financial system.[8] In the 1990s, the authorities have taken further steps with a view to strengthening financial market efficiency and liquidity. This section examines recent reforms in the markets for foreign exchange, short- and long-term debt instruments, and equity. Box 2 sketches the chronology of major events. Although changes in the financial markets have occurred mainly by design, economic conditions have influenced them as well.

Capital movements

127. In recent years the rules and regulations governing inward and outward capital transactions in Iceland have been liberalized. **Foreign direct investment** in Iceland is regulated by Act No. 34/1991 on investment by non-residents in business enterprises, as amended in May 1996. Direct investments and purchases of residence abroad by Icelanders are fully liberalized. However, there are still restrictions on direct investments by foreigners in the sectors of fishing and fish processing, energy, and aviation:

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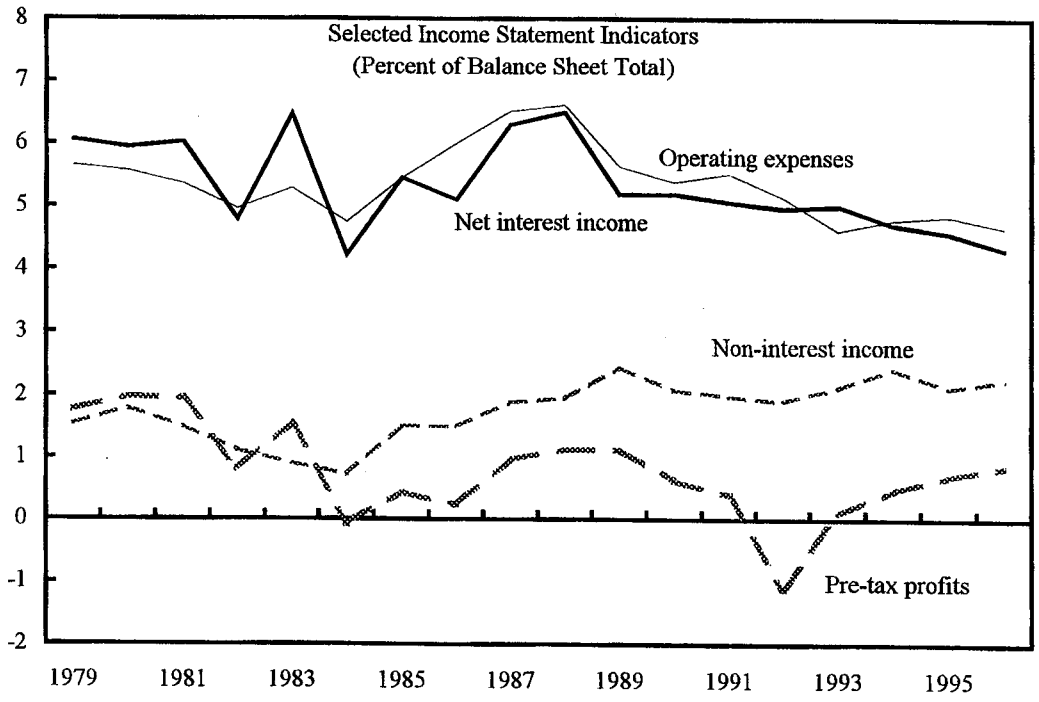
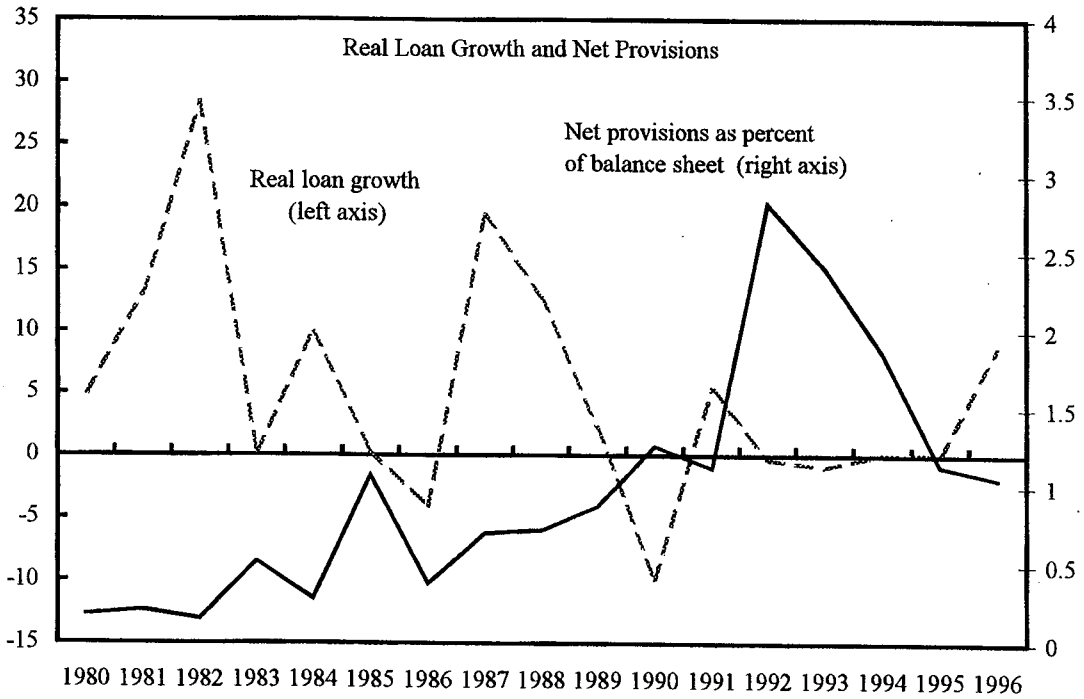
[7]Asset quality criteria are discussed in the Appendix.

[8] See Iceland - Recent economic developments, SM/94/7

Figure 12. Iceland: Selected Banking Sector Data





Source: OECD Bank Profitability, 1998; *International Financial Statistics*

Box 2: Financial Sector Chronology

Money Market and Monetary Instruments

1992	•	Ceiling placed on the automatic overdraft facility of the Treasury with the Central Bank.
1993	•	Treasury overdraft facility is closed, but the Central Bank agrees to buy bills if necessary.
1998	•	Liquidity requirements levied on deposit money banks were abolished. 1/
	•	Weekly auctions for 14 day repos replaced tap-availability and eligible collateral was extended.
	•	Tap sales of 45 day CDs was abolished, although the Central Bank can auction 14 day CDs to reduce liquidity.
	•	An overnight facility was created in the Bank.
	•	New rules for reserve requirements became effective.
	•	The discount quota was abolished.
	•	Foreign currency deposits of credit institutions in the Central Bank were closed.
	•	New rules for the interbank market take effect.

Bond Market

1986	•	Complete liberalization of interest rates in banking sector.
1989	•	First housing bonds sold on market.
1990	•	National Debt Management Agency established.
1992	•	Commencement of regular weekly auctions of government securities.
1993	•	Government attempts to lower long-term real interest rates by adopting a long-term intervention rate on indexed securities.
1994	•	Central Bank intervenes in bond markets including housing bonds.
1995	•	Introduction of first non-indexed government bond with three-year maturity.
	•	A second non-indexed bond with five year maturity is introduced.
1996	•	Central Bank ceases market making operations for Treasury notes and bonds.
1997	•	The Government Debt Management Agency consolidates government bonds into nine issues.
	•	Real-time electronic quotes are provided internationally.
	•	Market making is introduced for Housing Bonds.
	•	Preparation for electronic registration of bonds starts.

Foreign Exchange Market

1989	•	Exchange rate of the króna is fixed against a basket of currencies.
1990	•	Liberalization of capital movements begins.
1992	•	New foreign exchange legislation is adopted.
1993	•	Iceland becomes a member of the European Economic Area.
	•	Interbank market for foreign exchange is created.
1994	•	Long-term capital movements are fully liberalized.
1995	•	Short-term capital movements are fully liberalized.
	•	Fluctation band of the króna is widened to ±6 percent from ±2.25 percent.
1996	•	New legislation on foreign direct investment is passed.
1997	•	Central Bank withdraws from market-making in the foreign exchange market.

Equity Market

1985	•	Iceland Stock Exchange (ISE) established.
1990	•	Equities are listed on ISE.
1991	•	Trading in equities begins.
1992	•	Brokers begin operating an OTC market for non-listed shares.
1998	•	Monopoly on ISE abolished.

1/ This was temporarily reinstated in February 1999.

- Direct investments by non-residents in fishing and fish processing is prohibited, indirect investment is limited to a maximum of 33 percent.

- Residents and companies residing inside the EEA are allowed to invest in energy production and energy distribution in Iceland. Residents and companies residing outside the EEA can apply to parliament for such rights.

- Investments by residents outside the EEA in aviation companies are restricted to 49 percent.

128. At the beginning of 1994 **long-term portfolio investments** were completely deregulated, and restrictions on short-term movements were eased. The final step in the liberalization of external capital movements was taken on January 1, 1995, when all restrictions on **short-term capital movements** were abolished. There are now no restrictions on non-resident trades in Icelandic debt instruments or debt derivatives (futures, options, forward contracts, or swaps). Non-resident trades in shares in Icelandic enterprises are subject to the same restrictions as direct investment by non-residents in enterprises. There are also no restrictions on the repatriation of capital, interest or dividends for all investments in Iceland's financial markets. Non-residents may open accounts with resident depository institutions. The regime on external capital movements in Iceland is now in full accord with the EEA agreement and the regime in EU countries. Foreign exchange conversions for **current payments** have been unrestricted since a new Act on Foreign Exchange and the Regulation on Foreign Exchange became effective on January 1, 1993. Payments in connection with trade in goods and services are also fully liberalized, including travel expenses, interest payments, dividends and other forms of income from capital. Parliament must approve **foreign borrowing by the Treasury and government institutions** as listed in the annual budget. In addition, there is a standing authorization to refinance outstanding public debt.

129. Despite the liberal environment, there has been little foreign interest in Icelandic securities. This is largely attributed to lack of market liquidity, settlement and clearing risk, and the previous widespread indexation of the market. A large part of inward foreign direct investment has been directed to energy generation and power intensive sectors. The fishing industry has expanded in recent years, accounting for the bulk of foreign direct investment abroad.

The foreign exchange market

130. The Central Bank has recently reorganized the foreign exchange market in order to support market development and promote market-determined prices. Under previous arrangements, the Central Bank had played a central role in the market. Fixing meetings had been held between the Central Bank and the commercial banks each morning, during which most interbank transactions took place. The daily foreign exchange fixing meetings were abolished in July 1997 and the market became continuous. Commercial banks assumed the

obligation to post continuous two-way quotes. Nevertheless, the Central Bank continues to intervene in the foreign exchange market for monetary policy objectives.

131. Derivative instruments are playing an increasing role in the foreign exchange market, since the commercial banks started to offer forward and swap contracts to their customers. Some securities houses have started to offer currency options over-the-counter.

Money market

132. Despite deregulation of interest rates in 1986, money markets have developed only in recent years. The market in **short-term government paper** emerged after the Treasury's unlimited access to a central bank overdraft was phased out between 1992 and 1994. The Treasury began auctioning standardized 3, 6, and 12-month bills on a regular basis. Prior to that time, Treasury bills were only sold on tap at a price decided by the Ministry of Finance. The amount and maturity had been chosen by the investor, making the bills unsuitable as instruments for secondary market trading. The Central Bank can make non-competitive bids at auctions, but is not required to do so. The bills have been listed on the Iceland Stock Exchange and the secondary market for bills has developed rapidly to become the largest financial market in Iceland in terms of traded volume. The Central Bank is the only market-maker in Treasury bills, and commercial and savings banks are the most common traders. The Central Bank has been considering transferring market-making responsibility to the commercial banks in order to facilitate monetary policy operations, which may currently be hampered by the obligation to post two-way quotes.

133. The **interbank market** for short-term securities was reorganized in 1998 in conjunction with the changes in monetary policy instruments. The Central Bank issued new rules that became effective in early June. Under prior arrangements, the Central Bank intermediated in all loan transactions as it always stood ready to engage in repurchase or resale agreements. Repo-transactions were limited to one day a week in order to increase the volume of interbank transactions. Eight institutions are now active members in this market—four commercial banks, two investment banks, and two savings banks. The new regulations require members to quote indicative interest rates for interbank loans and deposits for different maturities. On demand from another market participant, binding quotes must be given for minimum amounts for a specified maturity. Each morning, the Central Bank calculates the average of the quotation of the market participants for the different maturities and displays them publicly on the Reuters information system.[9] Trading volume in the interbank market started to rise following the change in monetary policy instruments in March, and increased sharply after the new arrangement became effective. Plans were developed to offer maturities of three, six, and twelve months in addition to the prior shorter-term maturities. An interbank market for free overnight reserves has been operated via telephone for several years by the four commercial banks. Other short-term instruments include

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[9]The interbank rates are called REIBOR and REIBID.

commercial and savings bank bills, which are tailor-made and usually not traded on a secondary market. A primary market also exists for units of money market mutual funds.

Bond market

134. The securities market in Iceland has expanded gradually. The government has issued indexed **government bonds** since 1964, and bond market development has also been asssisted by the deregulation of interest rates in 1986 and the commencement of regular weekly auctions of government securities in 1992. A secondary market for government bonds began to develop following the establishment of the Iceland Stock Exchange in 1985 as a joint venture of several banks and brokerage firms. For the first few years, domestic government bonds were the only instruments traded on the Exchange and until 1993 they were the dominant component of trading value. In recent years the supply of Treasury bonds has slowed as the the budget has been brought into surplus. This has created opportunities for other issuers and nearly 40 corporations and municipalities have listed their bonds on the Exchange. Table 22 shows the turnover and market capitalization of various short and long term securities on the Iceland Stock Exchange.

135. Another milestone in the development of the bond market occurred in February 1996, when the Central Bank of Iceland relinquished its role as a market-maker for long-term government bonds. The Central Bank's control over interest rates has been weakened as the long-term market deepened. In addition, attempts to exercise control over long rates sometimes compromised other monetary policy targets. Therefore, based on the judgement that the markets could function smoothly without daily intervention from the central bank, an agreement was concluded with three securities houses according to which they assumed the responsibility to maintain liquidity in the secondary market. The central bank handed over a part of its stock of government bonds to the securities houses in order to facilitate market-making and to finance their operations. The new system has operated successfully—spreads have narrowed and the volume of trade has increased. Ultimately this reform will be instrumental in fostering increased depth and liquidity of financial markets.

136. Another major sector of Iceland's domestic securities markets consists of **housing bonds** issued by the State Housing Board. These are 25-year inflation indexed bonds carrying a government guarantee. The housing bond system was introduced in 1989, and housing bonds were listed on the ISE in 1990. They quickly became the benchmark bonds for long-term interest rates and have grown to be comparable in size to that of government bonds. The housing bond system involves a non-market allocation of credit and places housing credit risk on the government. Discussion of alternatives has been inconclusive, with the most obvious solution—transferring housing credit to the banks—running up against the banks' capital adequacy requirements.

137. A major characteristic of Iceland's securities market had been the extensive practice of **indexation** of financial obligations to inflation. Throughout the 1970s, high and variable

Table 22
Turnover on the Iceland Stock Exchange

Year	Long-Term Market						Money Market	
	Total	Treasury Bonds	Housing Bonds	Treasury Notes	Shares	Other Bonds	Treasury Bills	Bank Bills
	(Billions of Kronur)							
1990	2.5	1.6	0.8	...	0.0	0.0	...	...
1991	2.4	1.7	0.7	...	0.0	0.0	...	...
1992	5.9	4.3	0.6	0.9	0.1	0.0	1.0	...
1993	22.3	14.0	2.9	4.5	1.0	0.0	53.3	...
1994	22.2	9.4	7.6	3.8	1.3	0.0	64.3	...
1995	22.6	9.3	2.5	7.8	2.9	0.1	48.3	...
1996	33.0	13.5	3.0	10.7	5.8	0.0	85.4	0.9
1997	74.8	28.4	24.3	8.4	13.3	0.4	77.7	36.4
1998	169.5	50.3	83.9	10.8	12.7	11.8	63.3	68.4

Market Capitalization on the Iceland Stock Exchange

Year	Long-Term Market						Money Market	
	Total	Government Bonds	Housing Bonds	Government Notes	Shares	Other Bonds	Treasury Bills	Bank Bills
	(Billions of Kronur, end of period)							
1990	45.8	37.8	5.1	...	1.7	1.2	...	...
1991	69.9	43.8	18.3	...	1.6	6.2	...	...
1992	106.0	51.6	31.1	1.9	14.6	6.8	6.8	...
1993	153.0	65.4	55.3	2.1	19.6	10.6	17.7	...
1994	204.5	72.7	69.7	5.6	33.2	23.3	17.1	...
1995	242.5	76.5	79.5	6.1	49.7	30.7	16.5	...
1996	324.9	66.3	104.9	8.1	95.3	50.3	16.6	4.0
1997	425.2	86.5	118.5	11.2	148.5	60.4	12.1	14.4
1998 1/	574.6	92.1	138.5	14.3	209.9	119.8	12.3	14.3
1998	...	...	...	...	231.5	...	...	...

Source: Central Bank of Iceland
1/ As of end November, 1998

inflation, combined with controlled nominal interest rates led to negative real interest rates and a sharp fall in saving. Indexation of government bonds was introduced to generate positive real interest rates, and later indexation was extended to bank deposits and loans. As price stability has been established, indexation is receding from the short to medium-term end of the securities market. Moreover, the government has been trying to phaseout the use of indexed obligations by issuing only non-indexed medium-term securities. The reduction of indexation is expected to help develop markets for short-term nominal instruments, encourage foreign participation in Iceland's financial markets, and reduce the disinflation risk of banks, which have typically had more indexed assets than liabilities.

Public debt management

138. The **National Debt Management Agency** (NDMA) was established by Parliament in 1990. This action transferred responsibility for the marketing and management of public debt to the NDMA, thereby reducing the role of the monetary authorities in the bond market. The legislation assigned the domestic and foreign borrowing and debt management functions of the Treasury, and government guarantees to the NDA. However, under a special agreement the Central Bank is responsible for the execution of foreign borrowing for the Treasury.

139. The **debt management strategy** has involved diversification of the debt with respect to maturity, currency composition, and interest rates. The Icelandic government has borrowed on both foreign and domestic financial markets, in roughly equal proportions during the 1990s. The policy has generally been to borrow at longer maturities. The average maturity and duration of external public debt at the end of 1997 were 4 years and 3 years, respectively, although the profile extended to the year 2016. The currency mix of external debt is determined with a broad reference to Iceland's trade patterns. In this respect, U.S. dollar denominated debt has represented a large but declining share of the foreign currency composition of the debt. Most of the foreign debt has been contracted at fixed interest rates. The floating component includes the borrowings through the Euro Commercial Paper Programme, which Iceland established in 1985. Iceland's credit ratings on various types of debt were upgraded by Moody's and Standard & Poor's in 1996, and again by Moody's in 1997. Iceland's ECP Programme has been assigned the highest possible short-term credit ratings.

Equity market

140. Development of Iceland's equity market has been slow during the first half of the 1990s, but has accelerated rapidly in the last three years. On the **primary equity market**, the supply of new equity (public offerings and privatization) receded between 1992 and 1995 (Table 23). One reason was the delay in implementation of privatization plans. In addition, weak economic conditions were reflected in low company earnings and declining interest rates, favoring the use of the debt during those years. New issue of equity on the primary

Table 23
Equity Listed on the Iceland Stock Exchange

	1991	1992	1993	1994	1995	1996	1997	1998
Number of companies listed	2	11	17	24	27	32	51	67
				(Percent)				
Turnover/market capitalization	0.3	1.0	4.9	4.0	5.8	6.1	8.8	5.5
Market capitalization/GDP	0.4	3.7	4.8	7.6	11.0	19.6	28.8	39.0
Change in share index (ICEX)	7	-10	-17	24	35	60	14	5

Public Issues of Equity, Equity Privatization and Turnover on Secondary Market

	1991	1992	1993	1994	1995	1996	1997	1998
				(Billions of Kronur)				
Primary Market								
Public issues	3.7	1.3	0.9	1.9	2.9	12.1	17.0	13.9
thereof equity funds	1.4	0.2	0.5	0.7	1.5	5.3	10.7	2.6
thereof privatization	0.0	0.0	0.0	0.3	0.2	1.0	0.1	9.3
Other Privatization	0.0	0.5	0.7	0.0	0.0	0.1	0.2	0.0
Secondary Market								
Icelandic Stock Exchange	0.0	0.4	0.4	0.6	0.8	2.0	3.4	0.7
OTC 1/	...	0.4	0.4	0.6	0.8	2.0	3.4	0.7
Total	3.7	2.3	3.0	3.8	6.6	20.1	33.9	27.3

Source: Central Bank of Iceland
1/ The OTC market is an unregulated equity market.

market has grown rapidly in 1996-98 in line with the strength of domestic output. The growth also led to increased turnover on the secondary market and higher prices.

141. The **secondary equity market** does not have a very long tradition in Iceland. Limited liability companies have existed for many years, but they often obtained new share capital through rights issues. Underdeveloped financial markets and a low level of primary issuance are partly to blame. In some cases, secondary market trading has been restricted by company resolutions. Equities were first listed on the Iceland Stock Exchange in 1990, but no equity trades took place until the following year. As a result many companies began the listing process in 1992, with an average of six new listings per year from 1992 to 1996. At year-end 1996 a total of 32 companies had been listed, but 1997 provided a big boost, as 19 more companies were listed in one year. By the end of 1998, 67 companies listed their shares on the Exchange with a current market capitalization of around 230 billion krónur (39 percent of GDP).

142. Some trading also takes place outside the ISE. Many small firms had problems raising equity capital due to the prohibitively high costs of listing on the ISE. In 1992, the largest brokers in Iceland started operating an **over-the-counter (OTC) market** for non-listed shares, and the Exchange allowed its members to use the trading and information system for trading in this market. Some companies have recently moved from the OTC market to the Stock Exchange.
The new Business Venture Fund is expected to assist in the early stages of business development of small and medium sized firms.

143. New legislation, adopted in April 1998, requires the **Icelandic Stock Exchange** to be converted into a limited liability company and abolishes its monopoly on exchange activities. At the same time, the legislation permits the Exchange to offer new services such as trading systems for electricity and fishing quotas. Given the small size of the Icelandic financial market, the emergence of local competition to the ISE seems remote. Members of the Exchange include the Central Bank, all the commercial banks and securities houses and some savings banks. Securities listed on the exchange include stocks, government bonds, notes and bills and various private bond issues, primarily by credit institutions. There is no Securities and Exchange Commission, so the regulatory aspects are divided between the Ministry of Commerce, the Financial Supervisory Authority and licenced securities exchanges or regulated securities markets. The Iceland Stock Exchange has issued rules on membership, listings of securities, disclosure, the trading and system, as well as a schedule of charges. Turnover on the exchange has risen rapidly in recent years. At the end of 1998, the market capitalization of listed securities was about 600 billion krónur, equivalent to 67 percent of GDP. Of this amount, bonds comprised about 60 percent and equities 35 percent.

E. Macroeconomic Effects of Liberalization

144. The previous sections have described the many developments and reforms that have taken place in Iceland's financial sector over the past several years. This concluding section examines how various aspects of economic behavior and macroeconomic control have been affected by these changes, and what risks lie ahead for the future.

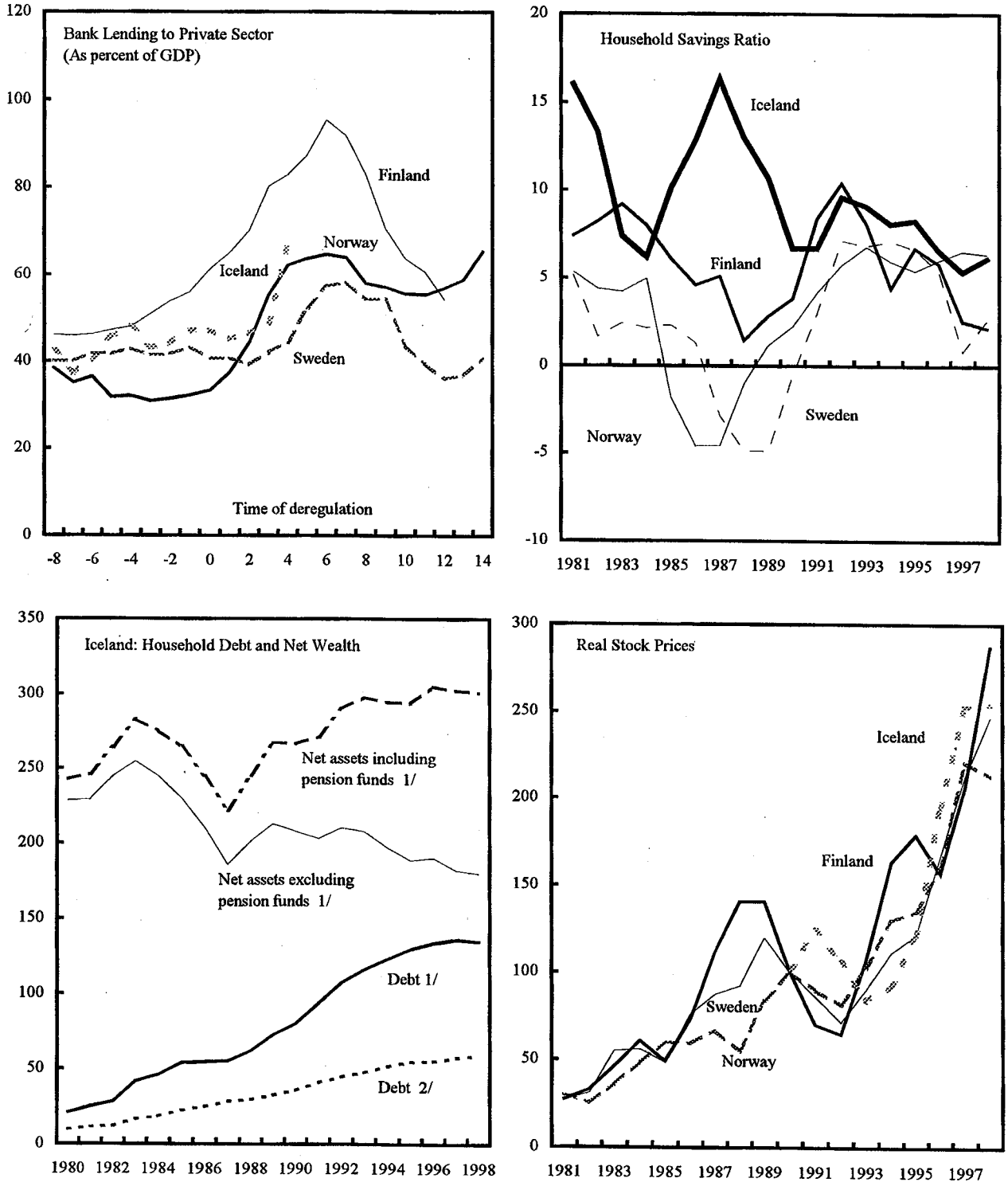
Economic behavior following liberalization

145. Household behavior in Iceland over the past two decades has been characterized by declining saving ratios and an accumulation of household debt (Figure 13). One explanation for this may be the relaxation of borrowing constraints following financial deregulation. Another explanation may be that households borrow for current consumption when their expected future incomes rise. An upward revision to income expectations could occur when the government engages in credible policies to increase growth, reduce inflation or other economic distortions. A stable economic environment can also reduce the need for precautionary savings. Another explanation could be that households consume more as their wealth increases. Indeed, total net household wealth has increased over the period. However, the rise can be attributed to a sharp increase in pension fund assets, since net wealth excluding pensions has fallen steadily. Moreover, the ratio of debt to fixed assets has risen. Some features of the tax system, such as mortgage interest rebate schemes, may encourage the accumulation of debt.

146. In the event, these recent trends are somewhat worrisome: households have committed themselves to an increased level of debt service and cannot expect to rely on pension fund assets, which are generally illiquid until retirement. Other assets, such as equity, are subject to price declines that can quickly erode net wealth. Thus households have become more vulnerable to income shocks in meeting their obligations. As discussed earlier, there are some indications that the buildup in household debt obligations includes credit from the banking system in foreign currency or foreign currency linked terms. The expansion of household debt has been used in large part to finance purchases of new automobiles and durable goods, the stock of which had deteriorated during the recession of the early 1990s. Consequently, Iceland's current account deficit has widened to nearly 6 percent of GDP in 1998, only partly reflecting imports of investment goods.

147. The **behavior of the private sector** as whole parallels that of households. Capital account liberalization and financial deregulation has been followed by an upswing in economic activity over the last 3 years, and in 1998 output is estimated to have been above potential by about 2 percent. Investment grew briskly by around 23 percent in constant prices in 1998. Although the share of lending to firms contracted as the share to households grew, the growth rate of lending from the banking system to firms was over 30 percent in 1998. The upswing has also been accompanied by a rapid rise in bank lending which has outstripped the increase in domestic deposits, as discussed in earlier sections. Much of the new lending has been

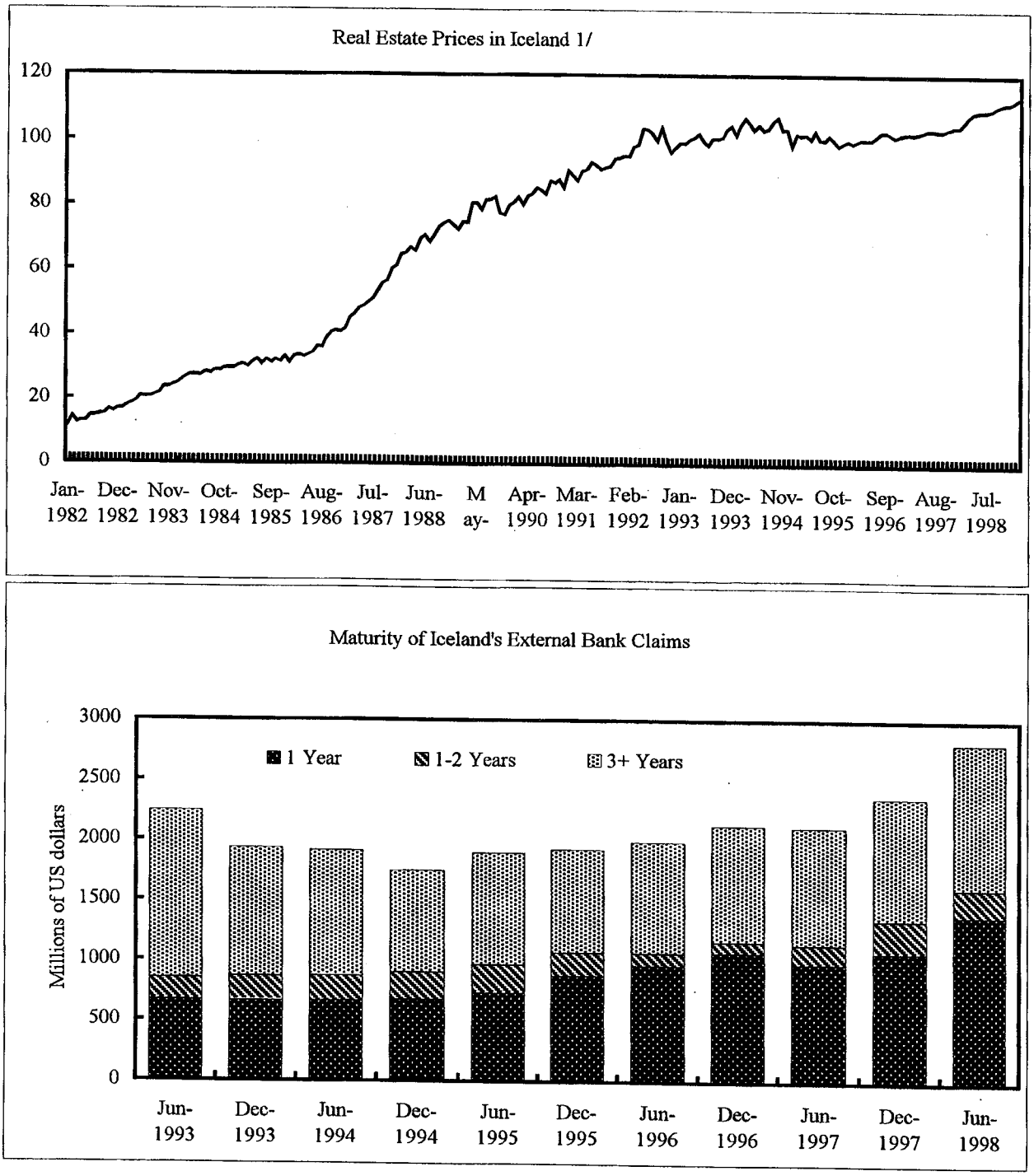
Figure 13. Iceland: Financial Sector Indicators



Source: Central Bank of Iceland; International Monetary Fund, *World Economic Outlook*, and *International Financial Statistics*.

1/ As a percentage of household disposable income.
2/ As a percentage of total fixed assets.

Figure 13 (continued). Iceland: Financial Sector Indicators



Sources: National authorities; and Bank for International Settlements.

1/ The real estate price series splices an index of apartment prices in the Reykjavik area prior to Jan. 1996 together with a more general index that includes larger dwellings starting in Jan. 1996. This may introduce a bias since the fall in the price of larger dwellings will not be fully reflected in the index, whereas the recent increases will be.

financed by increases in banks' liabilities to nonresidents. According to BIS data, external debt of Iceland's banking system and private sector have risen in the past few years, while public sector external debt fell.

148. In the three Nordic countries of Norway, Sweden, and Finland, economic behavior followed a similar pattern after financial deregulation. Households reduced their savings and borrowed aggressively, partly to finance purchases of consumer durables. This was set in an environment of low and declining unemployment and led to large current account deficits. Similar economic behavior has also been observed in other countries where short-term external debt has been used to finance a consumption and import boom. Positive terms of trade shocks also contributed to strong domestic demand growth in the Nordic countries during their boom period, and have occurred in Iceland recently as well. The bank lending boom in Iceland also mirrors developments in Norway, Sweden, and Finland prior to the Nordic banking crisis.

149. However, some elements of the typical post-liberalization pattern do not yet seem to be present. Many countries, including the Nordic countries (IMF Occasional Paper 161), experienced booms in stock and real estate markets. In Iceland, the exposure of banks to real estate has actually declined slightly over the past few years as a percent of total loans (although this may be due to a stronger competitive position of the government housing funds for mortgage financing). Real estate prices have been fairly stable over the past few years, and have only picked up somewhat in recent months. Icelandic stock prices have risen strongly in the past few years, but the increases have been in line with stock price movements in other Nordic economies.

Sequencing of reforms

150. It is generally agreed that capital account liberalization, especially of short-term inward capital flows should come after liberalization and reform of the domestic financial system. Timing is also important: liberalization can contribute to instability if it occurs at a time when the banking system is weak, or when there are significant macroeconomic imbalances or economic distortions. Given the macroeconomic momentum that often follows liberalization, policy-makers must respond quickly or preemptively to developments; otherwise, financial stability may be compromised. For example, deregulation in some of the Nordic countries was followed by a strong macroeconomic expansion. These conditions, combined with weak banking supervision and delayed policy responses led to excessive lending, followed by a banking crisis triggered when macroeconomic conditions deteriorated.

151. In Iceland, the main initiatives to liberalize financial markets and the capital account have occurred within a few years of each other, and some financial sector initiatives such as privatization of state-owned banks have not yet been completed. Moreover, responsibility for supervising the financial system has been transferred from the Bank Inspectorate to the newly established Financial Supervisory Authority. Thus, there are some elements of financial reform that have not preceeded the removal of all capital flow restrictions.

152. Yet, Iceland has not experienced destabilizing inflows of portfolio capital following capital account liberalization. The prospects for these in the near future are unlikely due to the small size of and relative unfamiliarity with Iceland's financial markets. Iceland has attracted considerable foreign direct investment, mostly in energy intensive sectors. As described above, however, external debt intermediated through the banking system has risen sharply and domestic demand is growing at a frenetic pace. The burden of quelling economic activity has fallen primarily on monetary policy and the sequence of interest rate increases have widened the interest rate differential with abroad, thus increasing the attractiveness of external debt as a financing source.

Monetary policy transmission

153. This section discusses the ways in which monetary policy transmission may have been affected by financial liberalization. There are **three main channels of monetary policy transmission**: (i) the bank lending channel, (ii) the interest rate or balance sheet channel, and (iii) the exchange rate channel. Monetary policy can affect the supply of bank credit through open market operations, changes in reserve requirements, and changes in interest rates. Changes in the supply of bank credit and the level of real lending rates will impact investment and consumption decisions that rely on bank credit. The second channel relates changes in policy interest rates to changes in interest rates along the entire maturity spectrum and also typically affect the prices of other real and financial assets. These changes in interest rates also affect private consumption and investment and in turn national output. In addition, changes in asset prices can impact investment and consumption through wealth or balance sheet effects. Finally, changes in short term interest rates can lead to capital flows that alter the exchange rate. Exchange rate movements then affect the import component of the domestic price level and also impact aggregate demand by changing the volume of imports and exports.

154. Monetary policy transmission can be affected in different ways following financial liberalization. Financial liberalization could be expected to weaken transmission through the **bank lending channel**, but strengthen it through the **balance sheet channel**. Monetary policy conducted through open market operations affects the availability of bank credit. However, financial liberalization provides firms with alternative sources of funding. As the availability of bank credit becomes less binding than in the past, open market operations may not be as effective in controlling the expansion of economic activity. On the other hand, financial liberalization also reduces credit constraints of firms and households, frequently leading to greater leverage. The debt servicing costs of leveraged firms and indebted households become more responsive to changes in interest rates, especially if loans are contracted at adjustable interest rates. In addition, the wealth effects of changes in interest rates become more important, especially since prices of assets used as collateral for loans fluctuate in response to interest rates.

155. The **exchange rate channel** can also strengthen the transmission mechanism provided that the central bank does not intervene to prevent appreciation. Liberalization of capital flows leads to greater interest elasticity of the exchange rate. In this case, an increase in interest rates would lead to upward pressure on the exchange rate, which then reduces the foreign component of consumer prices and contracts domestic output. On the other hand, if exchange rate appreciation is resisted by unsterilized official intervention, the monetary base would expand in concert with higher net foreign assets. In addition, an appreciation of the exchange rate in response to higher interest rates could reduce the debt servicing costs of foreign currency-denominated debt, allowing an expansion of output due to the increased availability of internal finance from retained profits.

156. In Iceland, financial sector reforms have indeed led to the development of alternative sources of financing, including marketable securities, foreign direct investment, and foreign debt. These would be expected to reduce the effectiveness of monetary policy from open market operations. On the other hand, households and firms in Iceland have become more indebted over the past several years. The ratio of household debt to disposable income and to fixed assets has increased sharply. This development raises the sensitivity of these sectors to interest rate changes. This is particularly relevant since more than half of borrowing in Iceland is contracted at flexible interest rates. The use of inflation indexed loans—an important feature of the Icelandic financial system in the past—may have an ambiguous effect on real interest rate sensitivity. The extent of indexation in Iceland has declined substantially, however, as a low inflation environment has prevailed over the past several years.

157. The Central Bank of Iceland has produced a number of econometric studies on **interest rate determination** in Iceland, which are summarized in the Central Bank's 1997 Autumn Statement. According to this research, the exchange rate channel is very effective in Iceland and has become more so since capital account liberalization in 1995. The short-term interest rate differential has a significant impact on capital flows, which in turn have a significant impact on the exchange rate. Research confirms a strong relationship between the exchange rate and domestic inflation. Moreover, an increase in the nominal exchange rate leads to an increase in the real exchange rate, which subsequently lowers the demand for domestically produced goods (via the substitution of imports) and reduces the demand for labor. The econometric studies also indicate that there has been a shift in interest rate determination in response to financial market development and reforms. During the formative years of the domestic financial system, Central Bank policy had a greater focus on long-term bond yields, which in turn had a pivotal impact on bank rates and short-term money market rates. However, the Central Bank has ceased trading in long-term bonds, using short-term interest rates as the monetary policy instrument. Consequently, and in conjunction with the rapid development of the money market, short-term interest rates now play the leading role in the transmission mechanism. Housing bonds appear to have replaced government bonds as the trend setter for long-term interest rates.

International Convergence in Asset Returns

158. Economic theory dictates that increased openness of a country's capital account would be accompanied by an increase in the correlation of interest rate and asset price movements since in equilibrium the risk-adjusted expected returns on all freely tradeable assets should be equalized. Empirical estimation by the Central Bank of Iceland shows that there is a significant relationship between foreign short-term interest rates, especially of the U.S., and short-term krónur interest rates. The relationship has strengthened considerably after the liberalization of short-term capital movements in the beginning of 1995.

159. Staff estimations show that there is also a significant relationship between the price changes of the U.S's S&P500 stock price index and Iceland's ICEX all-share stock price index. In particular, changes in the S&P500 index Granger cause changes in the ICEX index. This result is very robust to the number of lags used in the Granger causation procedure. However, the results do not indicate increased elasticity to the S&P500 after 1995 compared to the prior years.

Impact of financial reforms on long-run growth

160. Financial reforms can enhance growth by three main routes: (i) increasing savings, (ii) increasing the proportion of savings channelled to investment though improved intermediation, or (iii) improving resource allocation.

161. Financial liberalization in Iceland has heretofore been accompanied by reduced private **savings** as discussed above. However, Iceland's increased public savings since 1995 has helped offset this trend. The rise of mutual funds and pension funds can provide a cost-effective mechanism for channelling individual savings into equity investments and may also increase savings by providing access to assets with higher expected returns. Government privatization efforts may help increase savings also. Indeed, recent public offerings of shares of government owned commercial and investment banks kindled substantial public interest. In addition to financial reforms, recent fiscal measures may increase the available savings that can be channelled to investment and thereby increase growth. A new fully funded public pension system has been introduced (Chapter VI) and some of the large fiscal surpluses (on a cash basis) are expected to shore up the old pension fund. Also, the government has increased the percent of personal income that will exempted from taxes if contributed to a pension fund. These measures will raise the importance of pension and mutual funds as alternative sources of funding and contribute to savings and growth.

162. Financial liberalization can reduce **intermediation costs** in a number of ways. The rise of institutional investors and various types of marketable securities may, as noted above, provide banks with incentives to reduce costs and thereby reduce the interest rate spread. Indeed, the average lending-deposit interest rate spread has declined by over one percent since 1995. The reduction in the spread, accompanied by lower bank operating costs, reduces the

proportion of wasted resources that could have been used to finance investment and growth. Intermediation can also benefit from the sharp recent reduction in reserve requirements in Iceland, from greater financial innovation, and from the broader range of available financial instruments. The aggregation of idiosyncratic risks provided by mutual funds and pension funds can reduce the need to hold unproductive liquid balances.

163. Resource allocation could improve from the discipline imposed by creditors. For example, the rise of large institutional shareholders can influence corporate managers to maximize wealth and reduce costs. Over time, deregulated financial institutions can contribute to improved corporate performance by learning to screen investment projects, assess collateral, and monitor projects. On the other hand, increased competition in the financial markets in some countries following financial liberalization has sometimes led to competition for deposits through higher deposit rates that could only be supported by riskier lending activity. Often the lending was directed to unproductive projects or to property markets and contributed to speculative bubbles. In subsequent years, there have been large fiscal costs required to bailout the banking system. Moreover, the rise in provisions for bad loans and weak bank balance sheets reduced available credit for a few years. Resource allocation may have improved due to fiscal consolidation in Iceland over the past several years. This reduced the government's absorption of national savings, providing firms with greater access to credit, and thereby increasing the investment ratio. However, the proportion of lending to firms has actually declined as bank credit to households has risen.

Financial reforms and cyclical fluctuations

164. How have financial sector reforms affected the economy's vulnerability to shocks? There are many opposing factors, but a few main points can be mentioned:

- The trend toward greater private indebtedness increases the sensitivity of the economy to negative shocks. On the other hand, the public sector has been reducing its debt, thereby reducing the impact of interest rate changes on interest expenditures.

- The stability of the banking system is an important element of the economy's overall vulnerability to shocks. Indicators of banking soundness have been discussed in an earlier section. While the evidence is mixed, on balance the indicators tend to suggest an increase in the vulnerability of the banking sector to shocks.

- As new financial institutions and new funding sources grow in relation to the banking sector, the trend could reduce the potential for a problem in one bank to paralyze the financial system. However, as banks and individuals increase their ownership of financial assets, movements in assets prices could have greater wealth effects that exacerbate economic downturns. As the derivative market, which is still in its infancy, develops, it will provide the ability to hedge against shocks, but also provides an outlet for speculative behavior.

- The development of financial markets may help diversify the economy by providing access to alternative forms of financial intermediation, and especially access to risk capital, which may foster the growth of new industries.

- The increased correlation of Icelandic interest rates with international rates since the opening of the capital account will likely increase the transmission of some international economic shocks to Iceland.

- To the extent that the transmission of monetary policy has been strengthened by liberalization, control of macroeconomic fluctuations may be enhanced.

REFERENCES

Andersen, Palle S. And William R. White, 1996, "The Macroeconomic Effects of Financial Sector Reform: An Overview of Industrial Countries," in *Macroeconomic Policies and Structural Reform*, Organization for Economic Cooperation and Development, Paris, pp. 59-97.

The Central Bank of Iceland, Autumn Statement 1998.

The Central Bank of Iceland, 1997, "Interest Rate Determination and Interest Rate Differentials", Autumn Statement 1997.

"Compendium of the Icelandic Financial Market Legislation," 1997, Ministries of Industry and Commerce.

Corsetti, G, P. Pesenti and N. Roubini, 1998b. "Paper Tigers? A Model of the Asian Crisis", mimeo, NYU.

"Deregulation of the Financial Sector", in *OECD Economic Surveys, Iceland, 1998*, pp.56-75.

Drees, Burkhard, and Ceyla Pazarbaşioğlu, 1998, "The Nordic Banking Crises: Pitfalls in Financial Liberalization?," Occasional Paper 161, International Monetary Fund.

Economic Statistics Quarterly, 1999, Central Bank of Iceland.

The Economy of Iceland, Autumn 1998, Central Bank of Iceland.

Gudnason, Eirikur, 1996, "The Icelandic financial system", in *Changing Financial Systems in Small Open Economies*, BIS Policy Papers No. 1, Basle, Switzerland, pp. 62-90.

Hardy, Daniel C. and Ceyla Pazarbasioglu, 1998. "Leading Indicators of Banking Crises: Was Asia Different", IMF Working Paper, WP/98/91.

Malkämaki, Markku, and Jukka Vesala, 1996, "Finnish Financial Markets: Major Trends and International Comparisons," Bank of Finland Bulletin, Special Issue, (Helsinki: Bank of Finland), pp. 5-21.

Pétursson, Thórarinn G., 1995, "A Time Series Model of Real Interest Rates", (in Icelandic), unpublished manuscript, Central Bank of Iceland, Economics Department.

Pétursson, Thórarinn G., 1996a, "Interest Rates and the Transmission Mechanism in Iceland", unpublished manuscript, Central Bank of Iceland, Economics Department.

Pétursson, Thórarinn G., 1996b, "Links Between Domestic and Foreign Short Term Interest Rates", unpublished manuscript, Central Bank of Iceland, Economics Department.

Pétursson, Thórarinn G., 1998a, "A Time Series Study of Real Interest Rates-New Results with New Data", (in Icelandic), unpublished manuscript, Central Bank of Iceland, Economics Department.

Pétursson, Thórarinn G., 1998b, "Explaining the Term Structure: The Expectation Hypothesis and Time Varying Term Premia", IoES Working Paper Series, Department of Economics, University of Iceland, no. W98:06.

Radelet, S. and Jeffrey Sachs, 1998, "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects", mimeo, Harvard Institute for International Development.

Sachs, Jeffrey, Aaron Tornell, and Andres Velasco, 1996. "Financial Crises in Emerging Markets: The Lessons of 1995", Brookings Papers on Economic Activity No. 1, pp. 147-217.

"A Selection of Rules and Regulations in the Icelandic Financial Market", 1997, Central Bank of Iceland.

Starck, Christian, 1992, "Centralbankens sjalvstandighet – Argument och internationella erfarenheter (The independence of the central bank – Some arguments and international experience)". Ekonomiska – Samfundets – Tidskrift, 45(2), pp. 83–95.

Swinburne, Mark and Marta Castello-Branco, 1991, "Central bank independence: Issues and experience". IMF Working Paper 91/58.

Legal and Regulatory Framework for Banking Supervision

Questions	Official Answer/Description
1. Supervisory Agency	
1.1. Which agency acts as the banking supervisory authority?	The Financial Supervisory Authority (FSA). FSA is a new institution which began its operation on 1 Jan. 1999 in accordance with law on official financial operation no. 87/1998. FSA takes over the function of the Bank Inspectorate of the Central Bank of Iceland and the Insurance Supervisory Authority. FSA is an independent state institution that defers to a special Board.
1.2. Does the banking supervision authority have full legal, budgetary and de facto autonomy in banking supervision?	Yes. No aspects of the supervisory authority is considered to be in lack of independence or under undue political pressure.
1.3. What is the number of professional supervisory staff?	8, covering banks, other credit institutions, leasing companies, mutual funds and the securities market (excluding professionals working at supervision of insurance activities and pension funds).
1.4. Can the supervisory agency autonomously issue prudential regulations?	Yes. In some cases the Ministry of Commerce is authorized according to law to issue some prudential regulations.
1.5. If not, which agency must give the approval.	See answer to 1.4
1.6. Is legal immunity provided to supervision staff against prosecution or civil lawsuits against acts legitimately performed in the course of their duties?	There are no specific provisions exempting the supervision staff or the supervisory authority as such from lawsuits against them.
2. Bank Licensing	
2.1. Does the supervisory agency have exclusive bank licensing authority?	No. The Ministry of Commerce grants operating licenses to banks after seeking a statement concerning the application in question from FSA.
2.2. How many licenses have been issued during the last five years?	In the case of commercial banks and savings banks no new licenses have been granted except licenses to the two commercial banks which took over the operations of the two state-owned banks Landsbanki Islands and Bunadarbanki Islands. In the case of credit institutions other than commercial banks and savings banks, only 2 new licenses have been issued, i.e. Kaupthing hf. and FBA hf.
2.3. How many licensing applications have been rejected during the last five years?	zero
2.4. How many licenses have been withdrawn during the last five years?	In the case of commercial banks and savings banks, 5 savings banks have ceased operation. In all cases they have been merged with other savings banks. In the case of credit institutions other than commercial banks and savings banks, 5 credit funds have ceased operations, 3 of which merged to FBA hf. and 1 merged to Islandsbanki hf.
2.5. Total assets of the banks of which licenses have been withdrawn?	Total assets of the 5 savings banks mentioned in 2.4 were 1 billion kr. Total assets of the 5 credit funds mentioned in 2.4. were 61 billion kr.
2.6. Is a licensing manual used?	The Ministry of Commerce grants operating licenses as mentioned in answer to question 2.1. Article 4, paragraphs 2 and 3 of Act on Commercial Banks and Savings Banks No. 113/1996, can be considered as a guideline for application for operating licenses. Other formal guidelines are not in place.

Questions	Official Answer/Description
3. Capital and Capital Adequacy	
3.1. What is the minimum capital required to obtain a banking license?	400 million kr. or equivalent to 5.2 million Euro. For savings banks the minimum is 80 million kr. or equivalent to 1.0 million Euro.
3.2. What is the risk-weighted capital adequacy ratio?	8%
3.3. Is the system of risk-weights consistent with the Basle recommendations?	Yes
3.4. If applicable: what is the minimum ratio of capital over total non-risk weighted assets?	Not applied
3.5. Have capital requirements against market risk been introduced?	Yes
3.6. Are capital adequacy requirements imposed on off-balance sheet risks?	Yes
4. Liquidity	
4.1. What is the required minimum ratio between demand liabilities and highly liquid assets?	No minimum ratio required.
4.2. What is the required minimum ratio between total liabilities (minus shareholders equity) and total liquid assets?	No minimum ratio required.
5. Risk Diversification	
5.1. What individual and aggregate limits are applied for a single borrower (or a connected group of borrowers) (as a % of capital)?	25% of own funds. Temporarily the maximum ratio has been 40% and will be 35% during the year 2000 and 30% during the year 2001. Own funds in this connection are defined the same as used in calculation of the Capital Adequacy Ratio.
5.2. Are limits applied to lending to economic sectors or geographical areas?	No
6. Lending to related parties and insiders	
6.1. What are the limits on lending to related parties and/or insiders (as a % of capital)?	No limits are issued by the supervisory authority or other competent authorities. Article 47, paragraph 1, of Act on Commercial Banks and Savings Banks No. 113/1996, gives guidelines regarding loans or guarantees granted to bank managers. In other respects, dealings between the employees and the bank in question shall be subject to rules set by the board of directors of the bank cf. Article 47, paragraph 2, of the same Act.
6.2. Are commercially based lending and collection policies applied to such loans?	Lending and collection policies are considered by FSA to be commercially based.
7. Foreign Exchange	
7.1. What limits are imposed on open positions in individual foreign currencies?	15% of own funds at the beginning of the year for individual foreign currencies except 20% for US dollars cf. rules no. 421/1997 issued by the Central Bank of Iceland. Own funds in this connection are defined the same as used in calculation of the Capital Adequacy Ratio.
7.2. What aggregate limits are imposed for the open position in all currencies?	30% of own funds.
7.3. Is the net aggregate position, gross aggregate, or shorthand method used to calculate the overall position?	The net aggregate position method
7.4. Are off-balance sheet items included in the calculation of the open position?	Yes
7.5. Are capital adequacy requirements imposed for open foreign exchange positions?	Yes

Questions	Official Answer/Description
8. Loan Review, Classification and Provisioning	
8.1. How frequently are banks obliged to review asset quality?	Semi annually. Annually for banks with less than 2.0 billion in total assets.
8.2. What asset quality criteria are applied?	According to Appendix I to Rules on the Annual Accounts of Banks and Other Credit Institutions No. 554/1994 each bank shall with a view to current rules and generally accepted accounting principles, when preparing its annual accounts and interim financial statement, assess the need for provisions to cover losses on loans and other borrowers' commitments and record the necessary entry into the allowance account for credit losses in order to offset probable credit losses of the bank as at the balance sheet date. Entry to the allowance account for credit losses shall comprise *specific and general provisions*. *Specific provisions* are provisions made in order to offset losses on borrowers' commitments which, at the balance sheet date, are deemed to be at particular risk due to substantial or long-standing defaults, moratorium, bankruptcy or other circumstances, such as when the borrowers' solvency or ability to pay has suffered a considerable decrease. When a borrower has failed to meet due installments and interest payments on loans or other contractual obligations for a period of 6 months or more, his commitments are deemed to be at a particular risk. When a borrower's commitments are at a particular risk, the need for the following shall be assessed: a) ceasing to credit interest and commissions within the account period and c) entering specific provisions to the allowance account for credit losses shall be assessed with a view to the total commitments of the borrowers and the estimated value of security held (including collaterals) shall take aim of the expected sales value of the asset in question, less selling expenses. If the sales value of an asset cannot be determined, for example if no active market for it exists at that time, other means for assessing the value of the security held shall be sought, for example with a view to cash flow or estimated future market value of the asset. Here the cost of capital (calculated interest) of the bank shall also be taken into account. *General provisions* are provisions to offset probable losses on the balance sheet date, other than losses of borrowers' commitments deemed to be at a particular risk. Assessment of the general provisions shall take into account the lending risk of different industries and loan-groups, as well as that of risky commitments of individual borrowers which can, however, on the balance sheet date not be categorized as imposing a particular risk, cf. definition of specific provisions above. General provisions shall also be assessed in the light of the loan losses experience and prevailing economic conditions.
8.3. What provisioning percentages are applied to these classifications?	Not available.
8.4. Can the supervisory agency increase provisions when it deems necessary?	The Supervisory Authority has no formal authority to prescribe provisions, but it can make non-binding requests.
8.5. What percentage of "standard" assets must be held as a general reserve?	No specific provisioning percentage is prescribed.
8.6. How is collateral taken into account in classification and provisioning?	Collaterals are taken into account, cf. furthermore answer to questions 8.2.
8.7. How are off-balance sheet items classified and provided for?	Off-balance sheet items are included in borrowers' commitments which come into consideration when assessing the need to provision for eventual losses cf. furthermore answer to question 8.2
8.8. How is income from nonaccrual assets suspended?	See answer to question 8.2.
8.9. What criterion is used to place assets in "nonaccrual" status?	See answer to question 8.2

Legal and Regulatory Framework for Banking Supervision

Questions	Official Answer/Description
9. Reporting	
9.1. How frequently are banks required to submit prudential returns?	The frequency vary from monthly to quarterly, semi-annually and annually.
9.2. What "early warning" systems are used?	Various indicators are used for example: - Capital adequacy ratio. - Return on equity. - Loan losses provisions as percent of loans and guarantees. - Non-performing loans as percent of total loans. - Large exposures as percent of own funds. - Classification of loans by sectors as percent of total loans. - Liquid assets as percent of disposable resources. - Foreign assets and liabilities balance as percent of own funds. - Indexed assets and liabilities balance as percent of own funds. - The auditors reports to the board of directors of each bank.
9.3. How are the results of off-site reports and analyses communicated to management of the supervisory agency and with which frequency?	The processing of off-side reports and analyses are worked at in a close consultation with the director general and deputy director general of the FSA and serious results are discussed at meetings of the board of directors of FSA.
9.4. How many supervisory staff are engaged in off-site reporting and analysis?	3, covering banks, other credit institutions, leasing companies, mutual funds and the securities market (excluding professionals working at supervision of insurance activities and pension funds).
9.5. Is a manual for off-site analysis in place?	A draft manual is present.
10. On-site Inspections	
10.1. How frequently are individual banks subjected to on-site inspections (mandated and % examined annually)?	No mandated prescription for the frequency of on-site inspections is present. The average over the last 2 years is 62% (67% for the last 4 years).
10.2. How are inspection results and recommendations communicated to the management of the bank?	A written draft report on the results and recommendations is discussed with the management or the board of directors of the bank in question. A final written report is sent to both the management and the board of directors of the bank.
10.3. How are inspection results and recommendations communicated to supervisory management?	The processing of on-site reports and analyses are worked at in a close consultation with the director general and deputy director general of the FSA and serious results are discussed at meetings of the board of directors of FSA.
10.4. Is feedback or follow up on examination findings required?	The board of directors of the bank in question is required to react in a written manner to the results and recommendation of the FSA. Serious findings give reason for more frequent on-site inspections on behalf of FSA.
10.5. Are ad hoc, unscheduled inspections carried out?	Yes.
10.6. Is a manual for on-site inspections in place?	A draft manual is present.

Legal and Regulatory Framework for Banking Supervision

Questions	Official Answer/Description
11. Risk Management, Internal Audit, Internal Controls	
11.1. Are regulations on risk management, internal control and audit in place?	Yes for audit. Regulation on risk management and internal control is under preparation within FSA.
11.2. Are banks required to have internal manuals on credit, foreign exchange, and other market activities?	According to Article 39, paragraph 1, indent 5, the board of directors of a bank shall issue credit rules for the bank. The question of requiring internal manuals on credit, foreign exchange and other market activities will come under consideration when preparing the regulation mentioned under 11.1 above.
12. Accounting and Disclosure	
12.1. Are external audits of banks' annual financial statements obligatory?	Yes.
12.2. Are external audits of banks' selected periodic prudential returns obligatory?	No.
12.3. Does the appointment of a bank's external auditor require supervisory approval?	No.
12.4. Are internationally accepted accounting standards complied with?	The annual financial statements shall be in accordance with the Rules on the annual accounts of banks No. 554/1994, which are based on the corresponding EU-directive.
12.5. Is the publication of banks' balance sheet, profit and loss statement, notes to the accounts, and auditor's statement mandatory?	Yes.
12.6. Is the external auditor obliged to inform, on his/her own initiative, the supervisory agency of facts or circumstances that are relevant to effective supervision, or relevant to the auditor's ability to issue a "clean" opinion on the accounts?	Yes.
12.7. Are the prudential regulations applied on a consolidated basis?	Yes.
12.8. Do banks issue consolidated annual financial statements and prudential reports?	Yes.
12.9. Which organization is charged with setting accounting/auditing standards for banks?	The Financial Supervisory Authority.
13. Legal Framework	
13.1. Does the law on the supervisory agency/banking law have shortcomings that hinder effective supervision?	No shortcomings that specifically hinder supervision have been identified.
13.2. Does the law on the supervisory agency/banking law hinder supervisors' autonomy?	No.
13.3. Does the law oblige the supervisor to take action when specific prudential standards are breached?	Yes.
13.4. Do deficiencies in civil, company, or bankruptcy law hinder the conclusion of enforceable loan contracts, and/or their enforcement?	No deficiencies have been identified.
13.5. Do laws and regulations have an appeals clause against supervisory decisions?	According to Article 17 of the Act on official supervision of financial operations, No. 87/1998, the decisions of the financial supervisory authority may be referred to a special appeals committee. Furthermore, supervisory decisions can be put before the courts.
13.6. Are the laws and regulations effectively implemented?	Yes.

Legal and Regulatory Framework for Banking Supervision

Questions	Official Answer/Description
14. Deposit Protection	
14.1. Has a deposit protection system been introduced?	Yes, the Deposit Guarantee Fund of the Commercial Banks and the Deposit Guarantee Fund of the Savings Banks.
14.2. What categories of depositors are covered?	Each depositor is covered, with the following exceptions: - Commercial Banks, Savings Banks or Credit institutions other than Commercial Banks and Savings Banks. - Subsidiaries or parent companies of the above mentioned institutions.
14.3. What categories of deposits are covered?	All deposits are covered, with the following exceptions: - Deposits owned by other Commercial Banks, Savings Banks or Credit institutions other than Commercial Banks and Savings Banks. - Deposits owned by subsidiaries or parent companies of the above mentioned institutions. - Deposits connected to money laundering cases in which conviction has been passed.
14.4. What maximum amount or what percentage of eligible deposits is covered?	All deposits which are claimed and a Commercial Bank/Savings Bank is unable to repay are covered. Should the assets of the Deposit Guarantee Scheme not suffice to repay the total amount of guaranteed deposits of the relevant Commercial Bank/Savings Bank or its branch payment shall be made so that each depositor's claim up to 1.7 million kr. shall be repaid in full but claims in excess of that amount shall be repaid proportionally as the assets of the scheme allow.
14.5. Are claims of nonresidents covered?	Yes.
14.6. How is the deposit protection fund financed?	The total assets of the Deposit Guarantee Fund for Commercial Banks/Savings Bank shall be at least 1% of the average of guaranteed deposits of Commercial Banks/Savings Banks the previous year. Until that percentage is reached each Commercial Bank/Savings Bank shall pay to the respective Fund, no later than March 1 each year, 0.15% of the guaranteed deposits of the relevant bank the previous year.
14.7. Is the fund government-guaranteed?	The Deposit Guarantee Fund of Commercial Banks is an independent institution owned by the State. The Deposit Guarantee Fund of Savings Banks is a private self-owned institution. The Government guarantee is not specifically stated in the law.
14.8. Which agency administers the fund?	The Deposit Guarantee Fund of Commercial Banks is administered by a Board which is appointed by the Minister of Commerce. The Deposit Guarantee Fund of Savings Banks is administered by a Board partly elected by the savings banks and partly appointed by the Minister of Commerce.
14.9. Have depositors been compensated in amounts in excess of that covered by the deposit protection scheme?	No. No case has yet occurred.

Legal and Regulatory Framework for Banking Supervision

Questions	Official Answer/Description
15. Lender of Last Resort	
15.1. What lender of last resort liquidity facilities are available to solvent banks?	The Central Bank might provide a lender of last resort function in the case of solvent banks having serious liquidity problems. The Central Bank Act does not, however, explicitly give the Bank the legal obligation to act as a lender of last resort for the banking system. The Central Bank often supplies banks with short term credit if there is an overdraft on their settlement account in the morning when their account at the C.B. is settled for the previous business day. This is considered a standard practise of central banks rather than a last resort manoeuvre, although the facilities offered have prevented serious problems in some cases.
15.2. Is the interest rate charged for these facilities above, at or below the interbank rate?	The interest rate on overdrafts is the same as on daily loans, plus a penalty rate. The terms of other credit facilities offered by the Central Bank are not predetermined.
15.3. What maturities are available for central bank liquidity facilities?	These overdraft facilities are of a very short term nature.
15.4. What collateralization rules apply for central bank liquidity support? (describe)	The collateral has in all cases been either Treasury bonds, or securities with a Treasury guarantee.
15.5. Has liquidity support been provided by the central bank to the banking system during the past five years?	The liquidity shortages requiring the overdraft facilities have usually been of a very short term nature. There have not been other cases of real liquidity problems during the last five years.
16. Enforcement Measures and Bank Exit	
16.1. Can temporary management be imposed, suspending incumbent management?	No, but the Supervisory Authority can appoint a representative to work with the management and give guidance.
16.2. Can the supervisory agency suspend dividends by an undercapitalized bank?	No, not in a binding manner.
16.3. Can the supervisory agency impose a merger or a purchase and assumption transaction upon an undercapitalized bank? (yes/no)	No, not in a binding manner.
16.4. Can a merger or purchase and assumption transaction be imposed on unwilling minority shareholders?	Yes. According to the Act on Commercial Banks and Savings Banks, 2/3 of the shareholders, holding 2/3 of the shares, can decide upon a merger.
16.5. Which agency has the authority to withdraw a bank's license?	The Minister of Commerce upon recommendation from The Financial Supervisory Authority.
16.6. Which agency has the authority to liquidate a bank?	Liquidation requests would be submitted to a district court judge by the Minister of Commerce.
16.7. Which agency performs the actual liquidation?	A special attorney is appointed by the district court judge.
16.8. Is a bank in liquidation subject to normal banking supervision?	The formal supervision of the supervisory Authority ceases upon the withdrawal of the bank's license.
16.9. Do special rules apply to the bankruptcy of banks (not the general bankruptcy law)?	Special rules apply to the bankruptcy of banks but general bankruptcy laws would apply vis a vis.
16.10. Is a manual for taking actions against banks in place?	No.

VI. FISCAL DEVELOPMENTS AND POLICIES[1]

165. This chapter analyses recent fiscal developments, policies and issues. Section A describes Iceland's fiscal performance in recent years with an emphasis on policies and the budgetary outcome for 1998. Section B presents the 1999 budget bill. Recent modifications of the tax system are outlined in Section C. Finally, some other public sector policies are discussed in Section D.

A. Recent Fiscal Developments

Background

166. Iceland's recent fiscal performance has been generally favorable by international standards. Since 1991, the emphasis has been on containing public expenditures, correcting fiscal imbalances and reducing the government's involvement in the economy. Iceland's general government deficit averaged 3½ percent of GDP over 1990-1995, in line with the OECD average and well below the European Union average of 5 percent (Figure 14). In the most recent three years, the balance has improved further, resulting in a small surplus in 1998. This fiscal performance contrasts with the sharp deterioration in Iceland's public finances during the 1980s, which contributed to a rapid rise in net Treasury debt from about 5 percent of GDP in the mid-1980s up to 35 percent by 1993.

167. Fiscal consolidation tended to lag behind the authorities' objectives in the first half of the 1990s. The overshooting of the deficit was due in part to stagnating activity in the early 1990s. Growth in health and social security outlays was rapid and fiscal concessions were granted in connection with centrally negotiated wage agreements. Moreover, current transfers rose by over a percentage point from the late 1980s to around 8 percent of GDP in 1993-95, at the same time that unemployment peaked.

168. General government gross debt doubled from about 30 percent of GDP in 1987 to a peak of around 60 percent in 1995, reflecting persistent deficits and stagnating activity; the devaluations of 1992 and 1993 also substantially raised its foreign-currency–denominated component. Extensive recourse to foreign financing in 1994-95, consistent with the government's policy of maintaining low domestic interest rates at that time, contributed to raising its foreign component further, to 29 percent at the end of 1995, one half of the total outstanding debt.

169. In 1995, the new government made the strengthening of public finances one of its priorities and adopted an ambitious medium–term fiscal consolidation plan. At that time, modest prospects for growth, strong pressures for social expenditures, and high borrowing costs were contributing to a disquieting medium-term fiscal outlook.

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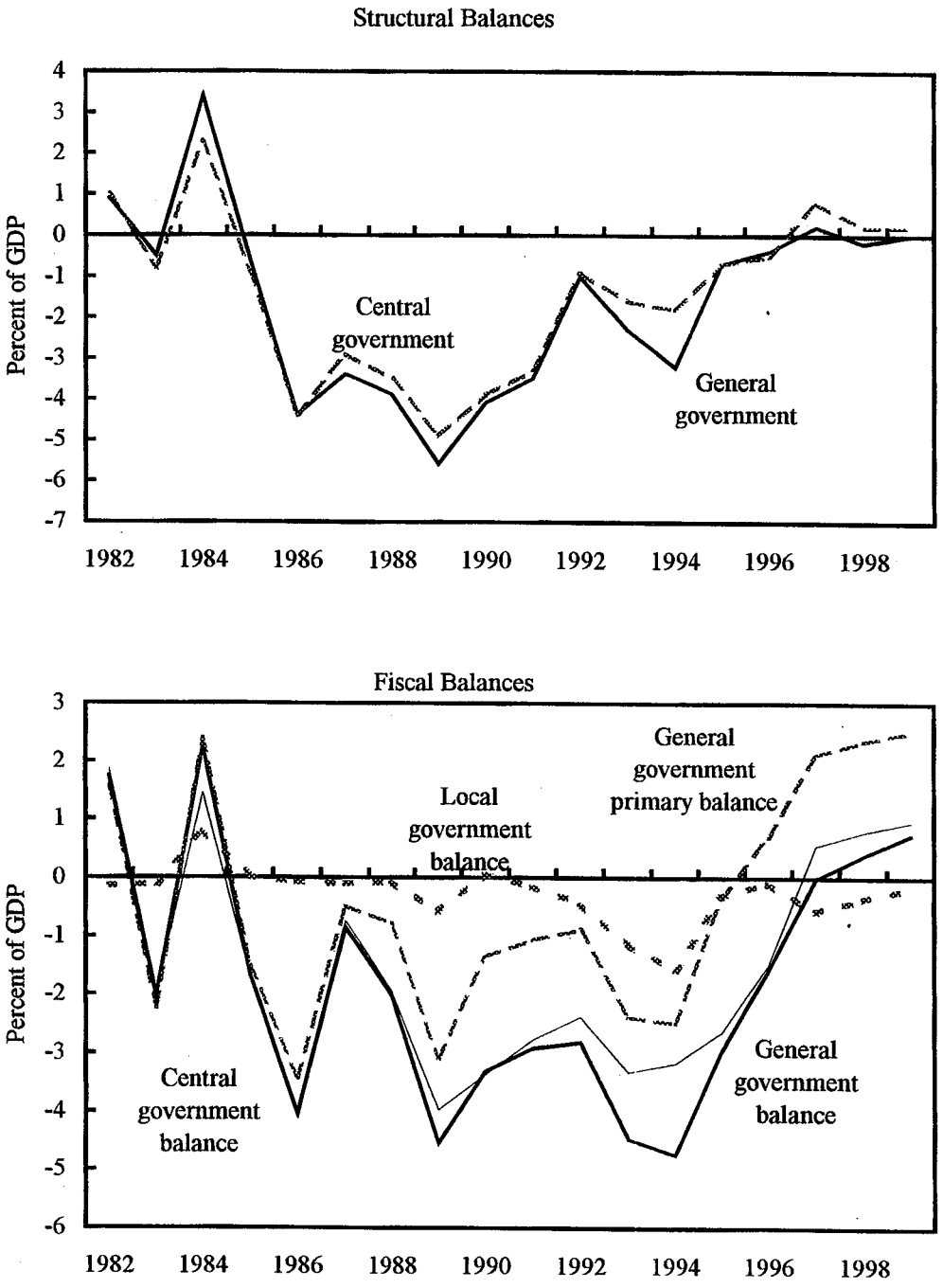
[1]Prepared by Valerie Cerra

Figure 14. Iceland: Fiscal Balances, 1982-1999



Source: National Economic Institute, and Central Bank of Iceland

170. A baseline scenario prepared by the Ministry of Finance on the basis of unchanged laws and regulations as of 1995 projected increased Treasury revenue deficits. The fiscal consolidation plan targeted a halving of the Treasury deficit in 1996, achieving a balanced budget in 1997 and a small surplus in later years. The plan emphasized expenditure restraint and structural changes, with various measures aimed at reducing transfer payments and capital expenditures in 1996, and plans to curb public consumption and transfers in 1997 and beyond. The plan was thus aiming at a reduction of Treasury expenditure by 3 percentage points of GDP from 1995 to 1999 (then projected at 24 percent of GDP), allowing a gradual decline of central government debt to 40 percent of GDP by the end of the century.[2]

171. This medium-term plan has been broadly achieved (Table 24). The deficit was reduced by more than half in 1996 (after adjusting for an early redemption of Treasury bonds that increased expenditure on a cash basis), and a small surplus was achieved by 1997. Central government debt has been reduced from a peak of 51 percent of GDP in 1995 to 39 percent of GDP in 1998.

172. Progress towards fiscal adjustment was mainly achieved through a reduction of the expenditure to GDP ratio (Table 25). As economic activity picked up, current transfers fell. In addition, there was a reduction in capital expenditures—which had been increased temporarily to stimulate activity during the downturn—and through cuts in net capital transfers. Subsidies declined steadily over the 1990s. The sharp reduction in public debt led to lower interest payments. Partly offsetting these declines in expenditure components to GDP, the ratio of public wages to GDP increased by 2 percent of GDP over the 1990s.

173. On the revenue side, the main development was the change in the tax structure—increasing the proportion of direct taxes (Figure 15). Indeed, in the first half of the 1990s, Iceland collected a much larger share of its tax revenue from domestic taxes on goods and services and from import duties compared to other OECD countries, and a correspondingly lower share from taxes on income, profits, capital gains, and social security (Table 26).

The budgetary outturn in 1998

Overall balances

174. Against the background of fiscal consolidation achieved in the prior two years, the Treasury Budget for 1998 targeted an increased surplus on a cash-basis reflecting a decline in the expenditure ratio by ¼ percent of GDP. Treasury finances improved in 1998, although by less than warranted by cyclical conditions. As part of an effort to sharpen government financial management, the accounting practices underlying the **budget presentation** have been revised. The 1998 budget consolidated some previously off-budget items and was

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[2]See Iceland—Recent Economic Developments 1997 (SM/97/22) for further details.

Table 24. Iceland: Treasury Finances, 1995-1999

	1995	1996	1997	1998			1999
				Budget		Estimate	Budget
				(cash)	(accrual)	(accrual)	(accrual)
				(In billions of ISK)			
Revenue	114.4	127.7	131.9	139.9	165.8	174.9	184.8
Tax revenue	106.0	119.5	122.9	129.7	149.4	158.5	166.0
Other revenue	8.4	8.2	9.0	10.2	16.4	16.4	18.8
Expenditure	123.3	139.7	130.7	137.0	165.7	177.7	182.4
Operating expenditure	48.1	52.3	49.3	53.4	63.6	74.8	76.7
Transfer payments	47.7	49.7	51.5	56.5	69.1	69.0	72.1
Interest payments	12.4	23.8	16.0	12.3	16.2	15.8	15.0
of which early redemption 1/	--	10.0	3.5	--	--	--	--
Maintenance	4.0	3.9	4.1	3.8	3.8	3.9	4.3
Capital expenditure	11.1	10.0	9.8	10.9	12.9	14.2	14.3
Revenue balance	-8.9	-12.0	1.2	2.9	0.1	-2.8	2.4
of which:							
Revenue balance excluding redemptions 1/	--	-2.0	4.7	--	--	--	--
Net borrowing requirement	18.6	12.7	0.6	-4.8	-4.8	-14.7	-16.7
Memorandum items:							
				(In percent of GDP)			
Revenue	25.3	26.4	24.9	24.9	29.5	29.7	29.7
Expenditure	27.3	28.8	24.7	24.4	29.5	30.2	29.3
Revenue balance	-2.0	-2.5	0.2	0.5	0.0	-0.5	0.4
Revenue balance excluding redemptions 1/	--	-0.4	0.9	--	--	--	--
Net borrowing requirement	4.1	2.6	0.1	-0.9	-0.9	-2.5	-2.7

Source: Ministry of Finance of Iceland.

1/ Additional interest costs, on a cash basis, due to the early redemption of Treasury bonds.

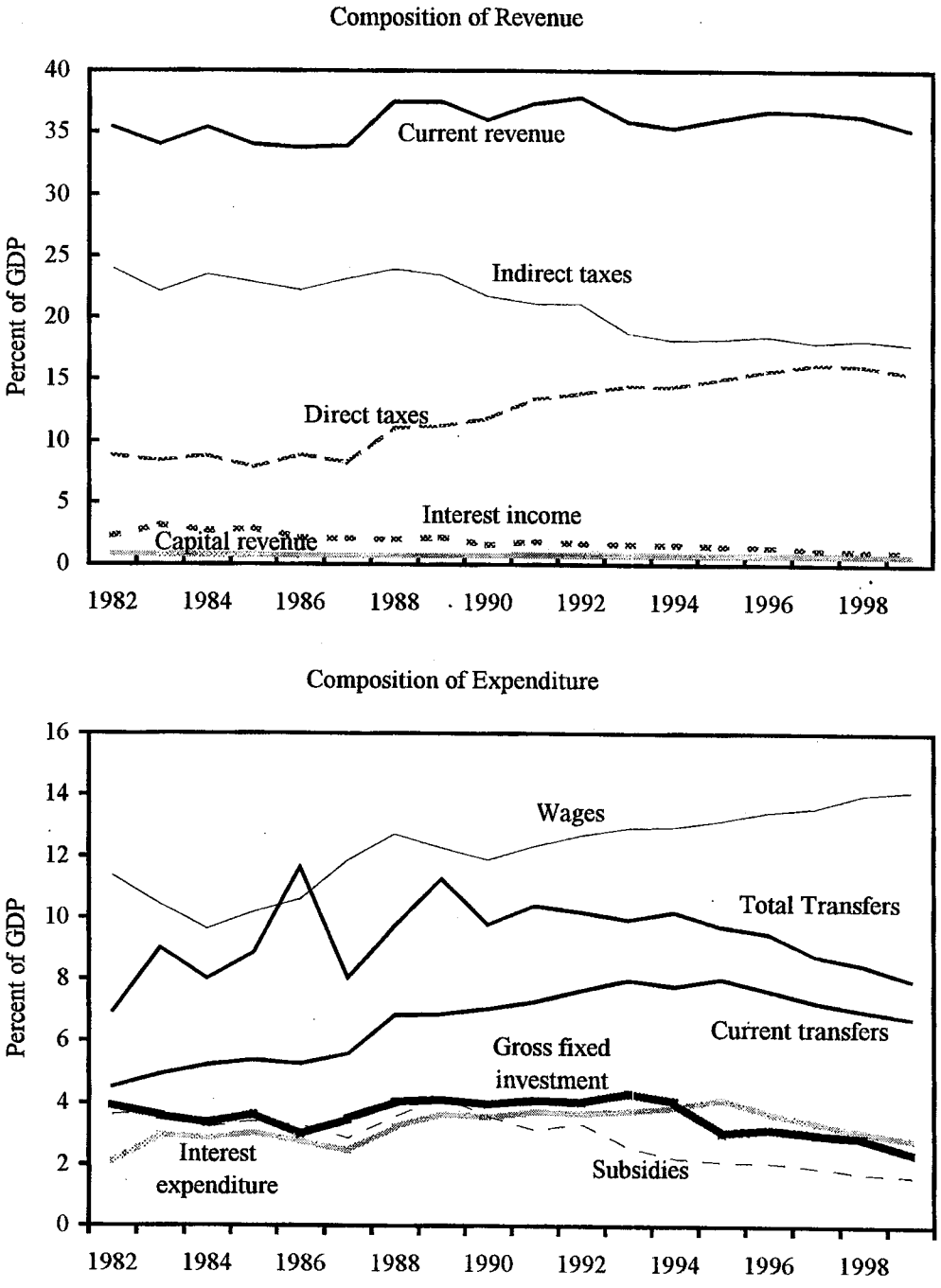
Table 25: General Government Finances 1988-1999

Percent of GDP; Accruals basis

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Prov. 1998	Forecast 1999
Current revenue	37.4	37.5	36.0	37.3	37.8	35.9	35.3	36.0	36.7	36.6	36.3	35.2
Direct taxes	11.1	11.2	11.8	13.4	13.9	14.5	14.4	15.1	15.7	16.2	16.1	15.5
Indirect taxes	23.9	23.4	21.7	21.1	21.1	18.7	18.2	18.2	18.5	17.9	18.2	17.8
Interest income	2.0	2.2	1.6	1.8	1.7	1.7	1.6	1.5	1.4	1.2	1.1	1.0
Other current income	0.5	0.7	0.9	0.9	1.2	1.0	1.1	1.2	1.1	1.1	0.8	0.8
Current expenditure	33.3	34.2	33.3	33.7	34.8	34.9	34.4	35.1	34.0	32.9	32.2	31.6
Public consumption	19.7	19.6	19.2	19.7	20.2	20.6	20.6	20.8	20.7	20.4	20.5	20.4
Wages	12.7	12.3	11.9	12.3	12.7	12.9	12.9	13.2	13.4	13.6	14.0	14.1
Consumption of fixed capital	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Other consumption	6.4	6.8	6.8	6.8	6.9	7.1	7.0	7.0	6.6	6.2	5.9	5.7
Interest expenditure	3.2	3.6	3.5	3.7	3.6	3.7	3.9	4.1	3.7	3.4	3.1	2.8
Subsidies	3.5	4.2	3.6	3.1	3.3	2.6	2.2	2.1	2.1	1.9	1.7	1.6
Current transfers	6.8	6.8	7.0	7.2	7.6	8.0	7.8	8.0	7.6	7.2	7.0	6.7
Current balance	4.2	3.2	2.7	3.5	3.0	1.0	0.9	1.0	2.6	3.7	4.0	3.6
Capital revenue	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
Capital transfers	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Consumption of fixed capital	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Capital expenditure	6.9	8.5	6.7	7.2	6.6	6.3	6.5	4.7	5.0	4.5	4.4	3.6
Gross fixed investment	4.0	4.1	3.9	4.1	4.0	4.3	4.1	3.0	3.2	3.0	2.9	2.4
Capital transfers	2.9	4.4	2.7	3.1	2.6	2.0	2.4	1.7	1.8	1.5	1.5	1.2
Capital balance	-6.2	-7.8	-6.0	-6.4	-5.8	-5.5	-5.7	-3.9	-4.2	-3.7	-3.6	-2.9
Financial balance	-2.0	-4.6	-3.3	-2.9	-2.8	-4.5	-4.7	-3.0	-1.6	0.0	0.4	0.7
Primary balance	-0.8	-3.1	-1.4	-1.1	-0.9	-2.4	-2.5	-0.3	0.7	2.1	2.4	2.5
Net increase in claims	1.8	0.3	0.1	1.5	-0.4	-0.5	0.4	1.4	0.6	0.1	-	-
Total lending	1.8	2.0	1.9	2.0	1.8	2.2	4.4	4.2	3.0	2.2	-	-
Total repay	1.1	2.5	2.0	1.4	0.8	1.7	2.4	1.9	3.1	1.8	-	-
Change in equity holdings	0.0	-0.2	0.1	0.1	-0.2	0.8	0.3	0.0	0.1	0.2	-	-
Other claims (net)	1.1	1.0	0.2	0.8	-1.2	-1.8	-1.8	-0.8	0.6	-0.6	-	-
Borrowing requirement	3.8	4.8	3.4	4.4	2.5	4.0	5.1	4.4	2.2	0.1	-	-
Net borrowing	2.3	4.1	4.2	3.0	4.5	4.3	5.2	4.7	2.4	0.0	-	-
Total borrowing	5.1	7.9	6.9	5.8	7.9	10.6	11.2	8.8	11.9	5.4	-	-
Total repay	2.7	3.8	2.7	2.8	3.3	6.3	6.0	4.1	9.6	5.5	-	-
Decrease in cash and bank depos	1.5	0.8	-0.7	1.5	-2.1	-0.3	-0.1	-0.2	-0.2	0.1	-	-
Memorandum items:												
Structural balance	-3.9	-5.6	-4.1	-3.5	-1.0	-2.3	-3.2	-0.7	-0.4	0.2	-0.2	0.0
Total revenue	38.2	38.2	36.7	38.0	38.6	36.7	36.1	36.8	37.5	37.4	37.0	35.9
Total expenditure	40.2	42.7	40.0	41.0	41.4	41.1	40.9	39.8	39.0	37.4	36.6	35.2

Sources: National Economic Institute, Central Bank of Iceland

Figure 15. Iceland: General Government Fiscal Composition



Source: National Economic Institute

Table 26. OECD Countries: Tax Structure, 1990-95

(In percent of total tax revenue)

	Sample Size	Total Revenue	Tax Revenue	Other Revenue	Taxes on Income, Profits, and Capital Gains			Social Security Taxes	Payroll Taxes	Domestic Taxes on Goods and Services			International Trade Taxes			Property Taxes
						of which:					of which:			of which:		
					Total	Individual	Corporate			Total	General sales, turnover or VAT	Excises	Total	Import duties	Export duties	
Australia	1990-95	112.3	100.0	12.3	71.5	53.8	16.7	0.0	1.6	22.9	10.7	11.9	3.8	3.7	0.0	0.1
Austria	1990-94	109.7	100.0	9.7	21.6	17.2	3.4	40.9	5.9	27.0	18.3	6.3	1.5	1.5	0.0	1.8
Belgium	1990-94	104.1	100.0	4.1	35.1	29.6	5.2	36.7	0.0	25.4	16.8	5.4	0.0	0.0	0.0	2.7
Canada	1990-94	113.0	100.0	13.0	56.6	47.8	7.8	20.0	0.0	20.4	14.1	5.7	3.0	3.0	0.0	0.0
Czech Republic	1993-95	108.2	100.0	8.2	18.0	1.3	16.7	41.1	0.0	34.4	21.5	11.9	4.2	4.2	0.0	0.5
Denmark	1990-95	118.3	100.0	18.3	44.7	36.1	4.5	4.6	1.0	46.7	29.0	10.9	0.1	0.1	0.0	2.5
Finland	1990-94	112.6	100.0	12.6	33.1	30.2	2.9	12.3	0.0	50.3	30.9	16.1	1.0	0.9	0.0	3.0
France	1990-95	107.8	100.0	7.8	18.9	14.2	4.7	47.2	1.4	29.7	20.5	6.8	0.0	0.0	0.0	2.2
Germany	1990-95	106.8	100.0	6.8	16.7	14.0	2.7	52.0	0.0	26.5	15.0	9.8	0.0	0.0	0.0	0.1
Greece	1990-94	108.8	100.0	8.8	30.3	16.0	8.1	7.2	0.0	65.1	38.9	24.2	0.1	0.1	0.0	6.3
Hungary	1990	118.4	100.0	18.4	0.0	6.6	14.6	34.6	0.2	37.1	16.8	11.6	6.9	5.6	1.3	0.1
Iceland	**1990-95**	**117.2**	**100.0**	**17.2**	**24.1**	**21.0**	**3.1**	**8.3**	**0.9**	**53.7**	**38.3**	**5.6**	**6.8**	**6.4**	**0.0**	**5.8**
Ireland	1990-94	106.9	100.0	6.9	40.8	33.2	7.5	15.6	1.6	33.1	20.8	9.6	6.8	6.8	0.0	2.1
Italy	1990-94	104.9	100.0	4.9	37.7	31.3	5.9	30.0	0.0	29.8	15.4	7.7	0.0	0.0	0.0	1.3
Japan	1990-93	115.6	100.0	15.6	52.6	32.0	20.6	22.7	0.0	16.8	8.0	7.5	1.4	1.2	0.0	4.3
Luxembourg	1990-94	112.1	100.0	12.1	34.6	22.7	10.8	28.7	0.0	27.3	15.5	10.7	0.0	0.0	0.0	7.6
Mexico	1990-94	110.1	100.0	10.1	0.0	...	...	19.2	0.7	56.5	22.0	11.8	7.7	7.6	0.0	0.0
Netherlands	1990-95	108.9	100.0	8.9	31.6	24.2	7.4	41.3	0.0	23.6	15.9	6.0	0.0	0.0	0.0	2.5
New Zealand	1990-95	114.0	100.0	14.0	64.3	50.1	9.8	0.0	1.6	30.7	20.9	7.5	2.4	2.3	0.0	1.0
Norway	1990-94	128.8	100.0	28.8	20.7	11.6	9.1	30.8	0.0	46.5	25.0	17.4	0.7	0.7	0.1	1.2
Poland	1994-95	111.8	100.0	11.8	0.0	22.3	8.6	27.6	0.8	31.2	19.5	11.5	9.1	9.1	0.0	0.0
Portugal	1990-94	114.6	100.0	14.6	27.6	19.0	8.1	28.5	0.0	39.6	20.7	15.1	0.7	0.7	0.0	0.4
Spain	1990-93	108.2	100.0	8.2	34.0	25.8	8.0	41.3	0.0	23.4	14.7	7.9	0.9	0.9	0.0	0.4
Sweden	1990-95	119.1	100.0	19.1	12.2	6.3	5.5	41.6	3.8	36.8	23.6	11.3	0.9	0.9	0.0	4.7
Switzerland	1991-93	107.1	100.0	7.1	16.1	12.7	3.4	55.9	0.0	18.0	14.3	2.3	7.0	7.0	0.0	3.1
Turkey	1990-94	125.3	100.0	25.3	46.9	37.9	9.1	0.0	0.0	43.3	29.9	6.6	5.5	5.5	0.0	1.3
United Kingdom	1990-95	109.4	100.0	9.4	39.2	29.9	9.3	18.3	0.0	34.7	20.1	12.4	0.1	0.1	0.0	7.7
United States	1990-95	108.8	100.0	8.8	55.6	45.2	10.4	37.5	0.0	4.1	0.0	3.4	1.6	1.6	0.0	1.1
Unweighted average		**112.2**	**100.0**	**12.2**	**31.6**	**25.6**	**8.3**	**26.6**	**0.7**	**33.4**	**19.9**	**9.8**	**2.6**	**2.5**	**0.1**	**2.3**

Sources: IMF, Government Finance Statistics; and International Financial Statistics.

175. presented on an accruals basis, creating a break in the series of government finances.[3] On an accrual basis, the treasury balance for 1998 is expected to be in deficit by ½ percent of GDP compared with a balanced 1998 Budget.

176. On a cash basis, Treasury finances are significantly stronger. Accrued payments, such as for future pension liabilities, exceed cash outlays by some 2¼ percent of GDP. Combining this adjustment with financial transactions such as the revenue from the sale of government assets, the **net financial balance** (public sector borrowing requirement) of the treasury is estimated to show a surplus of 15 billion kronur (2½ percent of GDP), sharply higher than the budgeted financial surplus of around 1 percent. Of this amount, 10 billion was used to repay foreign debt; 2-3 billion was used to repay domestic debt; and the remainder augmented the Treasury's cash position at the central bank. Gross Treasury debt declined by 10 percentage points of GDP from 1996 to 1998.

Revenue

177. Treasury revenue is expected to improve by ¼ percent of GDP compared to the 1998 budget assumption, mainly due to higher revenue indirect taxes, such as the VAT, and from personal income tax receipts (individual income taxes and social security taxes). This improvement reflects the strong cyclical position of the economy in 1998. Although the 1998 revenue estimate is subject to greater uncertainty as a result of the change in accounting standards, preliminary cash flow data for the 1998 outturn is consistent with the projections presented in the Budget proposal in October 1998.

178. The increase in receipts from **taxes on goods and services** is attributed mainly to higher VAT collections. As in the past, domestic VAT collections were slightly lower than expected in the budget, although they appear to be more in line with budgetary expectations than in previous years.

179. The boost in revenue from **personal income taxes** stems from the effects of higher domestic demand on incomes. Indeed, tax returns have thus far confirmed the higher estimate relative to previous projections. The cyclical effect on income tax revenue thus more than compensated for the lower income tax rate in 1998. This revenue item is particularly buoyant owing to the structure of income taxes—a high income threshold combined with high marginal tax rates. Indexation of tax brackets to inflation had been abolished a few years ago, although the budget assumed that the tax credit for 1998 would increase by 2½ percent based on the expectation for inflation. The cut in the personal income tax rate by 1.9 percent in 1998

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[3]The Treasury presentation differs from the NEI presentation of central government finances, which is also on an accruals basis, in three respects. Capital gains from the sale of public assets are treated as revenue by the Treasury, but the NEI presentation shows the entire amount below the line. Accrued pension liabilities are fully accounted for as expenditures in 1998, but the NEI spreads the amount over several years. The depreciation of taxes (taxes levied but not collected or writeoffs) is not accounted for in the NEI presentation.

was the second in a three year program of income tax rate reductions. The revenue loss from this change is estimated at 3 billion kronur. Revenue from **corporate taxes** is estimated at 7 billion kronur. Companies had previously been permitted to subtract 7 percent of the face value of shares outstanding. Effective 1999, this allowance was abolished, but was offset by a reduction of the corporate tax rate to 30 percent from 33 percent.

180. Revenue from the **sale of public assets** is below earlier forecasts since the sale of Iceland Prime Contractors has been postponed until 1999. Revenue for 1998 mainly reflects profits from the sale of 49 percent of government owned shares in the new investment bank—roughly one third is included as revenue and the other two thirds is shown below the line. Assets in a number of other companies have also been sold on the market.

Expenditure

181. Total expenditure was ¾ percent of GDP higher than budgeted in 1998. The expenditure overrun mainly reflects higher-than-expected future pension liabilities following a restructuring of public sector wages, which affect the budget on an accruals basis. This source accounted for 9 billion krónur of the 12 billion krónur overrun. The remainder of excess expenditure owes mainly to a higher wage bill and higher operating costs in hospitals. However, with strong economic activity, transfer payments were lower than budgeted due to the decline in unemployment relative to the rate that had been projected in the budget. The reduction in total public debt reduced interest expenditures.

182. Agricultural **subsidies** represent a transfer from the government to farmers for production quotas, and are intended to provide income support as agricultural wages have not kept pace with wage growth in other sectors. Other subsidies and transfers include an electricity subsidy intended to equalize electricity prices across regions. The Municipal Equalization Fund is part of regional management policy, in which funds are directed to municipalities to assist small communities with the provision of services, including primary education, the responsibility for which was transferred to the local government. Interest rebates are provided as a subsidy to home ownership and is income-and wealth-tested with a limit related to the debt on the property. This rebate on interest paid for residential mortgages has an individual maximum of 140,000 krónur per year, covering about 50,000 (mainly young) individuals.

General government

183. General government finances continued to improve in 1998, reflecting mainly the revenue impact of the economic upswing. The general government balance is expected to be in surplus by ½ percent of GDP in 1998, compared with a balanced position in 1997. The improvement in recent years can be attributed primarily to a steady decline in the expenditure to GDP ratio from 1992, mainly on account of lower interest payments, operating subsidies, and public investment expenditure. The local government financial balance for 1998 is estimated to be in deficit by ¼ percent of GDP. The share of local government in general

to GDP ratio from 1992, mainly on account of lower interest payments, operating subsidies, and public investment expenditure. The local government financial balance for 1998 is estimated to be in deficit by ¼ percent of GDP. The share of local government in general government expenditures has risen by about 5 percentage points to about 27 percent of general government expenditures due to the transfer of responsibility for primary education from the central to the local government.

B. Fiscal policy and outlook

The budget for 1999

184. The **treasury revenue balance** is budgeted to be in surplus by ½ percent of GDP, an improvement of 1 percent of GDP relative to the 1998 estimated outturn. This 2.4 billion krónur balance reflects a reduction in the expenditure-GDP ratio of 1 percent of GDP, and an unchanged revenue-GDP ratio. The **net financial balance**[4] is budgeted to show a surplus of 16.7 billion krónur (2¾ percent of GDP), to be used to reduce **gross Treasury debt** by 5½ percent of GDP. The government intends to repay domestic debt of roughly 10 billion krónur and foreign debts amounting to 5 billion krónur. Indeed, reduction of foreign debt is considered a long-run objective, partly to enhance the country's credit rating. In addition to debt reduction, the Treasury intends to use part of the cash flow to contribute to public pension liabilities. Despite the large reduction in debt, the Treasury also intends to issue new debt in the amount of 8.5 billion krónur. Government paper plays an important role in the financial markets, and the intention is to maintain strong benchmark issues.

185. The Treasury will take on additional **guarantees** of around 50 billion krónur,[5] of which the Mortgage Fund for residential housing is the largest element. Liabilities of the Mortgage Fund are domestic, whereas the liabilities of the State Power Company, the second largest component of guarantees, are foreign. Annual fees are charged on loans from this Fund which contribute to an insurance facility. There are also indirect guarantees, mostly to banks. No budgetary spending has been needed to meet any of the guarantees in recent years.

Revenue

186. Total Treasury revenue is budgeted to increase in line with GDP. Other than the third and final reduction in the personal income tax rate approved in 1997, no major change

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[4]The net financial balance represents the sum of the revenue balance, current non-financial transactions and financial transactions. Current non-financial transactions include items such as accrued pension liabilities and accrued interest payments that do not involve a cash flow within the year, while financial transactions include items such as relending activities and the book value component of the sale of public assets.

[5]Excluding liabilities of the state commercial banks.

will be made to the **tax structure**. The revenue loss from the reduction in the personal income tax rate is expected to be 1.5 billion krónur—expected to be more than outweighed by rises in personal incomes in 1999. The growth in corporate income tax receipts reflects continued economic buoyancy. Strong economic growth is also expected to generate increases in revenue from wealth taxes, social security taxes, and taxes on goods and services.

187. The government has been promoting policies to increase **private savings**. A commission set up to recommend ways of increasing savings proposed two tax measures that would increase incentives to save. A very popular measure permits an additional 2 percent of income, beyond the previous 4 percent, to be tax exempt if contributed to any pension fund. If the full 2 percent of income is contributed to a pension fund, the employer would be obliged to contribute an additional 0.2 percent of income, to be refunded from the employer's payment of social security taxes. Based on an expected participation rate of roughly one half of employees, the revenue loss from this measure is estimated at 200-300 million krónur for 1999. This measure is expected to have a small positive effect on private savings. Another measure to improve savings is the cancellation of the phasing out of a tax credit for the purchase of equity. A tax credit of 60 percent of the value of equity purchases up to a maximum of 260,000 kronur per year (per person) had been planned to be phased out by the year 2000. The revenue loss for 1999 from this measure is also expected to be approximately 200-300 million krónur.

188. Revenue from the **sale of public assets** is expected to increase to 3.7 billion krónur (0.6 percent of GDP) in 1999 from 2.6 billion krónur in 1998. This revenue includes the sale of the remaining 51 percent of shares in the Icelandic Investment Bank, and the sale of Iceland Prime Contractors. Overall proceeds from the sale of public assets are expected to yield a total of 8.3 billion krónur, of which 7 billion is from the investment bank. Most of the proceeds will be recorded as financial transactions—only the profits above book value will be included as revenue.

189. Dividends and other property income include the payment of dividends to the government by the National Bank of Iceland in 1999. A decision to require dividend payments likely reflects the partial ownership of shares by the public—market-like conditions are considered desirable—but also is a means to control lending by reducing bank liquidity from retained earnings. The Agricultural bank will also pay higher dividends.

Expenditure

190. Total expenditure is budgeted to increase to 182.4 billion krónur (29¼ percent of GDP) in 1999 from an estimated outturn of 177.7 billion krónur (30¼ percent of GDP) in 1998. The main pressures for increased spending are for salary increases, especially in health care and education. **Salaries** account for some ¾ of operating expenditure. Although public sector contracts will not be renegotiated in 1999, wage drift in the private sector has put pressure on public sector wages. Estimates of public sector wage drift range between

1-3 percent. Agreements for hospital staff salaries have been in place since the end of 1997, but a series of strikes in 1998 has resulted in pay rises.

191. Transfer payments are budgeted to decline as the projected fall in the unemployment rate from buoyant economic activity in 1999 leads to lower unemployment insurance payments.

192. Tax write-offs are expected to amount to 4 billion krónur. These items represent unrealistic levies on companies that have either gone bankrupt or have not earned income as high as estimated. High estimated levies are also used as a measure to improve tax administration by encouraging quick tax filing.

General government

193. The general government balance is expected to be in surplus by ¾ percent of GDP, representing an improvement by ¼ percent of GDP relative to the 1998 projected outturn. The weaker improvement in the general government balance compared to the central government balance stems from the smaller cyclical benefits accruing to local governments. The improved public finances will be used to reduce gross general government debt to 40¾ percent of GDP from a peak of 59¼ percent of GDP in 1995.

C. Recent modifications of the tax system

194. Over the past decade, **the tax system** has undergone comprehensive reforms aimed at achieving several objectives:

- To foster international cooperation and strengthen the competitiveness of Icelandic firms by aligning the tax system with other OECD countries.

- To improve incentives to work and save by reducing distortions in taxes on capital income, personal income, and means-tested benefits.

- To enhance the role of automatic stabilizers by shifting to direct from indirect taxation, which earlier accounted for three-fourths of central government revenue.

195. The **corporate income tax** system has been made more flexible and integrated with that of other European countries. The corporate tax rate has been lowered from 51 percent in 1989 to 30 percent in 1999, while various exemptions have been abolished, and the tax base widened. In addition, the period for which trading losses can be carried forward has been extended from 5 to 8 years, and depreciation rules made more flexible. A four step plan to harmonize the two-tier **social security tax** across industries will be completed in the year 2000. Finally, various changes to the system of **excise duties**, including a reduction in the

196. Tax distortions on **capital income** have been reduced by applying a uniform 10 percent tax rate on all forms of capital income (interest, dividends, capital gains and rent) in place of the previous system which exempted some forms while taxing other forms at the 42-47 percent personal income tax rate. The partial tax deductibility of dividends at the corporate level has been abolished. **Personal income tax** rates have been reduced by 4 percent over a period of three years and numerous exemptions and deductions have been abolished. These measures helped reduce distortions in the system which featured high marginal tax rates, but low average tax rates. For equity considerations, the child benefit system was fully means tested.

The social security tax

197. The social security tax has been levied at two different rates. At the end of 1996, the lower rate was 3.55 percent on agriculture, fisheries, manufacturing, hotels and restaurants, rental of cars and computer services, and 6.85 percent on other sectors, for an average rate of around 5½ percent. On January 1, 1997, the first of four steps to harmonize the two-tier system of the social security tax became effective. The unified rate will be 5½ percent for all industries when fully implemented in the year 2000, and the change will be revenue-neutral. Revenue from the social security tax is received by the Unemployment Insurance Fund (1.3 percent of the tax base), and the Occupational Safety and Health Administration (0.08 percent of the tax base), and the remainder is channeled to the social security system, for financing pension and insurance payments.

The personal income tax

198. By 1997, the two main features of the personal income tax system were a low average tax rate, but a fairly high marginal tax rate at low levels of income reflecting extensive tax credits and means-tested benefits. In 1988, an old system of personal income taxes levied and collected on the basis of the previous year's income was replaced by a Pay-As-You-Earn (PAYE) system. Furthermore, the tax system was simplified by abolishing numerous exemptions and deductions and thus broadening the tax base. However, changes in the tax structure over the years heightened the disincentives to work. The basic personal income tax rate had crept up to almost 42 percent by the beginning of 1997 (constituting a central government tax rate of 30½ percent and a local government rate of 11½ percent), and a 5 percent surtax on higher incomes raised the effective marginal tax rate to 47 percent for higher income individuals. Moreover, a basic tax credit amounting to 24,544 krónur per month, which was transferable between couples up to a maximum of 80 percent, was deductible from the taxes levied. In effect, a one-earner couple with monthly earnings below 105,000 krónur (about $1,500) paid no personal income tax, but all income above this threshold was taxed at 42 percent. This tax structure created significant work disincentives. In addition, there were two kinds of means-tested benefits related to the personal income tax system, child benefits

(about $1,500) paid no personal income tax, but all income above this threshold was taxed at 42 percent. This tax structure created significant work disincentives. In addition, there were two kinds of means-tested benefits related to the personal income tax system, child benefits and interest rebates,[6] with marginal effects as high as 21 percent. The relative weight of means-tested child benefits had increased rapidly, accounting for about a half of the total child benefits by 1997.

199. In March 1997, the personal income tax system was changed to reduce these distortions. A reduction in the **personal income tax by 4 percent** took effect in three stages. The tax rate was lowered by 1.1 percent on May 1, 1997, a further 1.9 percent on January 1, 1998 and a final 1 percent on January 1, 1999. The personal income tax threshold remained unchanged, as the tax credit per individual was lowered simultaneously with the reduction of the tax rate. However, for equity considerations, the surtax on high incomes was raised to 7 percent in 1998. The income limits for the surtax were raised by about 11 percent. The revenue loss due to the tax reduction was expected to be financed by phasing out a special tax rebate for purchases of shares, a new consolidated tax on capital income, and the freezing of all tax credits and benefits in 1997.

200. Child benefit payments earlier consisted of a lump-sum benefit that depended on family characteristics, and supplementary benefit that was means tested to income and net wealth. As of January 1, 1998, all benefits became means-tested, leading to a loss of benefits for high income families. The changes were tax neutral. Savings incurred by this change were used to reduce the marginal income losses implied by the system, from 15 percent to 11 percent for families with three or more children, from 11 to 9 percent for for families with two children and from 6 to 5 for families with one child.

Taxation of capital income

201. As of January 1, 1997, a consolidated tax on capital income became effective. This change overhauled the former system of capital taxation, which featured large discrepancies of tax rates on different forms of capital income. Interest income had been tax exempt, while other capital income was taxed at rates up to the 42-47 percent personal income tax rate. These discrepancies distorted the saver's choice of savings vehicle, especially encouraging the use of debt over equity. In 1997, a general 10 percent withholding tax was levied on interest income and capital gains. Consequently, all capital income, has been taxed at a uniform

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[6]The interest rebate is granted to individuals investing in owner-occupied housing. This rebate is means-tested to income through a 6 percent deduction of actual income from the interest outlays paid on which the rebate is based. This rebate also depends on the net wealth and the interest burden of the individual, but the critical factor has been income.

nominal rate of 10 percent. Additional revenues from the consolidated capital income tax were used to help finance the lowering of the personal income tax.

Excise duties

202. The system of excise duties was changed in 1996 in order to comply with an EEA Agreement. The 25 percent estimated mark-up on wholesale prices of imported goods was abolished, while the collection rules on imported goods and domestic products were harmonized. These changes also reduced the number of rates to four from six, ranging from 15-30 percent on the c.i.f. or product value except on a few items where the ad valorem duty was replaced by a quantity charge. Further adjustments to the excise duty system took effect at the beginning of 1997. The general rate of excise on goods was lowered to 25 percent from 30 percent, while the excise rate on spare parts for automobiles was lowered to 15 percent from 20 percent, and excises on cosmetics, films for photography, pens and pencils were abolished, except on candy, soft drinks and several food products where the ad valorem duty was replaced by a quantity charge.

D. Other reforms in the public sector

Public pension reform

203. The government carried out a fundamental revision of its pension system with the Government Employees Pension Fund Act that became effective at the beginning of 1997. The basic aim of the reform was to contain the growing deficit of the system and introduce a new, fully funded pension scheme. The new act limited access to the existing pension fund to existing members. A new fund was established for new entrants and those who wished to transfer from the old system.

204. The two pension funds are considerably different in structure. Premiums to the **old pension fund** are based on each employee's base pay, with a 4 percent contribution from the employee and a 6 percent contribution from the government. Premium contributions are paid on basic pay, not on emoluments such as overtime. The employee's pension is linked to the basic pay of his or her successor. On average, the pension payment amounts to about 65-70 percent of earnings. In recent years base pay has tended to be only a portion of total pay; for higher pay grades, base pay is often less than half of total pay. This has meant that higher-grade employees receive a lower replacement ratio when they retire, a drawback is being corrected under the new system. Although contributions still exceeded disbursements on a cash basis, an actuarial assessment revealed that the fund had accumulated a shortfall of some 80 billion krónur on an accruals basis, a debt guaranteed by the Treasury.

205. The **new pension fund** has a very different structure. Premiums are paid on total pay (base pay, overtime and all other emoluments). Employees and the government contribute 4 percent, and 11.5 percent, respectively. The government guarantees the solvency of the fund and pays annually any shortfall that may arise, based on actuarial evaluations. For the first three years, the government's contribution is 11.5 percent and thereafter it will be determined annually, based on actuarial calculations. Pension payments at retirement are linked to the employee's prior contributions. Pensions are also tied to the consumer price index and not based on the public employee pay index, as in the old pension fund.

206. Government pension costs associated with the old pension fund have risen as a result of salary agreements that were concluded with public employees early in 1997. One of the most important provisions of the agreement is related to the restructuring of the salary system for government employees. The supplementary component of the government salary system has become progressively larger over time, particularly for higher pay grades. The salary agreement stipulated that the supplementary portion would gradually be transferred into basic pay. This meant that actual take-home pay of active employees would not change, but the calculation base of the pension contribution would rise. Both employees and the government would pay higher premiums. Since the pension payments to government pensioners of the old fund were tied to the basic salary of the post which they occupied at the time of their retirement (the successor rule), government costs for their pensions increased in line with the transfer of supplemental pay into basic pay.

207. The wage agreements stipulated that the additional agreements involving the transfer of supplemental pay into basic pay was to be finalized by the end of 1997 and hence that the consequent increase in pension liabilities would be accounted for in that year. Therefore, the 1998 budget only allowed for an increase in pension liabilities in line with general wage increases. As it turned out, however, the additional agreements were concluded in 1998. This explains the bulk of the upward revision of pension liabilities for 1998.

Privatization

208. Public enterprises in Iceland account for over 30 percent of GDP. The state owns two of the three major commercial banks, various other financial institutions and funds as well as several manufacturing and service industries. Hospitals, schools, the energy industry, and the Post and Telecommunications monopoly are also public property. Recent governments have emphasized a policy of privatization of enterprises owned by the state. The main objectives of privatization are: to increase economic efficiency by eliminating the distortions inherent in state-ownership; To widen share ownership and encourage development of the Icelandic stock market; to raise capital for the Treasury and support industrial development. Revenues from

the privatization program are an important element of the strategy to reduce the budget deficit and repay public debt. However, the government has decided to use on fifth of revenues from sales of privatized companies to support R&D in Iceland and thereby promote industrial development.

209. Several state enterprises have already been sold to the private sector. The privatized enterprises include a venture capital institution, a fish processing company, a fish meal company, a coastal shipping line, and a machinery and heavy equipment plant. The state-owned and operated Vehicle Inspectorate, was incorporated and privatized. In 1997 the government and the City of Reykjavik privatized a joint computer data center. In 1997 the government agreed to sell part of the ferrosilicon plant at Grundartangi to one of its co-owners, a Norwegian firm. In addition, the state-owned Post and Telecom Iceland was incorporated and divided into two entities in the beginning of 1998, a postal company and a telecom company.

210. The government's plan for privatization in 1999 includes sale of the remaining shares of Icelandic Investment Bank Ltd. and Icelandic Prime Contractors Ltd., and sale of 25 percent of the shares of a cement manufacturer. In addition, it plans to privatize several other companies, including a fertilizer manufacturing firm, a recycling company, and internet company, and two fish breeding plants.

Table 27: Central Government and Social Security Finances 1989-1999

Percent of GDP; Accruals basis

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Prov. 1998	Forcast 1999
Current revenue	30.5	30.5	29.1	30.1	30.6	28.9	28.7	28.9	29.6	28.4	27.9	27.0
Direct taxes	7.2	7.3	8.0	9.6	9.9	9.7	9.8	10.4	11.0	10.3	9.9	9.4
Indirect taxes	20.8	20.3	19.1	18.3	18.1	17.0	16.5	16.4	16.7	16.3	16.6	16.3
Interest income	1.6	1.8	1.3	1.6	1.5	1.4	1.5	1.4	1.3	1.1	1.0	0.9
Other current income	0.2	0.4	0.6	0.6	0.9	0.7	0.8	0.7	0.6	0.7	0.4	0.4
Transfers from public sector	0.6	0.7	0.1	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Current expenditure	28.1	28.8	28.5	28.6	29.4	29.0	28.3	29.1	28.1	25.8	24.8	24.1
Public consumption	15.4	15.2	15.1	15.2	15.3	15.4	15.2	15.5	14.9	13.6	13.6	13.6
Wages	10.3	9.9	9.5	9.8	10.0	10.1	10.0	10.1	9.8	8.9	9.2	9.2
Consumption of fixed capital	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Other consumption	4.7	4.9	5.1	5.0	4.8	4.9	4.7	4.9	4.7	4.3	4.0	3.9
Interest expenditure	2.8	3.1	3.1	3.3	3.2	3.3	3.4	3.7	3.3	2.9	2.7	2.4
Subsidies	3.4	4.0	3.4	2.9	3.1	2.3	2.0	1.9	1.8	1.7	1.5	1.4
Current transfers	6.5	6.5	7.0	7.2	7.8	7.9	7.8	8.0	8.2	7.5	7.0	6.7
Other public sector	0.1	0.0	0.4	0.4	0.6	0.5	0.6	0.6	1.1	0.9	0.6	0.5
Households	5.7	5.6	5.9	6.0	6.4	6.6	6.4	6.5	6.2	5.9	5.6	5.4
Other private sector	0.7	0.9	0.7	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.7
Current balance	2.3	1.6	0.6	1.5	1.3	-0.1	0.4	-0.1	1.5	2.6	3.2	2.8
Capital revenue	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5
Capital transfers	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1
Consumption of fixed capital	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Capital expenditure	4.9	6.2	4.5	4.8	4.2	3.9	4.2	3.1	3.6	2.6	2.9	2.4
Gross fixed investment	1.5	1.4	1.7	1.8	1.6	2.0	1.9	1.6	1.7	1.2	1.5	1.2
Capital transfers	3.3	4.7	2.8	3.0	2.6	1.9	2.3	1.5	1.9	1.4	1.4	1.2
Other public sector	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2
Private sector	2.7	4.1	2.3	2.6	2.2	1.5	1.9	1.2	1.5	1.1	1.2	1.0
Capital balance	-4.3	-5.6	-4.0	-4.2	-3.6	-3.3	-3.6	-2.5	-3.0	-2.0	-2.4	-1.9
Financial balance	-2.0	-4.0	-3.4	-2.8	-2.4	-3.3	-3.2	-2.6	-1.5	0.5	0.8	1.0
Primary balance	-0.7	-2.6	-1.6	-1.1	-0.7	-1.5	-1.3	-0.4	0.5	2.4	2.5	2.5
Net increase in claims	1.5	0.2	-0.3	1.5	-0.5	-0.2	0.4	0.8	0.6	0.1	-	-
Total lending	1.2	1.8	1.5	1.6	1.5	2.0	4.3	3.9	2.7	1.7	-	-
Total repay	1.0	2.4	1.8	1.1	0.6	1.5	2.4	2.0	3.0	1.7	-	-
Change in equity holdings	0.0	-0.2	0.1	0.1	-0.2	0.8	0.3	0.0	0.1	0.2	-	-
Other claims (net)	1.2	1.0	0.0	0.9	-1.2	-1.5	-1.8	-1.1	0.9	-0.1	-	-
Borrowing requirement	3.4	4.2	3.1	4.2	1.9	3.1	3.5	3.4	2.1	-0.5	-	-
Net borrowing	1.9	3.3	3.7	2.7	3.9	3.4	3.6	3.8	2.3	-0.5	-	-
Total borrowing	4.0	6.7	5.9	4.8	6.5	9.1	9.1	7.2	11.1	4.0	-	-
Total repay	2.1	3.4	2.1	2.1	2.6	5.7	5.6	3.5	8.9	4.5	-	-
Decrease in cash and bank deposits	1.6	0.9	-0.6	1.5	-2.0	-0.3	0.0	-0.3	-0.2	0.0	-	-
Memorandum items:												
Structural balance	-3.5	-4.9	-3.9	-3.3	-0.9	-1.6	-1.8	-0.7	-0.5	0.8	0.2	0.2
Total revenue	31.0	31.1	29.7	30.7	31.2	29.5	29.3	29.5	30.2	29.0	28.5	27.5
Total expenditure	33.0	35.0	33.0	33.4	33.6	32.9	32.5	32.2	31.7	28.4	27.7	26.5

Sources: National Economic Institute, Central Bank of Iceland

Table 28: Local Government Finances 1989-1999

Percent of GDP; Accruals basis

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Prov. 1998	Forecast 1999
Current revenue	7.7	7.7	7.3	7.6	7.9	7.5	7.3	7.7	8.2	9.1	8.9	8.8
Direct taxes	3.9	3.9	3.8	3.8	4.0	4.8	4.6	4.7	4.8	6.0	6.2	6.2
Indirect taxes	3.1	3.1	2.6	2.9	2.9	1.7	1.7	1.8	1.8	1.7	1.6	1.5
Interest income	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Other current income	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.4	0.5	0.4	0.4
Transfers from public sector	0.1	0.0	0.4	0.4	0.4	0.5	0.6	0.6	1.1	0.9	0.6	0.5
Current expenditure	5.9	6.1	5.3	5.5	6.2	6.5	6.8	6.6	7.1	8.0	8.0	8.0
Public consumption	4.3	4.4	4.2	4.4	4.9	5.2	5.4	5.3	5.8	6.7	6.9	6.9
Wages	2.4	2.4	2.3	2.5	2.7	2.8	3.0	3.0	3.7	4.7	4.8	4.9
Consumption of fixed capital	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other consumption	1.7	1.9	1.7	1.8	2.1	2.2	2.2	2.1	1.9	1.9	1.8	1.8
Interest expenditure	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4
Subsidies	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2
Current transfers	1.0	1.1	0.5	0.4	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5
Other public sector	0.6	0.7	0.1	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Households	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Other private sector	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Current balance	1.8	1.6	2.0	2.1	1.7	1.0	0.5	1.1	1.1	1.1	0.9	0.8
Capital revenue	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Capital transfers	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3
Consumption of fixed capital	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Capital expenditure	2.7	3.0	2.6	2.8	2.8	2.8	2.7	1.9	1.7	2.2	1.7	1.4
Gross fixed investment	2.5	2.7	2.2	2.3	2.4	2.4	2.2	1.4	1.4	1.8	1.4	1.1
Capital transfers	0.2	0.3	0.4	0.5	0.4	0.5	0.5	0.5	0.3	0.4	0.3	0.3
Other public sector	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Private sector	0.2	0.3	0.4	0.5	0.4	0.5	0.5	0.5	0.3	0.4	0.3	0.3
Capital balance	-1.9	-2.2	-2.0	-2.2	-2.2	-2.2	-2.1	-1.4	-1.2	-1.7	-1.2	-0.9
Financial balance	-0.1	-0.6	0.1	-0.2	-0.4	-1.2	-1.6	-0.3	-0.1	-0.6	-0.4	-0.2
Primary balance	-0.1	-0.5	0.2	0.0	-0.2	-0.9	-1.2	0.0	0.2	-0.3	-0.1	0.1
Net increase in claims	0.3	0.1	0.4	0.0	0.1	-0.3	-0.2	0.5	-0.1	-0.1	-	-
Total lending	0.5	0.2	0.3	0.3	0.3	0.3	0.1	0.3	0.3	0.5	-	-
Total repay	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	-	-
Change in equity holdings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
Other claims (net)	-0.1	0.0	0.3	0.0	0.0	-0.3	0.0	0.3	-0.3	-0.4	-	-
Borrowing requirement	0.4	0.6	0.4	0.2	0.6	0.9	1.4	0.8	0.0	0.5	-	-
Net borrowing	0.4	0.7	0.4	0.3	0.6	0.9	1.5	0.7	0.0	0.4	-	-
Total borrowing	1.0	1.2	1.0	1.0	1.3	1.5	2.1	1.6	0.8	1.4	-	-
Total repay	0.6	0.5	0.6	0.7	0.7	0.6	0.6	0.8	0.8	1.0	-	-
Decrease in cash and bank deposits	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.1	0.0	0.1	-	-
Memorandum items:												
Total revenue	8.5	8.5	7.9	8.2	8.6	8.2	7.9	8.2	8.7	9.6	9.4	9.3
Total expenditure	8.6	9.1	7.9	8.4	9.0	9.3	9.5	8.5	8.8	10.2	9.7	9.4

Sources: National Economic Institute, Central Bank of Iceland

Table A1. Iceland: GDP and Expenditure Components 1/

	1997 In billions of kronur at current Prices	1993	1994	1995	1996	1997	1998 Prov.
		Percentage changes at constant prices 2/					
Private consumption	320.3	-4.5	1.9	4.2	6.4	6.0	12.0
Public consumption	107.3	2.3	3.7	1.3	1.0	3.1	3.0
Gross fixed investment	98.7	-11.5	-1.1	-2.8	26.5	11.2	23.0
Final domestic demand	526.3	-4.4	1.8	2.5	8.3	6.3	12.3
Change in Stocks 3/	-5.1	0.3	-0.2	0.7	-0.7	0.0	0.0
Total domestic demand	521.2	-4.1	1.5	3.1	7.5	6.4	12.2
Exports of goods and services	190.9	7.1	10.0	-2.1	10.0	5.6	3.1
Imports of goods and services	187.7	-8.6	4.1	3.8	16.6	8.5	23.3
Gross domestic product	524.4	1.0	3.7	1.0	5.6	5.4	5.1
Net factor income 3/	-9.9	-0.1	-0.6	0.3	0.7	0.0	-0.2
Gross national product	514.6	0.9	3.1	1.4	6.3	5.3	4.9
Gross national income 4/		-0.9	2.7	1.9	4.7	6.3	6.9

Source: National Economic Institute.

1/ Volume changes in 1992 to 1996 are based on 1990 prices, but the forecast for 1997 and 1998 on previous year's prices.
2/ Percentage figures indicate contribution to GNP growth; i.e. changes in aggregates expressed as a percentage of GNP of the previous year, fixed prices.
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/

	1996 In billions of kronur at current Prices	1993	1994	1995	1996	1997	1998
		Percentage changes at constant prices					
Gross fixed capital formation	86.8	-11.5	-1.1	-2.8	26.5	11.2	27.3
Business sector	52.9	-24.8	0.5	7.3	53.0	15.6	40.8
Agriculture	2.5	7.3	-8.8	-16.0	63.0	9.8	-0.7
Fisheries 3/	5.2	-67.1	50.8	-55.3	216.8	-65.6	107.2
Manufacturing	17.8	-5.9	7.4	18.2	99.0	14.9	-5.7
Fish processing	4.7	12.2	38.1	27.7	43.5	-11.8	21.1
Aluminum smelter	6.3	58.5	-56.4	49.6	1344.0	78.8	-23.3
Ferrosilicon plant	--	325.0	145.2	-19.1	170.1	-14.2	276.4
Other manufacturing	6.9	-17.0	-1.8	14.2	15.2	9.6	11.9
Energy and water supply	6.4	-11.4	-15.4	11.5	40.3	102.1	43.8
Electrical power generation, and distribution	3.4	-15.5	-23.4	10.8	73.6	124.9	94.0
Geothermal heating	1.3	-8.2	5.8	11.1	10.6	-0.6	32.9
Water supply	0.5	0.7	-20.1	14.8	-10.4	15.4	-4.0
Construction	2.6	-12.1	-22.5	35.9	45.6	23.7	23.2
Commercial and office buildings	4.7	-13.6	-10.8	5.1	18.3	20.1	37.3
Transport equipment	5.5	-49.4	-29.6	55.9	16.0	9.7	140.0
Post, telephone, radio and television	2.7	3.7	35.9	-10.4	-0.9	-0.9	68.7
Computers and office equipments	6.1	-1.8	26.1	19.7	23.8	-0.7	34.8
Housing	18.9	-5.8	0.0	-9.9	4.0	5.1	5.0
Public sector	14.9	14.4	-4.7	-12.4	-3.7	3.8	5.4
Roads and bridges	3.3	64.3	-12.5	-13.7	-10.0	3.7	6.0
Streets and sewers	2.9	1.8	5.2	-26.6	4.8	11.2	4.7
Public buildings	8.7	3.8	-4.5	-6.3	-3.7	1.4	5.5

Source: The National Economic Institute.

1/ Volume changes are based on 1990 prices.
2/ Official estimates and forecasts as of March 1998.
3/ Including aquaculture.

Table A3. Iceland: Gross Domestic Product by Sectors

	In percent of total (1990)	1992	1993	1994	1995	1996	1997
		Percentage changes at constant prices					
Agriculture and fishing	12.5	-0.4	4.7	-2.7	-1.2	7.5	-0.8
Agriculture	2.6	-5.1	3.3	2.6	-2.8	3.9	2.0
Fishing	10.0	1.0	5.0	-4.1	-0.8	8.5	-1.6
Manufacturing	17.1	-3.5	-1.3	3.3	2.4	8.6	2.1
Fish Processing	5.0	-2.4	6.1	2.3	-3.2	8.8	-1.6
Other manufacturing	12.1	-4.0	-4.4	3.7	4.9	8.5	3.6
Electricity and water supply	4.2	2.1	4.0	0.2	3.0	1.0	3.0
Construction	8.2	-8.3	-2.8	-2.2	-4.7	14.1	18.2
Commerce	13.3	-4.3	-4.2	2.4	4.2	6.0	6.5
Transport, storage and communication	7.7	-2.1	0.7	5.9	3.3	15.8	10.0
Finance, insurance, real estate and business services	18.7	-0.8	-0.7	3.1	1.5	3.0	1.0
Other private services	5.5	-1.4	0.7	5.9	3.5	6.0	6.0
Government Services	15.9	-0.5	3.0	4.2	1.3	1.0	2.2
Other producers	1.4	-2.2	3.8	2.6	8.1	1.0	2.2
Less: Imputed bank service charges	-4.5	-2.2	-0.9	-2.0	1.5	3.0	1.0
Gross domestic factor income	100.0	-2.2	0.3	2.6	1.5	6.4	4.3
Memorandum item: GDP from expenditure side		-3.3	1.0	3.6	1.0	5.6	5.4

Source: National Economic Institute.

Table A4. Iceland: Fish Catch and Marine Production

	1992	1993	1994	1995	1996	1997	1998 Provisional 1/
			(In thousands of metric tons)				
Fish catch	1,574	1,719	1,534	1,435	1,894	1,969	1,588
Cod	267	262	215	203	204	209	240
Other demersal species	318	325	343	308	298	268	261
Herring	123	117	130	110	100	71	70
Capelin	798	941	754	716	1179	1319	915
Crustaceans	61	70	86	93	101	95	90
Others	7	4	6	5	12	7	12
			(Percentage changes at constant prices) 2/				
Value of catch	-1.5	3.1	-0.5	-0.7	7.7	-1.0	-2.6
Excluding capelin	-6.9	2.0	-0.8	-1.7	0.5	-5.3	2.1

Source: The National Economic Institute.

1/ Official estimates and forecasts as of March 1999.
2/ Catch values deflated by average price of export production.

Table A5. Iceland: Unemployment, Wages, and Prices

	1992	1993	1994	1995	1996	1997	1998 Prov. 1/
				(In percent of labor force)			
Unemployment	3.0	4.4	4.8	5.0	4.3	3.9	2.9
Vacancies 2/							
Spring	-0.6	-0.9	-0.5	0.2	--	0.4	0.2
Autumn	-1.4	-0.6	--	0.1	0.1	0.6	0.5
				(percentage changes)			
Nominal wages and incomes							
Wage index	2.9	1.4	0.1	5.7	6.4	5.6	9.2
Disposable income per capita	1.4	-2.2	1.6	4.7	5.4	7.4	11.9
Prices							
Consumer price index	3.8	4.1	1.5	1.7	2.3	1.8	1.7
GDP deflator	3.6	2.5	2.0	2.7	1.9	3.4	6.0
Private consumption deflator	4.7	4.6	1.6	1.8	2.3	1.8	1.6
Real wages and incomes 3/							
Wage index	-0.8	-2.7	-1.3	3.8	4.2	3.6	7.5
Disposable income per capita	-2.3	-6.0	0.1	3.0	3.0	5.5	10.0

Source: The National Economic Institute.

1/ Official estimates as of October 1998.
2/ Planned hiring less layoffs.
3/ Relative to the consumer price index.

Table A6. Iceland: Selected Short-term Interest Rates

	Central Bank interest rates			Money market yields			
				Treasury bills			Interbank Overnight loans
	Repo rate	Discount rate	Current account	3-month	6-month	12-month	
1993	8.4		3.4	5.5	5.6	5.9	5.7
1994	5.3		2.5	6.1	6.5	7.4	4.9
1995	6.9		2.6	7.3	7.6	7.9	7.0
1996	6.6		2.4	7.1	7.3	7.8	8.3
1997	6.9		2.7	7.2	7.4	7.6	7.4
1998	7.3	8.5	3.0	7.6	7.6	7.6	9.4
1997 September	6.9		2.7	6.9	6.9	6.9	6.9
October	6.9		2.7	6.9	6.9	6.9	6.9
November	7.2		3.0	7.3	7.3	7.3	7.3
December	7.2		3.0	7.2	7.4	7.6	7.4
1998 January	7.2		3.0	7.3	7.4	7.5	7.8
February	7.2		3.0	7.4	7.7	7.7	10.0
March	7.2	8.5	3.0	7.3	7.4	7.5	7.4
April	7.2	8.5	3.0	7.3	7.3	7.3	7.8
May	7.2	8.5	3.0	7.3	7.3	7.4	8.3
June	7.2	8.5	3.0	7.3	7.4	7.4	8.1
July	7.2	8.5	3.0	7.3	7.3	7.4	8.9
August	7.2	8.5	3.0	7.3	7.3	7.3	6.9
September	7.5	8.5	3.0	7.5	7.6	7.7	7.9
October	7.5	8.5	3.0	7.6	7.6	7.6	8.7
November	7.5	8.5	3.0	7.6	7.6	7.7	8.7
December	7.5	8.5	3.0	7.6	7.6	7.6	9.4
1999 January	7.5	8.5	3.0	7.6	7.6	7.6	6.5
February	7.9	8.9	3.0	8.0	8.0	8.0	15.7

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

Table A7. Iceland: Selected Long-term and Deposit Money Banks' Interest Rates

	Secondary market for indexed bonds 1/		Deposit money banks' interest rates 2/			
	Government bonds' real yields	Housing bonds' real yields	Discount rate on commercial bills	Average rate on non-indexed secured loans	Average real rate on securities	Average rate on general credit
	5-year 3/	25-year 4/				
1993	4.9	5.4	16.9	14.1	9.1	15.0
1994	5.1	5.8	12.8	10.6	7.9	11.2
1995	5.9	5.8	13.1	11.6	8.7	12.0
1996	5.8	5.8	13.6	12.4	8.9	12.9
1997	5.3	5.3	14.0	12.9	9.1	13.5
1998	4.7	4.7	14.1	12.8	8.8	13.5
1997 January	5.8	5.7	13.9	12.8	9.0	12.5
February	5.8	5.8	13.9	12.8	9.0	12.6
March	5.8	5.8	14.0	12.8	9.1	13.5
April	5.7	5.6	14.0	12.9	9.1	13.2
May	5.8	5.7	14.2	13.1	9.1	13.0
June	5.7	5.5	14.2	13.1	9.4	12.9
July	5.4	5.2	14.0	13.0	9.1	12.7
August	5.4	5.3	14.0	12.8	9.1	12.7
September	5.2	5.3	14.0	12.8	9.0	13.4
October	5.2	5.3	14.0	12.8	9.0	13.4
November	5.3	5.4	14.0	12.9	9.0	13.4
December	5.3	5.3	14.2	12.9	9.0	13.5
1998 January	5.1	5.2	14.2	12.9	9.0	13.6
February	5.1	5.1	14.2	12.9	9.0	13.6
March	4.8	4.9	14.2	12.9	8.9	13.6
April	4.8	4.9	14.2	12.9	8.7	13.6
May	4.8	4.9	14.2	12.9	8.7	13.5
June	4.8	4.9	14.2	12.9	8.7	13.5
July	4.9	4.9	14.1	12.9	8.7	13.5
August	4.9	4.9	14.1	12.8	8.7	13.5
September	4.8	4.8	13.9	12.7	8.7	13.4
October	4.9	4.8	13.9	12.6	8.7	13.3
November	4.9	4.8	13.9	12.5	8.7	13.2
December	4.7	4.7	13.9	12.5	8.7	13.2
1999 January	4.3	4.3	13.9	12.4	8.5	13.2
February	4.7	4.5	13.9	12.3	8.2	13.1

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

1/ End of period figures.
2/ Annual average or end of month figures.
3/ Central Bank's bids on the Icelandic Stock Exchange.
4/ Market makers' bids on the Icelandic Stock Exchange.

Table A8. Iceland: Monetary Survey

	1992	1993	1994	1995	1996	1997	1998
	(In billions of kronur)						
Net liquid foreign assets	34.5	34.5	25.0	21.4	38.9	31.9	25.6
Total credit by use	210.4	229.1	235.4	239.8	258.5	298.6	375.8
Government	22.3	31.6	33.8	36.1	28.7	35.1	17.4
Municipalities	5.5	6.2	7.6	8.0	7.9	8.2	7.9
Non-bank financial institutions	6.5	7.6	12.3	10.6	14.4	18.9	36.8
Enterprises	126.2	130.1	125.0	122.9	138.8	157.4	206.6
Households	50.0	53.6	56.7	62.2	68.7	78.9	107.2
Money and quasi money (M3)	154.1	164.1	167.9	171.7	183.4	199.3	229.5
Money and general savings deposits (M2)	124.4	129.9	113.7	111.1	113.4	116.7	130.1
Money supply (M1)	29.9	31.6	35.0	38.3	41.6	48.4	56.9
Foreign borrowing	42.6	42.1	33.6	29.3	44.9	58.5	89.2
Other items, net	48.1	57.3	58.8	58.7	69.1	72.6	82.7

Source: Central Bank of Iceland.

Table A9. Iceland: Accounts of the Central Bank

	1992	1993	1994	1995	1996	1997	1998
	(In millions of kronur)						
Net liquid foreign assets	31,053	28,639	18,786	19,259	36,025	33,171	30,993
Net claims							
Government	1,551	4,444	13,849	12,299	3,680	6,413	-8,171
Other financial institutions	531	639	4,544	3,380	3,443	3,474	7,770
Deposit money banks	3,983	3,960	5,623	5,353	1,878	6,494	19,600
Main liabilities							
Base money 1/	18,088	15,908	16,161	15,430	19,067	19,667	20,562
Deposit money banks	14,495	12,003	11,521	10,261	13,592	13,916	14,239
Notes, coin in circulation	3,593	3,905	4,640	5,169	5,475	5,751	6,323
Other financial institutions	4,239	4,424	4,787	1,733	2,623	4,486	4,128

Source: Central Bank of Iceland.

1/ Base money = deposit money banks + notes and coin in circulation.

Table A10. Iceland: Credit System

	1992	1993	1994	1995	1996	1997 Prov.	Sept. 1998 Prov.
				(In billions of kronur)			
Total assets	673.9	749.2	785.2	831.5	899.8	999.3	1099.3
Loans to:							
Central Government	94.1	118.5	129.5	145.1	146.8	151.0	162.3
Municipalities	28.7	33.5	36.9	41.3	43.1	43.6	45.4
Industries	313.7	334.7	329.7	327.2	359.3	417.2	474.2
Households	237.4	262.5	289.1	317.9	350.6	387.5	417.4
Total liabilities	673.9	749.2	785.2	831.5	899.8	999.3	1099.3
Domestic liabilities	457.0	499.2	545.4	590.4	658.4	745.2	825.5
Voluntary sources	317.4	350.2	393.2	434.8	492.3	563.5	618.3
Notes and deposits	139.6	148.9	152.1	155.5	166.1	181.8	207.2
Others	72.5	82.5	95.0	93.0	98.6	114.7	128.0
Institutional sources	244.9	267.7	298.2	341.8	393.7	448.8	490.3
Pension funds	177.5	204.5	229.7	258.1	302.0	345.6	375.1
Others	67.4	63.2	68.5	83.7	91.7	103.2	115.2
Net foreign liabilities	216.9	250.0	239.8	241.1	241.4	254.1	273.8
Memorandum items:				(Percent change)			
Total assets	11.3	11.2	4.8	5.9	8.2	11.1	10.0
Loans to:							
Central Government	12.7	25.9	9.3	12.0	1.2	2.9	7.5
Municipalities	12.1	16.7	10.1	11.9	4.4	1.2	4.1
Industries	10.0	6.7	-1.5	-0.8	9.8	16.1	13.7
Households	12.4	10.6	10.1	10.0	10.3	10.5	7.7

Source: Central Bank of Iceland.

Table A11. Iceland: Central Government Debt and Claims 1/

	1991	1992	1993	1994	1995	1996	1997	1998 Est.	1999 Budget
					(In millions of kronur)				
Gross debt	137,530	166,116	195,569	213,924	232,585	239,246	241,168	234,700	213,500
Central bank	757	13	6	--	--	--	--	--	--
Treasury bonds	46,175	51,793	60,796	69,008	74,140	73,889	84,424	82,000	64,500
Treasury notes	8,244	12,545	13,742	14,630	14,406	15,811	11,258	15,800	15,700
Treasury bills	1,257	2,487	6,012	5,563	5,768	8,366	12,296	15,200	17,700
Other domestic liabilities	13,144	12,005	12,709	11,090	9,010	8,962	6,562	5,300	4,600
Foreign debt	67,953	87,273	102,304	113,633	127,261	132,218	126,628	116,400	111,000
Total lending	63,091	67,700	64,968	69,066	77,266	71,048	69,309	63,000	65,000
Long term credit	37,902	41,654	46,875	55,469	64,134	63,689	65,278	63,000	65,000
Indexed to domestic prices	22,071	22,644	26,405	36,965	45,176	50,339	52,885	--	--
In foreign currency	15,831	19,010	20,470	18,504	18,958	13,350	12,393	--	--
Short term credit, net	25,189	26,046	18,093	13,597	13,132	7,359	4,031	--	--
Net debt	74,439	98,416	130,601	144,858	155,319	168,198	171,859	171,700	148,500
Lending as percent of debt	45.9	40.8	33.2	32.3	33.2	29.7	28.7	26.8	30.4
					(Percent of GDP) 2/				
Gross debt	34.1	41.6	47.2	49.0	51.3	49.1	45.7	39.1	33.6
of which: foreign debt	17.1	21.9	24.9	26.1	28.2	27.3	24.1	--	--
Claims	9.4	10.4	11.3	12.7	14.1	13.0	12.3	11.7	10.8
of which: foreign debt	4.0	4.8	5.0	4.3	4.2	2.7	2.4	--	--
Net debt	18.6	24.7	31.6	33.3	34.3	34.5	32.4	29.5	23.6

Source: Ministry of Finance, Treasury Finances.

1/ Including accrued interest liabilities.

2/ Deflated to mid-year price level based on average exchange rates and the consumer price index.