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International Investment-Income Determination in INTERLINK: Models for 23 OECD Countries and Six Non-OECD Regions

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This paper presents the specification of an investment-income model for 23 OECD countries and six non-OECD regions. The basic structure of the model -- an effective rate of return applied to the stock of foreign assets and liabilities -- is relatively simple and straightforward. A central distinction is made between dollar and non-dollar denominated foreign assets and liabilities and matrices giving estimates of the currency composition of these stocks are reported. Estimation and simulation results for the investment-income model are presented.

* * *

Cet article présente la description d'un modèle de revenu d'investissement pour 23 pays de l'OCDE et six autres régions non-OCDE. La structure de base du modèle -- un taux de rendement appliqué aux stocks d'avoirs et engagements extérieurs -- est relativement simple. Une distinction fondamentale est faite entre les avoirs et engagements à l'étranger selon qu'ils sont exprimés en dollars ou en d'autres monnaies. Des matrices donnant des estimations de la composition de ces stocks suivant les monnaies sont également présentées. Les résultats des estimations et simulations faites à partir du modèle de revenu d'investissement sont par ailleurs fournis.

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Much of the work reported in this paper was completed in 1985 when the first author was also a member of the Balance of Payments Division. We are grateful to Erwin Veil and Martine Durand for help in the specification of the model and the construction of the weighting matrices; and to Bixio Barenco, Andrew Dean, Michael Feiner and Pete Richardson for helpful comments and suggestions.

INTERNATIONAL INVESTMENT-INCOME DETERMINATION IN INTERLINK: MODELS FOR 23 OECD COUNTRIES AND SIX NON-OECD REGIONS

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INTRODUCTION

Income flows can be thought of as the product of the stock of wealth and the relevant rate of return. Recent developments in the world economy have focused attention on international investment-income flows because there have been large changes in countries' stocks of foreign wealth -- brought about by large current-account imbalances which are likely to persist for a number of years -- and in rates of return -- reflecting, in part, large changes in interest rates (Table 1).

In the medium term there is also the interesting, and possibly unstable or unsustainable, dynamic interaction between debt-service flows and the stock of debt. In the early 1980s, these considerations came to the forefront of policy discussions concerning the developing-country debt crisis and the size of public sector indebtedness. Similar considerations are relevant to the external positions of OECD countries.

The determination of investment-income flows has thus become more important to the analysis of current-account developments, both with regard to forecasting and to the analysis of the effects of changes in exchange rates, economic policies, oil prices, etc. This paper reports the specification and simulation properties of a new international investment-income block for INTERLINK, the world econometric model used by the Department of Economics and Statistics for forecasting and policy analysis.

The paper is organised as follows. Section I briefly discusses the desired features and limitations, and reports the specification and estimation results. Section II explains how the weighting matrices giving the currency composition of outstanding assets and liabilities have been constructed. Section III presents simulation results, for the isolated investment-income block and in a full-model context. Section IV is a summary including a discussion of possible future improvements to the model.

I. THE INVESTMENT-INCOME MODEL

A. Design desiderata and limitations

INTERLINK is a world model incorporating 23 individual models for each of the OECD Member countries (there is a single model for Belgium and Luxembourg) and six regional models for the rest of the world (1). As in any world model, international consistency considerations are central, particularly in the determination of international transactions.

Table 1

RECENT DEVELOPMENTS IN CURRENT ACCOUNTS, NET FOREIGN ASSET POSITIONS AND NET INVESTMENT INCOME FLOWS

($ billion)

	1980	1981	1982	1983	1984	1985	1986
United States							
Current balance	1.87	6.33	-9.13	-46.61	-106.46	-117.68	-140.57
Net foreign assets (a)	198.51	172.59	157.47	119.23	18.28	-101.98	-164.95
Investment income balance	30.38	34.13	28.68	24.84	18.77	25.18	22.86
Japan							
Current balance	-10.75	4.77	6.85	20.80	35.01	48.17	85.97
Net foreign assets (a)	13.68	13.83	14.15	29.16	56.32	97.76	206.03
Investment income balance	0.85	-0.76	1.72	3.08	4.23	6.84	9.40
Germany							
Current balance	-15.75	-5.51	4.07	4.14	6.99	13.20	35.83
Net foreign assets (a)	29.62	20.55	22.22	28.02	34.53	44.97	63.39
Investment income balance	2.33	0.22	-1.59	1.26	1.97	1.79	0.90
Memorandum items:							
U.S. short-term interest rate (%)	11.3	14.0	10.6	8.6	9.5	7.5	6.0
World discrepancy on (b):							
Current accounts	-33	-62	-111	-75	-83	-74	-64
Investment income	-20	-35	-53	-50	-61	-53	-52

a) Mid-year, Secretariat estimates.
b) Secretariat estimates.

Unfortunately, these world consistency considerations are not respected by the available data on international transactions: the world current-account discrepancy in 1984 was some -$83 billion and the discrepancy on investment-income flows was about -$61 billion, the latter perhaps reflecting the incentive to under-report investment-income credits (Table 1). (See Veil (1982) and IMF (1987) for a discussion of the world current-account discrepancy.)

An important consideration in any model development of INTERLINK is that each country model operate consistently in linked and unlinked mode. This argues against arbitrarily making some country or region the residual which would include the world investment-income discrepancy. The new system therefore incorporates a total of 29 investment-income sub-blocks, effectively endogenising the world investment-income discrepancy. International consistency in the investment-income model is a reflection of the internationally-consistent determination of current accounts, exchange rates and interest rates, and the use of a common weighting matrix.

An important feature of the model reported here is that it allows for the heterogeneous currency composition of foreign assets and liabilities. In the specification presented below, this is reflected in the definitions of the relevant rates of return, which are functions of all interest rates determined in the country models, and also in the revaluation of assets and liabilities due to changes in exchange rates. This revaluation implies changes in the currency composition of outstanding stocks of assets and liabilities. Although conceptually attractive, allowing all of the currency weights to change would enlarge the model to such an extent as to be operationally infeasible. In the model presented below, a step in this direction has been taken by making a central distinction between U.S. dollar and non-dollar-denominated foreign assets and liabilities, with the dollar-denominated portion endogenously related to exchange-rate changes.

In contrast to the detailed modelling of the current account, the capital account in INTERLINK is very aggregative. Finlink, the international financial linkages sector of the model where exchange rates are determined, is based on an aggregate net capital flows specification (Holtham, 1984). Thus the specification of the investment-income block is by necessity also very aggregative, i.e. it is not possible to disaggregate investment-income flows into those arising from long- or short-term capital, direct investments, etc., because the relevant capital flows are not endogenously determined in the model (2).

The quality and availability of data is itself a limitation. Two groups of countries can be distinguished according to data availability. For Group I countries, gross aggregate capital flow data are available. For some of these countries published estimates of the stocks of foreign assets and liabilities are also available, although sometimes for only a limited number of years. The specification for these countries is in gross terms, i.e. investment-income payments and receipts are determined separately. This has necessitated estimating (total) capital outflow equations for these countries (3).

For Group II countries, only net capital-flow data are available. The specification of the investment-income model for these countries is in terms

of net investment-income flows, although the gross flows are determined in a somewhat ad hoc way. The Group II countries are Greece, Iceland, Ireland, New Zealand, Portugal, Spain, Switzerland and Turkey, as well as the six non-OECD regions. The country composition of the non-OECD regions are reported in Annex II. The Group II countries are net debtors except for Switzerland and the low absorptive oil-producing countries which are net creditors.

B. The specification of the investment-income model

In the presentation below, the numbering indicates whether the equations are applicable to Group I countries (e.g. 3.I) or Group II countries (e.g. 3.II).

1. Income-flow identities

The basic identities relate investment-income flows to the stocks of foreign assets or liabilities and the effective rates of return:

$$\begin{aligned} XSIID &= (RAE/100)FADD, \\ MSIID &= (RLE/100)FLDD, \\ BSIID &= XSIID - MSIID, \end{aligned} \qquad [1.I]$$

$$BSIID = (RE/100)NFAD, \qquad [1.II]$$

where XSIID, MSIID, BSIID are investment-income receipts, debits and net receipts, respectively;
FADD, FLDD, NFAD are mid-period stocks of foreign assets, liabilities to foreigners and net foreign assets, respectively; and
RAE, RLE, RE are the effective rates of return on foreign assets, liabilities to foreigners and net foreign assets, respectively.

Stocks and flows are measured in billions of U.S. dollars (denoted by a final D) and rates of return are in per cent.

The data for the effective rates of return are defined as the ratio of the income flows to the relevant stocks (multiplied by 100) and thus equations [1] are exact identities if actual data are used on the right-hand side. The data for the effective rates of return are generally well behaved and resemble interest rates (these data are reported in Annex IV). For the Group I countries the level of the effective rates of return on assets and liabilities often differ by as much as 2 percentage points. This is particularly important for the United States where foreign assets are mostly long-term and direct investment whereas liabilities to foreigners are mostly short-term financial instruments (Scholl (1986)); the different levels of the effective returns for the United States are reflected in the relative movements and signs of net foreign assets and the investment-income balance in Table 1. For the Group II countries the effective return on net foreign assets is generally well behaved because these countries are overwhelmingly either creditor or debtor countries, i.e. NFAD does not become small or change sign (in which case RE might become negative and/or large).

2. The determination of stocks and the revaluation effect

As noted above, a central distinction is made between dollar- and non-dollar-denominated assets and liabilities. If the dollar exchange rate changes, the dollar value of the non-dollar-denominated stocks will also change, and hence so will the proportion of the dollar-valued stock which is dollar denominated.

Denoting the dollar-denominated proportion of outstanding stocks of assets and liabilities as RHOA and RHOL, respectively, the equations determining how these proportions change with exchange-rate changes are:

$$RHOA_t = RHOA_{t-1}/[RHOA_{t-1} + (1-RHOA_{t-1})(EXA_t/EXA_{t-1})], \qquad [2]$$
$$RHOL_t = RHOL_{t-1}/[RHOL_{t-1} + (1-RHOL_{t-1})(EXL_t/EXL_{t-1})],$$

where EXA and EXL are weighted indices of the dollar exchange rate (dollars per unit of foreign currency) relevant to the non-dollar bundle of assets and liabilities, respectively. The derivation of equations [2], and of equations [3] below, is given in Annex I and the definition of EXA and EXL is given below in equations [4]. If the exchange rate is constant ($EXA_t = EXA_{t-1}$), the proportion of dollar-denominated assets and liabilities remains constant. If the dollar appreciates (EXA and EXL fall), the proportion of dollar-denominated assets or liabilities increases, and vice versa if the dollar depreciates (4).

The stock-flow relationship incorporating the revaluation effect on the existing stock of assets and liabilities, which is related to changes in RHOA and RHOL, is as follows (cf. Annex I):

$$FADD_t = FADD_{t-1}\ (RHOA_{t-1}/RHOA_t) + KFO_t,$$
$$FLDD_t = FLDD_{t-1}\ (RHOL_{t-1}/RHOL_t) + KFI_t, \qquad [3.I]$$
$$NFAD_t = FADD_t - FLDD_t,$$

$$NFAD_t = NFAD_{t-1}\ (RHOL_{t-1}/RHOL_t) + KFN_t, \qquad [3.II]$$

where KFO, KFI, KFN are capital outflows, capital inflows, and net capital flows, respectively (5). If exchange rates are constant ($RHOA_t = RHOA_{t-1}$), equations [3] reduce to the standard stock-flow identity. If the dollar appreciates, the dollar value of the non-dollar-denominated portion of the portfolio declines, and hence so does the total dollar value of the outstanding stocks of assets and liabilities; and vice versa if the dollar depreciates. The quantitative importance of these exchange-rate-induced revaluation effects is discussed in Section III.

Given the 1983 benchmark data reported in Section II, equations [2] and [3] have been used to construct time-series data for the dollar proportions and the outstanding stocks (these data are reported in Annex IV). The calculated stock series differ somewhat from official published data which are available for some OECD Member countries (6). The differences arise from a number of sources:

i) The estimates presented here include errors and omissions in capital inflows. Although this approach is used by a few countries, others do not allocate errors and omissions to either capital inflows or outflows.

ii) For some countries the stocks of foreign assets and liabilities are revalued not only for changes in exchange rates but also for changes in the values of foreign bond and share portfolios and direct investments (see, for example, Scholl, 1986). In addition, national revaluations for exchange-rate changes would presumably be based on more complete information about the currency composition of portfolios than embodied in the weighting matrices presented in Section II, and would reflect changes in all, rather than just dollar, exchange rates.

iii) For some countries, it was not possible to obtain data for the gross short-term flows of the banking sector, although these data are presumably reflected in national estimates. In these cases, the net short term private banking flow has been incorporated into the gross capital outflow series.

The most important differences between the calculated and the published stock data are for the United Kingdom, Canada, Australia (assets) and Sweden (liabilities). For the other countries for which the comparison is possible, the published and calculated series are quite similar.

The absence of other revaluation effects, both in the estimates presented here as well as in the published series for some countries, means that the effective rates of return tend to be biased upwards given that revaluation effects generally tend to be positive during periods of positive inflation and growing profits. The absence of revaluation effects other than for exchange rates may explain why, for some countries, the balance on investment income remains positive even though the published series for assets is less than for liabilities.

The exchange-rate indices are defined as

$$EXA = \sum_i w_i EXCHIN_i ,$$

$$EXL = \sum_i v_i EXCHIN_i , \qquad [4]$$

where $EXCHIN_i$ is an index of the dollar exchange rate of currency i; and w_i, v_i are the weights from the currency composition matrices for the non-dollar-denominated assets and liabilities, respectively (see Section II).

3. The determination of the effective rates of return

Given the above structure, the only econometrically-estimated equations in the system are those for the effective rates of return on assets and liabilities, which are related to interest rates. Rates of return on direct investment should, in principle, also be related to profitability -- the rate of return on capital. A substantial part of international direct investment income, which for most countries is not quantitatively important, is interest payments and capital gains or losses on exchange-rate changes. For some countries where data are available, the relationship between the effective rate of return on foreign direct investment and profitability has been examined and found to be very weak, or non-existent. For this reason, profitability is not an explanatory variable in the effective rate of return equations.

Proxies for the rates of return on assets (RA) and liabilities (RL) are defined as weighted averages of U.S. dollar (IRUS) and all non-dollar (IRNA and IRNL) interest rates,

$$\begin{aligned} RA &= RHOA.IRUS + (1-RHOA)IRNA, \\ RL &= RHOL.IRUS + (1-RHOL)IRNL. \end{aligned} \qquad [5]$$

The weights applied to the dollar interest rate and the weighted non-dollar interest rate changes endogenously with the exchange rate (cf. equations [2]). The weights used to construct the non-dollar interest rate, however, are constant,

$$\begin{aligned} IRNA &= \sum_i w_i IR_i, \\ IRNL &= \sum_i v_i IR_i, \end{aligned} \qquad [6]$$

where the w_i, v_i are from the currency composition weighting matrices for assets and liabilities, respectively, and the IR_i are interest rates in country i (i=1, ..., 23). Equations [5] are defined for both short- (RAS, RLS) and long-term interest rates (RAL, RLL), and similarly for equations [6].

The effective rates of return (RAE, RLE) are estimated as lagged functions of the proxies for both the short- and the long-term rates of return,

$$\begin{aligned} RAE &= a_0 + a_1 RAS + a_2 RAL + a_3 RAE_{-1}, \\ RLE &= b_0 + b_1 RLS + b_2 RLL + b_3 RLE_{-1}, \end{aligned} \qquad [7.I]$$

$$RE = c_0 + c_1 RLS + c_2 RLL + c_3 RE_{-1}. \qquad [7.II]$$

The long-run elasticity of the effective rates of return with respect to both the short- and the long-run proxies is expected to be 1.0 or less. The estimated coefficients and lag distributions in these equations can be thought of as summarising the heterogeneous composition -- with regard to terms to maturity and the fixed, flexible or concessionary nature of the relevant yields -- of the stocks of assets and liabilities.

4. Gross investment-income flows for Group II countries

As noted, for the Group II countries only net capital-flow data are available and hence it is only possible to construct a proxy for the stock of net foreign assets and for the effective rate of return on net foreign assets. For consistency with the Group I countries and the forecasting procedures in the Economics and Statistics Department, the net investment-income flows for Group II countries are decomposed into the gross flows. This has been done by estimating an equation for investment-income receipts (XSIID) based on a logarithmic version of the income-flow identity given in equation [1.I] and using a proxy for the stock of foreign assets. Investment-income payments are then determined as:

$$MSIID = XSIID - BSIID. \qquad [8.II]$$

C. Estimation results

1. Group I countries

Table 2 reports the ordinary least squares estimation results of equations [7.I] for the effective rates of return on assets (RAE, lines A) and liabilities (RLE, lines L). The choice of the preferred equations reported in Table 2 was based on the statistical significance and plausibility of the estimated coefficients on the long- and short-term proxies for the rates of return and the lagged dependent variables. In those equations where the estimation results suggested a total long-run response to interest-rate changes greater than one, the long-run elasticities were constrained to unity. Profitability was also included as an additional explanatory variable, but the estimated coefficients were insignificant and/or incorrectly signed.

A number of equations include shifts or time trends in some of the estimated coefficients which are reported in the notes to Table 2. Given that the left-hand-side variable is an effective rate of return, it is not uncommon for it to behave oddly in specific periods and dummy variables have been included for these outlying observations. The specification of these dummy variables and the estimated coefficients and standard errors are reported in Annex III. For Australia, the freely estimated coefficient in the equation for the effective return on liabilities was always extremely small so a coefficient of 0.1 was imposed.

The main feature of the estimation results is that a 1 percentage point increase in all interest rates leads, in general, to a less than 1 percentage point increase in the effective rates of return on foreign assets and liabilities. This is particularly true of Germany, Canada (assets) and Australia. This result can be interpreted reflecting the fixed or concessionary rate nature of a portion of the stocks of assets and liabilities in these countries (7). The effective rates of return tend to be more closely related to short- rather than long-term interest rates, perhaps reflecting the fact that a rising share of long-term capital is linked to short-term rates such as LIBOR. Mean lags are generally short -- often less than a semester, usually less than a year -- with the exception of Canada (liabilities), Japan (assets), the United Kingdom (liabilities) and Belgium.

2. Group II countries

Table 3 reports estimation results for the effective rates of return on the stock of net foreign assets for the Group II countries. Mean lags tend to be much longer perhaps reflecting a high proportion of liabilities at fixed and/or concessionary rates. For Turkey, it was not possible to obtain an acceptable equation with the long-run elasticity constrained to unity. A long-run elasticity of 1.34 was accepted because it was considered unlikely to lead to simulation problems given the mean lag of about eight years (cf. Table 10 below).

Table 4 reports estimation results for investment-income receipts for the Group II countries. As noted, the specification is based on a logarithmic version of equation [1] for XSIID using a proxy for the net foreign assets and for the rate of return on assets (equation [7]). For OECD countries, these equations use GDP as a proxy for the stock of net foreign assets; for the non-OECD regions, exports of goods and services are used. The equations for New Zealand, Switzerland and the low absorptive OPEC countries contain no

Table 2

EFFECTIVE RATE OF RETURN EQUATIONS FOR FOREIGN ASSETS (A) AND LIABILITIES (L) (a)

			Constant	Weighted interest rate: short	Weighted interest rate: long	Lagged dependent variable	SEE	$\bar{R}^2$	DW/h (b)	Long-run elasticities: short	Long-run elasticities: long	Long-run elasticities: total
United States		A	4.65 (0.24)	0.57 (0.03)			0.33	0.96	1.69	0.57		0.57
		L	1.79 (0.75)	0.17 (0.05)		0.60 (0.10)	0.54	0.85	1.26	0.43		0.43
Japan		A	-0.10 (0.42)	0.19 (0.06)		0.76 (0.08)	0.52	0.90	1.71	0.77		0.77
		L	-0.38 (0.34)	0.36 (0.05)		0.54 (0.07)	0.48	0.94	0.77	0.78		0.78
Germany		A	3.92 (0.23)	0.17 (0.03)			0.37	0.64	1.70	0.17		0.17
	(c)	L	2.03 (0.66)	0.08	0.08	0.43 (0.13)	0.46	0.63	0.48	0.14	0.14	0.27
France	(d)	A	-0.37 (0.20)	0.43 (0.06)	0.18 (0.12)	0.39	0.45	0.81 0.96	2.07	0.70	0.30	1.00
	(d)	L	-1.61 (0.52)	0.24 (0.06)	0.30 (0.16)	0.46	0.43	0.73 0.97	1.88	0.45	0.55	1.00
United Kingdom	(d)(e)	A	-0.07 (0.18)	0.35 (0.06)		0.65	0.56	0.61 0.98	1.89	1.00		1.00
	(d)	L	0.22 (0.26)	0.26 (0.06)		0.74	0.77	0.42 0.99	1.47	1.00		1.00
Italy		A	-1.71 (0.83)	0.29 (0.07)	0.18 (0.14)	0.34 (0.15)	0.48	0.92	1.05	0.44	0.27	0.71
	(d)	L	-2.49 (0.62)	0.21 (0.06)	0.37 (0.15)	0.42	0.44	0.69 0.96	1.58	0.36	0.64	1.00
Canada		A	0.36 (0.28)		0.17 (0.03)	0.35 (0.11)	0.19	0.84	-2.28		0.26	0.26
		L	-0.46 (0.28)		0.13 (0.04)	0.86 (0.06)	0.26	0.98	-0.09		0.92	0.92

a) Standard errors in parentheses. The estimation period is 72II-84I except for the United States, Japan and the United Kingdom where it is 73II-84I.

b) The Durbin-Watson statistic is reported for those equations without a lagged dependent variable; the Durbin-h statistic is reported for those equations with a lagged dependent variable.

c) An average of short- and long-term rates is used, i.e. the estimated coefficient is 0.1552*0.5*(RLS+RLL) with a standard error of 0.06.

d) The total long-run elasticities are constrained to unity by constraining the coefficient on the lagged dependent variable to be equal to one minus the sum of the estimated coefficients on the interest rate terms. For these equations the Durbin-Watson statistic is reported. The first figure in the $\bar{R}^2$ column refers to the estimated first-difference equation; the second figure refers to the squared correlation between the predicted and actual levels of the dependent variables.

e) The interest rate is also interacted with a dummy (DT792) equal to 1.0 up to 79II and zero thereafter. The estimated coefficient is -0.27*DT792*RAS, SE = 0.07.

Table 2 (continued) (a)

			Constant	Weighted interest rate: short	Weighted interest rate: long	Lagged dependent variable	SEE	$\bar{R}^2$	DW/h (b)	Long-run elasticities: short	Long-run elasticities: long	Long-run elasticities: total
Australia		A	1.48 (0.42)	0.39 (0.05)			0.57	0.86	2.27	0.39		0.39
	(c)	L	4.18 (1.88)		0.10	0.71 (0.12)	1.65	0.72	1.68		0.35	0.35
Austria		A	-0.28 (0.23)	0.26 (0.03)		0.65 (0.05)	0.30	0.98	0.37	0.73		0.73
		L	0.38 (0.24)	0.22 (0.03)		0.56 (0.07)	0.29	0.97	0.83	0.49		0.49
Belgium	(d) (e)	A	0.56 (0.17)	0.25 (0.03)		0.75	0.53	0.86 0.99	1.73	1.00		1.00
	(d)	L	0.63 (0.21)	0.25 (0.03)		0.75	0.53	0.85 0.99	1.38	1.00		1.00
Denmark		A	0.29 (0.33)	0.28 (0.05)		0.55 (0.08)	0.42	0.97	-0.64	0.62		0.62
		L	0.45 (0.43)	0.20 (0.06)		0.71 (0.07)	0.51	0.97	-1.45	0.71		0.71
Finland		A	1.26 (0.86)	0.27 (0.07)		0.46 (0.11)	0.77	0.79	1.24	0.49		0.49
		L	3.21 (0.77)	0.37 (0.07)		0.26 (0.13)	0.45	0.91	0.82	0.50		0.50
Netherlands		A	1.29 (0.64)	0.30 (0.07)	0.49 (0.11)		0.50	0.91	2.01	0.30	0.49	0.79
		L	0.49 (0.41)	0.28 (0.05)		0.69 (0.06)	0.51	0.94	-1.00	0.89		0.89
Norway	(d)	A	-0.80 (0.21)	0.32 (0.05)		0.68	0.48	0.69 0.97	1.74	1.00		1.00
	(d)	L	0.08 (0.12)	0.28 (0.05)		0.72	0.46	0.63 0.97	2.35	1.00		1.00
Sweden		A	-0.38 (0.37)	0.34 (0.07)		0.60 (0.08)	0.48	0.96	-0.51	0.86		0.86
		L	-0.47 (0.35)	0.25 (0.05)		0.74 (0.04)	0.45	0.98	-0.87	0.97		0.97

a) The estimation period is 72II-84I except for Norway (A), Sweden (A) and Finland where it is 75II-84I, for Belgium where it is 72II-83II, and for Norway (L) and Sweden (L) where it is 75II-83II.

b) The Durbin-Watson statistic is reported for those equations without a lagged dependent variable; the Durbin-h statistic is reported for those equations with a lagged dependent variable.

c) The long-term weighted interest rate term is constrained to 0.1.

d) The total long-run elasticities are constrained to unity by constraining the coefficient on the lagged dependent variable to be equal to one minus the sum of the estimated coefficients on the interest rate terms. For these equations the Durbin-Watson statistic is reported. The first figure in the $\bar{R}^2$ column refers to the estimated first-difference equation; the second figure refers to the squared correlation between the predicted and actual levels of the dependent variables.

e) The interest rate is also interacted with a dummy (DT812) equal to 1.0 up to 81II and zero thereafter and with a time trend (TIME = 1 in 72I). The estimated coefficient is -0.034*DT812*TIME*RAS, SE = 0.005.

Table 3

EFFECTIVE RATE OF RETURN EQUATIONS
FOR NET FOREIGN ASSETS (a)

	Constant	Weighted interest rate		Lagged dependent variable	SEE	$\bar{R}^2$	DW/h (b)	Long-run elasticities		
		short	long					short	long	total
Greece	-1.08 (0.36)		0.15 (0.04)	0.78 (0.09)	0.3	0.94	-0.75		0.68	0.68
Iceland	-0.09 (0.22)	0.13 (0.04)		0.84 (0.05)	0.32	0.98	0.06	0.78		0.78
Ireland (c)	1.37 (0.21)		0.06 (0.04)	0.94	0.79	0.59 0.98	1.22	0.00	1.00	1.00
New Zealand (d)	0.20 (0.16)	0.24 (0.12)			0.7	0.65	2.80	0.24		0.24
Portugal (c)	0.43 (0.71)		0.16 (0.08)	0.84	3.05	0.39 0.94	1.53		1.00	1.00
Spain (c)	1.24 (0.41)		0.21 (0.06)	0.79	1.87	0.63 0.94	2.26		1.00	1.00
Switzerland (c)	0.63 (0.18)	0.13 (0.06)		0.87	0.82	0.17 0.95	1.65	1.00		1.00
Turkey	-0.51 (0.20)	0.08 (0.02)		0.94 (0.04)	0.22	0.99	-0.67	1.34		1.34
NIC (c)	-0.20 (0.15)	0.21 (0.04)		0.79	0.43	0.53 0.99	1.64	1.00		1.00
LMI	0.65 (0.27)	0.063 (0.02)		0.71 (0.09)	0.20	0.86	1.96	0.22		0.22
OOP	-0.93 (0.57)		0.48 (0.07)	0.51 (0.10)	0.31	0.99	1.06		0.99	0.99
SOV	0.24 (0.15)	0.085 (0.02)		0.88 (0.03)	0.21	0.99	0.50	0.73		0.73
HOP	5.51 (0.66)	0.43 (0.06)			0.74	0.88	1.86	0.43		0.43
LOP	-0.79 (0.78)		0.18 (0.07)	0.67 (0.07)	0.50	0.85	1.20		0.53	0.53

a) Standard errors in parentheses. The estimation period is 72II-83II, except for NIC, LMI, OOP and SOV where it is 72II-84I, and for HOP and LOP where it is 75II-84I.

b) The Durbin-Watson statistic is reported for those equations without a lagged dependent variable; the Durbin-h statistic is reported for those equations with a lagged dependent variable.

c) The total long-run elasticities are constrained to unity by constraining the coefficient on the lagged dependent variable to be equal to one minus the sum of the estimated coefficients on the interest rate terms. For these equations the Durbin-Watson statistic is reported. The first figure in the $\bar{R}^2$ column refers to the estimated first-difference equation; the second figure refers to the squared correlation between the predicted and actual levels of the dependent variables.

d) This equation is estimated in first differences, i.e. RE-RE(-1) = 0.20 + 0.24*(RLS-RLS(-1)).

Table 4

EQUATIONS FOR INVESTMENT-INCOME RECEIPTS FOR GROUP II COUNTRIES

(dependent variable is lnXSIID) (a)

	Constant	lnGDPD	lnXGBD	Weighted interest rate		Lagged dependent variable	SEE	$\bar{R}^2$	DW/h (b)
				short	long				
Greece	-2.34	0.40		0.14		0.59	0.12	0.95	0.82
	(2.55)	(0.15)		(0.11)		(0.08)			
Iceland	-4.14	0.59		0.82		0.36	0.37	0.83	-0.38
	(4.67)	(0.26)		(0.37)		(0.15)			
Ireland	2.41	0.26		0.15		0.56	0.05	0.98	2.06
	(0.73)	(0.08)		(0.05)		(0.08)			
New Zealand	5.38			0.31		0.68	0.14	0.85	0.03
	(1.74)			(0.12)		(0.10)			
Portugal	-52.45	2.88			1.12		0.14	0.95	2.25
	(10.4)	(0.46)			(0.33)				
Spain	-2.32	0.51		0.80		0.39	0.09	0.98	-1.24
	(1.86)	(0.11)		(0.09)		(0.07)			
Switzerland (c)	0.24				1.11	0.88	0.33	0.91	-0.03
	(1.37)				(0.51)	(0.08)			
Turkey	-2.78	0.54		1.14		0.26	0.73	0.82	0.51
	(11.33)	(0.48)		(0.67)		(0.13)			
LMI	-6.51		0.53		0.73	0.62	0.15	0.97	0.23
	(3.56)		(0.22)		(0.27)	(0.10)			
NIC	-2.09		0.57	0.29		0.41	0.05	0.99	0.21
	(0.87)		(0.09)	(0.04)		(0.06)			
OOP	-6.91		0.82	0.20		0.37	0.14	0.98	1.49
	(2.98)		(0.24)	(0.12)		(0.14)			
SOV	-7.27		0.51	0.16		0.72	0.10	0.99	1.03
	(2.11)		(0.14)	(0.07)		(0.07)			
HOP	-3.09		0.55	0.65		0.46	0.10	0.97	1.64
	(5.14)		(0.19)	(0.22)		(0.10)			
LOP (c)	8.03			0.56		0.60	0.07	0.98	1.53
	(1.09)			(0.10)		(0.06)			

a. Standard errors in parentheses. XSIID is investment-income receipts in U.S. dollars, GDPD is GDP measured in dollars, XGBD is exports of goods in dollars, all at annual rates. The weighted interest rates refer to assets. The estimation period is 72II-84I except for Portugal where it is 76I-84I and for HOP and LOP where it is 75II-84I.

b. The Durbin-Watson statistic is reported for those equations without a lagged dependent variable; the Durbin-h statistic is reported for those equations with a lagged dependent variable.

c. The dependent variable is the logarithm of investment income debits and the weighted interest rates refer to liabilities.

proxies for net foreign assets; proxies for the rates of return on assets enter all equations. As noted above, the purpose of these equations is merely to decompose the net investment-income flows into the gross flows using equation [8.II].

The simulation properties of these equations in reaction to changes in world interest rates are discussed in Section III for both groups of countries.

II. THE CURRENCY COMPOSITION WEIGHTING MATRICES

The weights used to define the dollar exchange rate indices (EXA, EXL) and the non-dollar interest rates (IRNA, IRNL) are estimates of the currency composition of a basket of non-dollar-denominated assets and liabilities. This section discusses how the currency composition matrices, which refer to the end-1983 stocks of assets and liabilities, have been constructed.

It is worth emphasizing that there is only a limited amount of published data on the currency composition of Member countries' external positions, and virtually no published data for the non-OECD regions. The currency composition matrices which are constructed below, incorporate a number of assumptions while exploiting what data are available.

A. Data and assumptions for OECD countries

Table 5 reports estimates of the end-1983 breakdown of foreign assets into direct investment, official non-monetary and financial assets; and the breakdown of liabilities into direct investment and financial liabilities. Financial assets and liabilities are both determined as residuals. Given data and/or assumptions about the currency composition of each category of foreign assets and liabilities, the shares in Table 5 are used to weight the categories together giving the currency-composition matrices for total assets and liabilities.

The following data are available, or assumptions are made, about the currency composition of each category:

i) INTERLINK trade weights are assumed to be representative of the currency composition of direct investment assets except for the United States and the United Kingdom where national data on the geographical distribution of direct investment assets are available (Bank of England, 1986, and Scholl, 1986). Trade with non-OECD regions, and hence direct investment in these regions, is assumed to be denominated in U.S. dollars.

ii) Direct investment liabilities are assumed to be denominated in own-country currency.

iii) Official non-monetary assets, which are primarily development loans, official trade credits, advance payments on military sales, etc., are assumed to be denominated in own-country currency.

Table 5

COMPOSITION OF FOREIGN ASSETS AND LIABILITIES

(as per cent of total, end-1983)

	Assets			Liabilities	
	Direct investment	Official non-monetary	Financial (a)	Direct investment	Financial (a)
United States	26.8	9.0	64.2	17.7	82.3
Japan	12.8	13.0	74.2	2.0	98.0
Germany	10.1	8.2	81.7	8.2	91.8
France	10.0	10.0	80.0	10.0	90.0
United Kingdom	13.8	1.3	84.9	8.6	91.4
Italy	9.2	4.3	86.5	6.8	93.2
Canada	26.8	12.7	60.5	38.7	61.3
Australia	25.4	11.4	63.2	39.9	60.1
Austria	2.6	1.0	96.4	9.3	90.7
Belgium	2.6	3.7	93.7	5.4	94.6
Denmark	14.3	5.6	80.1	10.6	89.4
Finland	11.5	0	88.5	6.3	93.7
Greece	3.0	5.0	92.0	20.0	80.0
Iceland	1.0	3.6	95.4	2.2	97.8
Ireland	3.0	5.0	92.0	30.0	70.0
Netherlands	2.6	3.7	93.7	10.0	90.0
New Zealand	25.4	11.4	63.2	10.0	90.0
Norway	3.6	4.2	92.2	2.2	97.8
Portugal	3.0	5.0	92.0	20.0	80.0
Spain	3.0	5.0	92.0	20.0	80.0
Sweden	8.0	4.0	88.0	5.0	95.0
Switzerland	15.6	8.3	76.1	9.3	90.7
Turkey	3.0	5.0	92.0	20.0	80.0

a) Calculated as a residual.

Sources: National sources and Secretariat estimates.

Table 6

THE PROPORTION OF FOREIGN FINANCIAL ASSETS AND LIABILITIES OF REPORTING BANKS DENOMINATED IN HOME CURRENCY

(as per cent of total, end-1983)

	Assets	Liabilities
United States	98.2	98.2
Japan	28.2	13.2
Germany	68.8	63.4
France	15.0	4.3
United Kingdom	5.5	6.7
Italy	2.3	5.0
Canada	5.7	5.5
Austria	28.3	4.3
Belgium	4.7	6.6
Denmark	1.8	11.8
Finland	0.0	2.9
Ireland	4.3	34.0
Netherlands	21.0	16.0
Norway	4.8	9.7
Spain	0.6	4.9
Sweden	9.9	7.9
Switzerland	51.2	20.5

Source: BIS, International Banking Developments, November 1984.

Table 7

CURRENCY COMPOSITION OF THE FOREIGN CURRENCY POSITION OF FINANCIAL ASSETS AND LIABILITIES OF ALL REPORTING BANKS

(as per cent of total, end-1983)

	Assets	Liabilities
U.S. dollar	79.9	81.3
Deutschemark	10.7	9.0
Swiss franc	5.1	5.1
Pound sterling	1.1	1.2
Dutch guilder	0.9	0.9
French franc	0.9	0.8
Yen	1.5	1.7

Source: BIS, International Banking Developments, November 1984.

iv) The currency composition of financial assets and liabilities is based on BIS data which relates to reporting banks in 15 European countries, the United States, Canada and Japan. These banking data are assumed to be representative of the currency composition of total financial assets and liabilities. The following BIS data are used:

a) The breakdown between domestic and foreign currency denominated assets and liabilities in each of the above 18 countries (Table 6). Portugal, Turkey and Greece are assumed to have the same domestic/foreign currency breakdown as Spain; and Australia and New Zealand are assumed to have the same breakdown as the United Kingdom;

b) The currency breakdown of the foreign currency position of all reporting banks into U.S. dollar, Deutschemark, Swiss franc, Pound sterling, Dutch guilder, French franc and Yen (Table 7). This seven-currency breakdown, which is only available in aggregate, is assumed to be representative of the non-own-currency distribution of all financial assets and liabilities in all countries except the United States, Germany, Switzerland, the United Kingdom, the Netherlands, France and Japan. For these seven countries the seven-currency breakdown is renormalized on the six non-own-currencies.

v) The currency distribution of financial assets has been adjusted based on confidential data on the currency composition of official reserve holding. This adjustment mainly affects the U.S. dollar weight for Germany and Japan, where official reserve holdings (primarily dollars) are large relative to total outstanding financial assets.

B. Assumptions for the non-OECD regions

Only a limited amount of data on the currency composition of outstanding foreign assets and liabilities for the non-OECD regions is available. Based on discussions with colleagues familiar with LDC debt positions and data, the following assumptions have been made:

i) 100 per cent of the liabilities of the newly-industralising countries (NIC) is assumed to be dollar-denominated;

ii) for the other regions the per cent of total liabilities (assets in the case of LOP) which is dollar-denominated is assumed to be:

low and middle-income countries (LMI)	50
low absorptive OPEC countries (LOP)	60
high absorptive OPEC countries (HOP)	60
other oil-producing countries (OOP)	65
USSR and Eastern European countries (SOV)	50

iii) except for the NICs, the currency composition of the non-dollar bundle is assumed to be:

	LMI, HOP OOP, SOV	LOP
Yen	9	7
Deutschemark	48	53
Pound sterling	7	5
French franc	4	5
Dutch guilder	5	5
Swiss franc	27	25

C. The currency composition matrices

Based on these data and assumptions, weighting matrices for the currency composition of assets and liabilities at end-1983 have been constructed. Tables 8 and 9, which report the weighting matrices for the non-dollar-denominated portion, have been constructed by removing the "dollar row", reported as memoranda items RHOA and RHOL, and then rescaling each column to sum to unity. The tables are read as follows, taking the column for German liabilities in Table 9, for example:

-- 27.0 per cent (RHOL) of total liabilities to foreigners is denominated in dollars with the remaining 73 per cent (100 - RHOL) non-dollar-denominated;

-- the shares of the total non-dollar liabilities denominated in the various currencies are given in the GER column of the weighting matrix (which sums to unity): £ 3.8 per cent, FF 3.2 per cent, DM 67.3 per cent, GLD 3.2 per cent, ¥ 5.6 per cent, SF 17.0 per cent;

-- the share of total liabilities denominated in DM is therefore 49.1 per cent (67.3*(1-RHOL)), etc.

In the bottom line of Tables 8 and 9, the benchmarks for the end-1983 assets and liabilities in billions of U.S. dollars are reported. These benchmarks are published estimates (excluding monetary gold) except for Belgium, Spain, Turkey, Ireland, Iceland, New Zealand, Portugal and Greece; for France and the Netherlands, partial data are published. For these countries, the benchmark is based on cumulative capital flows since 1960. As a rough consistency check, the dollar value of total liabilities held (by all countries) in any one currency can be compared with the total assets denominated in that currency. This calculation gives a total of $300 billion in DM-denominated liabilities compared with $430 billion in DM-denominated assets held by OECD countries; and $140 billion in SF-denominated liabilities compared with $190 billion in SF-denominated assets held by OECD countries.

In end-1983, total assets of OECD countries amounted to only 80 per cent of total liabilities, a reflection of the discrepancy in the world data on capital flows and investment-income flows (8). The relative currency composition of the total asset and liability portfolios is markedly different, in particular there is a much higher proportion of liabilities denominated in dollars than there are assets denominated in dollars. This is a problem for international consistency because the average interest rates weighted by the asset currency composition matrix will not equal the average interest rates weighted by the liability matrix. As discussed in the next section, this

Table 8

WEIGHTING MATRIX FOR NON DOLLAR DENOMIMATED ASSETS

(per cent, end-1983)

	USA	UKM	FRA	GER	ITA	BLX	NET	CAN	JAP	ASL	OST	DEN	FIN	IRE	NOR	SWE	SWI	SPA	GRE	TUR	ICE	POR	NZD	LOP
UKM	9.0	10.0	4.6	4.0	5.3	5.3	4.2	8.6	4.1	3.9	4.0	6.2	7.1	5.5	6.0	4.6	4.3	4.7	4.7	4.3	4.3	4.9	8.1	5.0
FRA	4.3	5.0	31.6	4.6	5.6	4.5	6.3	3.5	2.5	2.6	3.0	3.8	4.1	3.7	3.4	3.9	4.3	4.3	3.9	3.9	3.6	4.1	2.2	5.0
GER	41.7	44.4	35.1	61.6	43.9	50.0	38.7	31.6	24.4	17.6	37.9	38.1	48.5	41.0	41.2	38.4	32.7	41.4	42.2	42.4	42.3	41.8	16.1	53.0
ITA	0.7	0.4	1.8	1.1	13.8	0.4	0.3	1.6	0.4	0.9	0.5	0.8	0.4	0.0	0.0	0.4	1.7	0.4	0.4	0.4	0.4	0.0	0.9	0.0
BLX	1.1	0.7	1.5	1.1	0.3	4.5	0.5	1.2	0.5	0.4	0.0	0.4	0.4	0.4	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.4	0.0
NET	4.7	4.7	3.6	3.8	4.1	4.9	26.7	4.9	2.7	1.7	3.3	3.5	4.6	3.7	3.7	3.9	2.8	3.9	3.9	3.9	3.9	3.7	1.8	5.0
CAN	7.6	1.8	0.0	0.2	0.0	0.0	0.0	20.6	1.4	0.9	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.9	0.0
JAP	6.8	6.1	4.8	4.6	6.0	6.8	5.2	11.2	48.6	17.6	5.1	5.4	6.6	5.5	5.6	5.3	4.5	5.9	5.9	5.8	6.1	5.7	9.0	7.0
ASL	1.4	3.9	0.0	0.2	0.0	0.0	0.0	1.2	1.6	44.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	6.7	0.0
OST	0.0	0.0	0.0	0.8	0.3	0.0	0.0	0.2	0.2	0.0	28.7	0.4	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEN	0.4	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	19.2	0.8	0.0	0.4	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIN	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	1.7	0.0	0.0	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IRE	0.7	1.1	0.0	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	0.4	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.4	0.0	0.0	1.2	0.8	0.0	19.9	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SWE	0.0	0.4	0.3	0.4	0.3	0.0	0.0	0.4	0.4	0.0	0.0	2.3	2.5	0.0	0.4	22.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SWI	20.9	20.4	16.0	15.3	19.7	23.5	18.1	14.1	10.9	7.7	17.5	16.9	22.4	19.2	19.5	17.8	45.1	19.5	19.5	19.8	20.1	19.7	7.2	25.0
SPA	0.4	0.4	0.5	0.4	0.3	0.0	0.0	0.4	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	19.5	0.0	0.0	0.4	0.0	0.0	0.0
GRE	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	19.5	0.0	0.0	0.0	0.4	0.0
TUR	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	19.5	0.0	0.0	0.0	0.0
ICE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0
POR	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.7	20.1	0.0	0.0
NZD	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.4	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.2	0.0
RHOA	72.0	72.1	60.5	48.0	68.0	73.4	61.7	50.4	44.3	76.4	57.0	74.1	75.6	72.7	73.3	71.7	46.8	74.6	74.5	74.3	72.1	75.3	77.5	60.0
FADD	862	692	261	234	93	124	106	112	261	17	49	16	11		17	22								

Note: RHOA is the proportion of total assets denominated in dollars. FADD is in billions of U.S. dollars, end of period.

Table 9

WEIGHTING MATRIX FOR NON DOLLAR DENOMIMATED LIABILITIES

(per cent, end-1983)

	USA	UKM	FRA	GER	ITA	BLX	NET	CAN	JAP	ASL	OST	DEN	FIN	IRE	NOR	SWE	SWI	SPA	GRE	TUR	ICE	POR	NZD	HOP	OOP	NIC	LMI	SOV
UKM	5.3	32.6	4.1	3.8	4.7	4.9	4.0	1.5	5.6	1.5	4.1	3.7	4.6	1.2	5.4	5.0	5.1	1.7	1.7	1.7	5.4	1.7	4.0	7.0	7.0	0.0	7.0	7.0
FRA	5.3	3.5	37.5	3.2	3.4	3.6	3.2	1.1	4.5	1.1	3.1	2.9	3.6	1.0	3.9	3.8	4.1	1.4	1.4	1.4	3.9	1.4	3.3	4.0	4.0	0.0	4.0	4.0
GER	47.4	34.5	31.4	67.3	35.4	37.5	31.1	12.2	44.3	11.7	31.4	29.4	36.3	9.6	41.4	37.7	41.1	14.1	14.1	14.1	41.4	14.1	30.8	48.0	48.0	0.0	48.0	48.0
ITA	0.0	0.0	0.0	0.0	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLX	0.0	0.0	0.0	0.0	0.0	22.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NET	5.3	3.5	3.1	3.2	3.7	3.9	38.5	1.1	4.5	1.1	3.1	2.9	3.6	1.0	4.2	3.8	4.1	1.4	1.4	1.4	4.2	1.4	4.3	5.0	5.0	0.0	5.0	5.0
CAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAP	10.5	6.5	6.1	5.6	6.4	6.8	5.8	2.3	16.2	2.2	5.8	5.5	6.8	1.8	7.6	6.9	7.8	2.4	2.4	2.4	7.6	2.4	5.7	9.0	9.0	0.0	9.0	9.0
ASL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SWE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SWI	26.3	19.4	17.7	17.0	19.9	21.0	17.4	6.8	24.9	6.5	17.7	16.4	20.6	5.3	23.3	21.1	37.7	7.6	7.6	7.6	23.3	7.6	17.4	27.0	27.0	0.0	27.0	27.0
SPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TUR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ICE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.5	0.0	0.0	0.0	0.0	0.0	0.0
NZD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.4	0.0	0.0	0.0	0.0	0.0
RHOL	98.2	69.1	70.8	27.0	70.3	69.1	62.2	47.2	64.3	46.3	70.8	65.3	71.9	48.9	66.8	68.2	58.9	70.9	70.9	70.9	66.8	70.9	70.1	60.0	65.0	100	50.0	50.0
FLDD	761	609	264	204	113	133	98	193	227	50	60	35	20		30	43												

Note: RHOL is the proportion of total liabilities denominated in dollars. FLDD is in billions of U.S. dollars, end of period.

problem is apparent in simulations where the interest rates on different currencies change in markedly different ways, resulting in changes in the discrepancy on world investment income.

III. SIMULATION RESULTS

This section presents a number of simulations designed to reveal the dynamic and the international consistency aspects of the investment-income model, bearing in mind that changes in the world investment-income discrepancy are, to some extent, inevitable given the size of the discrepancies in the data (9). Three single-country (i.e. unlinked) block simulations are presented for changes in the most important exogenous variables to the block -- interest rates, exchange rates and the trade balance. Multi-country simulations are also presented for an exchange-rate depreciation in each country.

A. Partial simulations of the investment-income block

1. Interest-rate changes

In the single-country block simulations reported in Tables 10 and 11, all world interest rates were increased by 1 percentage point relative to baseline. For the Group I countries, the average increase in the effective return on assets and liabilities in the sixth year is about 0.7 percentage points (Table 10). For the United Kingdom, France, Italy (liabilities), Belgium, Norway and Sweden, by the sixth year the full 1 percentage point increase in world interest rates has been reflected in the effective returns. There is a slightly faster response of the effective returns on assets compared with that on liabilities. For the Group II countries the response of the effective rate of return on net assets is much slower with an average increase of about 0.6 percentage points by the sixth year.

The impact of a 1 percentage point increase in interest rates on the investment-income balance is reported in Table 11. As noted above, there is a substantial world deficit on investment income and a corresponding deficit on estimated world net assets of about $470 billion in 1983. Even if the change in the rates of return on assets and liabilities was equal, the world deficit on investment income would increase. After three years, an increase of 1 percentage point in world interest rates results in a $4.6 billion increase in the discrepancy on investment income, which is roughly 1 per cent of net world liabilities at the start of the period (10); after six years, the increase in the world discrepancy is $6.8 billion.

Although Germany and Japan are net creditors, their investment-income balance deteriorates. For Germany, this is because the estimated response of the effective rates of return on assets is smaller than on liabilities (cf. Tables 2 and 10). For Japan, although the long-run responses of the effective rates of return on assets and liabilities are the same, the effective return on assets reacts much more slowly to changes in interest rates than does the effective return on liabilities. This creates an initial

Table 10

IMPACT ON THE EFFECTIVE RATES OF RETURN OF A 1 PER CENT INCREASE IN WORLD INTEREST RATES (a)

(Deviations from baseline, percentage points)

Group I countries	Effective return on assets				Effective return on liabilities			
Years	1	2	3	6	1	2	3	6
United States	0.57	0.57	0.57	0.57	0.22	0.36	0.40	0.43
United Kingdom	0.47	0.78	0.91	0.99	0.36	0.66	0.81	0.97
France	0.73	0.96	0.99	1.00	0.66	0.93	0.99	1.00
Germany	0.17	0.17	0.17	0.17	0.19	0.26	0.27	0.27
Italy	0.55	0.70	0.71	0.71	0.70	0.95	0.99	1.00
Canada	0.20	0.25	0.26	0.26	0.19	0.39	0.53	0.77
Japan	0.26	0.48	0.60	0.74	0.45	0.68	0.75	0.78
Belgium	0.34	0.64	0.80	0.96	0.35	0.63	0.80	0.97
Netherlands	0.79	0.79	0.79	0.79	0.37	0.64	0.77	0.87
Australia	0.39	0.39	0.39	0.39	0.14	0.24	0.29	0.34
Austria	0.34	0.57	0.66	0.72	0.28	0.43	0.47	0.49
Denmark	0.35	0.54	0.59	0.62	0.28	0.49	0.60	0.69
Finland	0.33	0.46	0.48	0.49	0.42	0.50	0.50	0.50
Norway	0.43	0.74	0.88	0.99	0.38	0.68	0.83	0.98
Sweden	0.45	0.71	0.80	0.86	0.35	0.63	0.78	0.94
Total	0.47	0.62	0.68	0.72	0.35	0.57	0.66	0.75

Group II countries	Effective return on net assets			
Years	1	2	3	6
Switzerland	0.18	0.37	0.52	0.79
LOP	0.23	0.40	0.47	0.53
Average	0.22	0.39	0.48	0.59
Ireland	0.09	0.21	0.30	0.53
Spain	0.30	0.57	0.73	0.94
Greece	0.20	0.39	0.50	0.64
Iceland	0.18	0.36	0.48	0.68
Portugal	0.22	0.46	0.62	0.87
Turkey	0.11	0.24	0.36	0.65
New Zealand	0.24	0.24	0.24	0.24
HOP	0.43	0.43	0.43	0.43
OOP	0.60	0.89	0.96	0.99
NIC	0.29	0.56	0.72	0.83
LMI	0.09	0.15	0.18	0.21
SOV	0.12	0.26	0.36	0.56
Average	0.29	0.46	0.55	0.63

a) Single-country simulations, all variables exogenous to the investment-income block are held fixed.

Table 11

IMPACT ON NET INVESTMENT INCOME OF A 1 PER CENT INCREASE IN WORLD INTEREST RATES (a)

(Deviations from baseline, $ billions)

	Net investment income			
Years	1	2	3	6
United States	3.34	2.32	1.56	0.51
United Kingdom	1.00	1.47	1.57	1.63
France	-0.16	-0.40	-0.52	-0.55
Germany	0.02	-0.09	-0.11	-0.02
Italy	-0.30	-0.50	-0.62	-0.81
Canada	-0.14	-0.47	-0.77	-1.84
Japan	-0.33	-0.19	0.22	3.13
Belgium	-0.04	-0.07	-0.09	-0.10
Netherlands	0.49	0.27	0.20	0.33
Australia	0.00	-0.06	-0.11	-0.29
Austria	-0.01	0.01	0.04	0.16
Denmark	-0.05	-0.11	-0.16	-0.42
Finland	-0.03	-0.04	-0.04	-0.09
Norway	-0.05	-0.08	-0.08	-0.27
Sweden	-0.09	-0.19	-0.27	-0.49
Ireland	-0.02	-0.04	-0.06	-0.19
Switzerland	0.15	0.33	0.51	1.35
Spain	-0.06	-0.12	-0.15	-0.31
Greece	-0.04	-0.08	-0.12	-0.21
Iceland	0.00	0.00	-0.01	-0.02
Portugal	-0.03	-0.60	-0.80	-0.14
Turkey	-0.02	-0.05	-0.07	-0.18
New Zealand	-0.03	-0.03	-0.04	-0.06
LOP	0.67	1.11	1.29	1.48
HOP	-0.56	-0.62	-0.68	-1.28
OOP	-1.04	-1.11	-1.90	-3.11
NIC	-0.90	-1.88	-2.57	-3.51
LMI	-0.20	-0.38	-0.52	-0.96
SOV	-0.11	-0.21	-0.27	-0.54
Total	1.46	-2.25	-4.62	-6.81
Total OECD	3.60	1.28	0.09	1.12
Total non-OECD	-2.14	-3.53	-4.71	-7.93

a) Single-country simulations, all variables exogenous to the investment-income block are held fixed.

deficit in investment income which is gradually offset by the higher income from assets.

2. Exchange-rate changes: the revaluation effect

The importance of the exchange-rate-induced revaluation of outstanding assets and liabilities is demonstrated by a series of single-country simulations in which each currency is separately assumed to depreciate by 10 per cent (Table 12). As a general rule, a depreciation improves the investment-income balance measured in dollars. This reflects the fact that, regardless of their overall net asset position, most countries have more liabilities than assets denominated in their own currency (11). A depreciation vis-à-vis the dollar reduces the dollar value of these liabilities and hence the associated investment-income payments. The major exceptions are France, where the large amount of export credit loans denominated in French francs outweighs franc-denominated liabilities; and Japan, Austria, Spain and Switzerland, which have net positive own-currency asset positions. The case of the United States is somewhat different because investment-income flows are expressed in U.S. dollars -- the local currency. Nearly all U.S. liabilities are measured in dollars whereas about 70 per cent of its foreign assets, primarily direct investment abroad, is denominated in foreign currency. A depreciation of the U.S. dollar has almost no effect on the dollar value of liabilities, but increases the dollar value of foreign assets and earnings, and hence increases the balance on investment income.

The simulations reported in Table 12 are carried out in single-country mode. If the sign of the results for the United States is reversed and multiplied by 1.1 (since a 10 per cent depreciation of all currencies against the dollar implies an 11 per cent appreciation of the dollar), then the figures in Table 12 can be added across countries to give the approximate global revaluation effect due to the appreciation of the dollar (cf. memorandum item to Table 12). A 10 per cent appreciation of the dollar against all currencies changes the dollar value of net world assets by about $8 billion (about 5 per cent of net world assets) reflecting the fact that the stock of dollar assets and liabilities are not equal. This, however, has only a slight impact on world net investment income.

3. Trade-balance changes: the dynamics of the investment-income block

To demonstrate the dynamic interaction of changes in the trade balance, net foreign assets and debt-service payments, Table 13 reports the effects of a sustained $10 billion improvement in the trade balance for each country. This simulation differs from the other two block simulations by endogenising the identities determining the current balance thus incorporating the compounding effect implicit in the specification: changes in net export earnings affect the stocks of assets and liabilities, which in turn determine subsequent investment-income flows, which augment the change in net export earnings, etc. After six years, the impact on the current balance from the initial $10 billion shock to the trade balance is between $12 and $24 billion, depending on the level of the effective rates of return on assets and liabilities. The countries in Table 13 with the largest improvement in the current balance after six years are Belgium, the Netherlands, Denmark, Finland, Norway, Ireland and Spain. This is because the average effective rate of return for these countries is about 14 per cent over the simulation period compared to about 7 1/2 per cent for the other countries (12).

Table 12

IMPACT OF A 10% DEPRECIATION (a)

(Deviations from baseline, $ billions)

	Net investment income			The revaluation effect (in the first period)		
Years	1	2	3	Assets	Liabilities	Net
United States	2.61	2.26	1.86	22.38	-0.48	21.90
United Kingdom	0.56	0.51	0.35	-2.24	-7.63	5.39
France	-0.11	-0.18	-0.21	-2.59	-2.41	-0.18
Germany	0.17	0.32	0.26	-7.02	-8.63	1.61
Italy	0.02	-0.03	-0.07	-0.43	-0.73	0.30
Canada	0.45	0.53	0.55	-1.10	-7.16	6.06
Japan	-0.25	-0.16	-0.05	-5.43	-1.37	-4.06
Belgium	0.15	0.14	0.10	-0.18	-1.05	0.87
Netherland	0.05	0.04	0.02	-1.07	-1.54	0.47
Australia	0.15	0.12	0.16	-0.19	-1.41	1.22
Austria	-0.01	-0.03	-0.05	-0.52	-0.50	-0.02
Denmark	0.03	0.02	0.02	-0.07	-0.45	0.38
Finland	0.01	0.00	0.00	0.00	-0.06	0.06
Norway	0.00	-0.01	-0.01	-0.09	-0.15	0.06
Sweden	0.02	0.03	0.03	-0.15	-0.40	0.25
Ireland	0.04	0.05	0.05	-	-	0.62
Switzerland	-0.15	-0.09	-0.15	-	-	-2.13
Spain	0.02	-0.06	-0.12	-	-	0.35
Greece	0.01	0.00	-0.01	-	-	0.36
Iceland	0.00	0.00	0.00	-	-	0.01
Portugal	0.01	0.01	0.02	-	-	0.17
Turkey	0.05	0.04	0.04	-	-	0.56
New Zealand	0.01	0.02	0.02	-	-	0.11
LOP	-0.22	-0.21	-0.49	-	-	-11.68
HOP	0.23	0.24	0.31	-	-	4.57
OOP	0.34	0.41	0.35	-	-	7.43
NIC	0.00	0.00	0.00	-	-	0.00
LMI	0.51	0.36	0.32	-	-	11.90
SOV	0.54	0.55	0.54	-	-	7.94
Memorandum item:						
Estimated global impact (b)	-0.24	0.13	-0.07	-	-	8.53

a) Single-country simulations, all variables exogenous to the investment-income block are held fixed.

b) Calculated by multiplying the U.S. results by -1.11 and summing across all countries.

Table 13

IMPACT ON THE CURRENT BALANCE OF A $10 BILLION IMPROVEMENT IN THE TRADE BALANCE (a)

(Deviations from baseline, $ billions)

	Current balance			
Years	1	2	3	6
United States	10.4	11.2	11.7	13.4
United Kingdom	10.5	11.6	12.9	16.3
France	10.4	11.3	12.2	15.4
Germany	10.3	10.9	11.6	16.2
Italy	10.4	11.9	12.0	14.2
Canada	10.4	11.3	12.3	16.3
Japan	10.3	11.0	11.6	14.1
Belgium	10.7	12.3	14.6	24.0
Netherlands	10.5	11.5	12.5	18.8
Australia	10.5	11.7	12.9	16.8
Austria	10.2	10.8	11.2	13.4
Denmark	10.4	11.4	12.6	18.4
Finland	10.5	11.8	12.9	19.0
Norway	10.5	11.7	13.2	19.4
Sweden	10.4	11.2	12.1	15.7
Ireland	10.5	11.8	13.6	24.4
Switzerland	10.4	11.3	12.2	16.2
Spain	10.6	12.0	13.0	22.0
Greece	10.2	10.7	11.3	13.0
Iceland	10.5	11.8	12.8	16.3
Portugal	10.5	11.7	12.8	17.1
Turkey	10.4	11.2	11.9	15.5
New Zealand	10.4	12.3	13.4	15.6
LOP	10.3	10.6	10.8	12.2
HOP	10.4	11.5	12.7	15.8
OOP	10.4	11.6	12.7	15.8
NIC	10.5	11.5	12.6	16.4
LMI	10.2	10.6	11.3	12.3
SOV	10.4	11.2	12.0	14.1

a) Single-country simulations, all variables exogenous to the investment-income block are held fixed.

These simulations, and those reported in Tables 10 to 12, are baseline dependent: different results would be obtained if the simulation was done over a different time period. For the interest-rate and exchange-rate simulations, the results depend on the level of the stocks of assets and liabilities in the baseline. For the trade-balance simulations, the results depend on the level of the effective rates of return.

B. Full-model simulations

The previous simulations were performed in partial single-country mode on the investment-income block and therefore take no account of the single- and multi-country interactions of the block with the rest of the model. As a guide to these, Table 14 reports the results of a series of linked, full-model simulations of a 10 per cent own-currency depreciation for each country, highlighting the role of investment-income in shaping the overall current-balance response. The simulations were run assuming that real government expenditure on goods and services remains unchanged in volume terms and that nominal interest rates remain constant.

With the exception of Norway, where a depreciation does not improve the balance on goods and non-factor services due to the absence of a price elasticity on energy exports, a depreciation of the home currency improves the current account excluding investment income and hence the balance on investment income gradually improves. This is a reflection of the gradual increase in net foreign assets as the trade account improves and revaluation effects which reduce net liabilities measured in dollars. By the sixth year, the size of the improvement in the investment-income balance is typically as much as one-half of the size of the improvement in the non-investment-income part of the current balance. After six years the impact on the trade and service accounts is beginning to weaken and will eventually become zero, but the balance on investment income will remain positive and will continue growing until the change in the balance on current account becomes zero. The latter will require a lower balance on the trade account to offset the improvement in net investment-income due to the improved net foreign asset position.

The addition of the investment-income block has had an important impact on the current-account dynamics of the model (Table 15) (13). Before the introduction of the investment-income block, the volume of investment income was exogenous and values reacted to foreign trade price movements. For most countries, including the investment-income block results in a currency depreciation generating a bigger change in the current balance. The most important exceptions is Switzerland where the negative portion of the J-curve and an initial negative revaluation effect combine to give a large downward movement to net investment income so that the current account only improves relative to baseline in the sixth semester. For the other countries, the larger current-balance responses occur because the improvement in the balance on goods and non-factor services generated by a depreciation is amplified by an increase in interest payments on the cumulated improvement in the current balance, and also by a reduction in foreign currency needed to pay the income on local-currency debts. The most important impacts of the new investment-income block in a devaluation simulation occur when a country has a major net asset or liability position in its own currency, as do the United States and the United Kingdom.

Table 14

FULL-MODEL SIMULATIONS OF A 10 PER CENT DEPRECIATION (a)

(Deviations from baseline, $ billions)

	Net trade and non-factor services						Net investment income						Current balance					
Years	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
United States	-3.70	11.88	18.04	16.98	13.39	8.59	-0.26	0.01	0.92	1.90	2.65	3.46	-3.96	11.89	18.96	18.88	16.04	12.06
United Kingdom	-0.99	2.53	3.22	3.24	3.07	2.60	0.33	0.41	0.77	1.21	1.61	1.87	-0.66	2.95	3.99	4.44	4.68	4.47
France	-0.85	3.48	3.81	3.39	2.00	0.93	-0.09	0.03	0.33	0.70	0.94	1.05	-0.95	3.51	4.14	4.10	2.94	1.98
Germany	-4.59	1.52	3.39	2.94	2.51	3.57	-0.01	-0.11	0.07	0.49	0.91	1.14	-4.60	1.41	3.46	3.44	3.42	4.71
Italy	-0.48	2.51	1.77	0.96	0.51	1.06	0.00	0.10	0.27	0.41	0.43	0.46	-0.47	2.61	2.04	1.37	0.95	1.52
Canada	0.25	3.17	3.32	2.83	1.95	1.11	0.51	0.74	1.10	1.52	1.97	2.27	0.76	3.91	4.42	4.35	3.92	3.37
Japan	-2.05	4.62	5.70	5.67	4.49	2.99	-0.43	-0.32	0.01	0.33	0.71	0.99	-2.48	4.29	5.71	6.00	5.21	3.99
Belgium	-0.31	0.56	0.96	1.03	1.14	1.13	0.07	0.10	0.25	0.53	0.83	1.10	-0.24	0.66	1.21	1.56	1.96	2.23
Netherlands	-0.49	0.98	1.22	1.38	1.20	0.65	0.02	0.05	0.15	0.43	0.68	0.80	-0.47	1.03	1.37	1.81	1.88	1.45
Australia	0.22	1.23	1.68	1.75	1.65	1.59	0.16	0.27	0.43	0.62	0.83	1.04	0.38	1.50	2.11	2.37	2.48	2.62
Austria	-0.33	0.11	0.38	0.61	0.69	0.61	-0.01	-0.02	-0.01	0.03	0.06	0.09	-0.35	0.10	0.37	0.64	0.75	0.70
Denmark	-0.29	0.12	0.28	0.43	0.55	0.63	0.02	0.01	0.03	0.10	0.18	0.26	-0.27	0.13	0.31	0.53	0.73	0.89
Finland	-0.13	0.17	0.37	0.48	0.54	0.52	0.00	0.00	0.03	0.10	0.19	0.29	-0.13	0.18	0.40	0.58	0.73	0.81
Norway	-0.20	-0.10	-0.17	-0.38	-0.72	-0.95	0.00	-0.02	-0.04	-0.08	-0.17	-0.28	-0.20	-0.12	-0.21	-0.47	-0.89	-1.23
Sweden	-0.19	0.56	1.11	1.41	1.55	1.66	0.00	0.02	0.09	0.21	0.34	0.48	-0.19	0.58	1.20	1.62	1.88	2.14
Ireland	-0.04	0.02	0.02	0.09	0.19	0.23	0.06	0.07	0.09	0.15	0.22	0.30	0.03	0.09	0.11	0.24	0.41	0.53
Switzerland	-0.34	0.03	0.29	0.63	0.87	0.86	-0.16	-0.18	-0.17	-0.22	-0.19	-0.13	-0.50	-0.15	0.12	0.42	0.68	0.73
Spain	0.21	1.22	0.89	0.53	0.38	0.59	0.05	0.16	0.27	0.55	0.90	1.53	0.25	1.38	1.15	1.08	1.27	2.12
Greece	0.08	0.40	0.43	0.45	0.52	0.52	0.02	0.03	0.06	0.09	0.11	0.14	0.09	0.43	0.49	0.54	0.64	0.66
Iceland	-0.02	0.02	0.02	0.02	0.03	0.04	0.00	0.00	0.00	0.00	0.01	0.01	-0.02	0.02	0.02	0.03	0.04	0.05
Portugal	0.05	0.17	0.14	0.13	0.20	0.25	0.03	0.04	0.06	0.09	0.12	0.16	0.08	0.21	0.21	0.23	0.33	0.42
Turkey	0.01	0.15	0.25	0.34	0.34	0.38	0.04	0.04	0.05	0.08	0.11	0.15	0.05	0.19	0.31	0.42	0.45	0.53
New Zealand	-0.08	0.10	0.14	0.15	0.17	0.21	0.00	0.00	0.02	0.03	0.05	0.06	-0.08	0.10	0.16	0.18	0.21	0.27

a) The simulation reported for each country is a linked (i.e. multi-country) simulation of a 10 per cent depreciation of that country's currency.

Table 15

FULL-MODEL SIMULATIONS OF A 10 PER CENT DEPRECIATION: THE EFFECT OF ADDING THE INVESTMENT-INCOME BLOCK (a)

(after addition — before addition) (b)

($ billions)

	Net trade and non-factor services						Net investment income						Current balance					
Half years	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
United States	-0.57	-0.82	-0.84	-0.91	-0.94	-1.00	5.97	5.88	5.65	5.38	4.94	5.47	5.39	5.06	4.81	4.47	4.00	4.46
United Kingdom	-0.26	-0.65	-0.82	-0.70	-0.57	-0.50	4.78	6.33	5.63	5.21	4.52	4.11	4.52	5.68	4.81	4.52	3.95	3.61
France	-0.09	-0.23	-0.29	-0.30	-0.30	-0.27	1.69	1.73	1.57	1.46	1.40	1.35	1.60	1.50	1.28	1.16	1.10	1.07
Germany	-0.37	-0.38	-0.31	-0.18	-0.16	-0.14	0.98	0.70	0.49	0.29	0.29	0.27	0.61	0.33	0.19	0.10	0.13	0.13
Italy	-0.01	-0.04	-0.04	-0.05	-0.04	-0.03	0.31	0.32	0.30	0.28	0.21	0.22	0.28	0.28	0.26	0.22	0.17	0.19
Canada	-0.07	-0.08	-0.10	-0.13	-0.15	-0.18	0.39	0.52	0.66	0.73	0.83	0.97	0.32	0.44	0.56	0.62	0.68	0.80
Japan	-0.17	-0.19	-0.18	-0.16	-0.09	-0.09	0.59	0.69	0.86	1.02	0.96	1.07	0.40	0.51	0.69	0.86	0.86	0.98
Belgium	-0.12	-0.25	-0.27	-0.20	-0.13	-0.07	1.28	1.31	1.12	0.85	0.66	0.52	1.16	1.06	0.84	0.65	0.54	0.44
Netherlands	-0.04	-0.10	-0.09	-0.05	-0.04	-0.03	0.65	0.55	0.36	0.31	0.28	0.26	0.59	0.45	0.27	0.27	0.26	0.23
Australia	-0.01	-0.02	-0.02	-0.02	-0.02	-0.03	0.14	0.12	0.13	0.15	0.20	0.33	0.13	0.10	0.11	0.13	0.18	0.30
Austria	-0.01	-0.04	-0.04	-0.03	-0.03	0.00	0.18	0.18	0.15	0.12	0.10	0.08	0.16	0.15	0.11	0.09	0.07	0.06
Denmark	0.00	-0.01	-0.01	-0.01	0.00	-0.01	0.07	0.06	0.05	0.05	0.05	0.06	0.07	0.05	0.04	0.04	0.04	0.05
Finland	-0.01	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	-0.01	0.01	0.03	0.05	0.01	-0.01	-0.01	0.01	0.03	0.04
Norway	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	-0.02	-0.05	0.02	0.02	-0.01	0.00	-0.02	-0.04
Sweden	-0.01	-0.02	-0.01	-0.02	-0.01	-0.02	0.07	0.09	0.08	0.07	0.06	0.07	0.07	0.07	0.06	0.06	0.05	0.06
Ireland	-0.02	-0.02	-0.01	-0.01	-0.02	-0.01	0.07	0.06	0.07	0.06	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05
Switzerland	-0.02	-0.04	-0.04	-0.04	-0.02	0.00	0.26	0.23	0.26	0.19	0.14	0.10	-0.09	-0.23	-0.33	-0.26	-0.18	-0.10
Spain	0.00	-0.02	-0.02	-0.02	-0.02	-0.03	0.10	0.14	0.16	0.21	0.26	0.30	0.10	0.12	0.14	0.19	0.23	0.26
Greece	-0.01	0.00	0.00	-0.01	-0.01	0.00	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03
Portugal	0.00	0.00	0.00	0.00	-0.01	-0.02	0.00	0.01	0.03	0.06	0.06	0.07	0.01	0.01	0.03	0.04	0.05	0.05
Turkey	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.02	0.04	0.06	0.07	0.08	0.09	0.02	0.04	0.06	0.07	0.07	0.08
New Zealand	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.00	0.01	0.00	0.00	0.02	0.02

a) The simulation reported for each country is a linked (i.e. multi-country) simulation of a 10 per cent depreciation of that country's currency.

b) These simulations are based on the Summer 1986 version of INTERLINK and are carried out over the period 1981 to 1983.

For most countries, the addition of the new investment-income block barely changes the short- or medium-term response of gross national or domestic product to a currency depreciation. Except for the United States, France, the United Kingdom and Canada, the change in the impact of a 10 per cent depreciation of the home currency from inserting the new block is less than or equal to 0.1 per cent of GDP after three years; for the above four countries, the changes are larger (up to 0.3 per cent of GDP in the case of the United Kingdom).

IV. SUMMARY

The investment-income model presented above is essentially a formalization of the off-model forecasting technique previously used in the Economics and Statistics Department. The basic structure of the model -- an effective rate of return applied to the stock of assets and liabilities -- is relatively simple and transparent. The information content of the model has been enriched with the inclusion of available data on the currency composition of assets and liabilities. These weighting matrices enable the rich multi-country environment of INTERLINK to be exploited in the definitions of the proxies for rates of return, which are related to all interest rates in the model, and in the revaluation effects from exchange-rate changes. No exogenous variables have been added to the model.

The investment-income block has been included in the standard version of INTERLINK since the Summer of 1986. It has proven to be an extremely useful framework for preparing the investment-income forecasts. The simulation properties of the model have also been improved, obviating the necessity for ad hoc off-model adjustments to allow for the effects from cumulative build-ups of external assets and liabilities. This is particularly important in the light of large current-accunt imbalances which are expected to persist in the medium term.

Given the size of the discrepancies in the data on world investment income flows, the endogenous changes in the world discrepancy on investment income are generally of an acceptable magnitude. The largest changes to the discrepancy are encountered in simulations where there are large changes to both exchange rates and interest rates. In these cases, the practice has generally been to reallocate the change in the world investment-income discrepancy across countries according to the size of the gross investment-income flows.

A number of experiments have been done to determine to what extent these changes in the world investment-income discrepancy are related to aspects of model specification. In particular, the lags in the effective rate-of-return equations and the fact that the long-run elasticities are less than unity does not appear to contribute to the problem. Preliminary results also suggest that the fact, noted above, that the weighting matrices imply that there is a higher percentage of dollar liabilities than dollar assets, does not cause simulation problems for the world investment-income discrepancy.

There are a number of areas where the model needs to be improved. Perhaps the most important is to utilize published time-series estimates of the stock of foreign assets and liabilities for those countries for which such data are available. These data could be incorporated into the block together with the calculated estimates. The official published data would be used in the construction of the effective rates of return, etc. The differences between the published and the calculated estimates, to the extent that they primarily represent revaluation effects, might be sucessfully explained by economic factors such as changes in interest rates, profitability, inflation and exchange rates.

NOTES

1. References to the INTERLINK model are given in Richardson (1987).

2. Most models incorporate disaggregated capital flow or capital stock data in the determination of investment-income flows; see, for example, Bond (1977), Brayton and Mauskopf (1985), EPA (1982) and Stevens et al. (1984).

3. These capital outflow equations are very rudimentary but are necessary to decompose the net capital flows into the gross flows. Given that much greater confidence can be placed on the determination of the net capital flow, greater confidence can also be placed on the determination of the net, rather than the gross, investment-income flows.

4. According to Shafer and Loopesko (1983), this exchange-rate-induced revaluation effect has been an important aspect of changes in the relative quantities of dollars and other currencies in portfolios. See also Scholl (1986).

5. For Switzerland and the low absorptive oil-producing countries, which are the only net creditors among the Group II countries, RHOA is used in equation [3.II] and RAS and RAL are used in equation [7.II]. Note that because the stock data refer to mid-semester, the capital flow data must be consistently defined to refer to the semi-annual flow from mid-semester to mid-semester.

6. Published time-series estimates of the stocks of foreign assets and liabilities are available for the United States, Japan, Germany, the United Kingdom, Italy, Canada, Australia, Denmark, Finland, Norway, Sweden and Switzerland. Published estimates for only the most recent years are also available for Austria.

7. For Germany the very low elasticity on assets may also reflect relatively recent direct investments, the return on which is typically very low.

8. The discrepancy may itself be an understatement of the real discrepancy because only a few (mainly creditor) countries report the undistributed earnings of foreign subsidiaries.

9. All block simulations are single-country and were performed relative to the actual and projected outcome over the period 1983 to 1988. The full-model simulations are separate, linked simulations.

10. By the end of three years, the world net foreign assets discrepancy has increased which explains why the increase in the world investment-income discrepancy appears to exceed the weighted average of individual rates of return on assets and liabilities.

11. This can be seen by comparing the diagonal elements of the weighting matrices (multiplied by 1-RHO) going south-easterly from the first row, second column of Tables 8 and 9. Recall that foreign direct investment liabilities are assumed to be denominated according to trade weights.

12. The $10 billion improvement in the trade balance compounded at an annual rate of return of 14 per cent for six years gives about a $22 billion improvement in the current account; at an annual rate of return of 7 1/2 per cent, the improvement is about $15 billion.

13. The simulations reported in Table 15, which are specified analogously to those reported in Table 14, are based on the Summer 1986 version of INTERLINK and are carried out over the period 1981 to 1983.

Annex I

THE DERIVATION OF THE EQUATIONS IN SECTION I.B.2

Let RHOA be the proportion of foreign assets held by domestic residents (FADD) which are dollar denominated:

$$RHOA = FAD\$/FADD = FAD\$/(FAD\$+FADN.EXA), \qquad [A.1]$$

where FAD$, FADN are the foreign assets denominated in dollars and non-dollars, respectively; and EXA is the exchange rate needed to convert the non-dollar currency into dollars.

Equation [A.1] is the definition of RHOA. To show how RHOA changes with changes in the exchange rate, it is convenient to use the reciprocal of [A.1]:

$$1/RHOA = (FAD\$+FADN.EXA)/FAD\$ = 1 + EXA.FADN/FAD\$, \qquad [A.2]$$

so, $$FADN/FAD\$ = [(1/RHOA) -1]/EXA = (1-RHOA)/(RHOA.EXA). \qquad [A.3]$$

All variables thus far are contemporaneous. If only the exchange rate changes, [A.2] in period t is:

$$1/RHOA_t = [FAD\$_{t-1} + FADN_{t-1}(EXA_{t-1} + \Delta EXA_t)]/FAD\$_{t-1}$$

$$= 1/RHOA_{t-1} + \Delta EXA_t . FADN_{t-1}/FAD\$_{t-1}.$$

Using [A.3],

$$1/RHOA_t = 1/RHOA_{t-1} + ((1-RHOA_{t-1})/RHOA_{t-1})(\Delta EXA_t/EXA_{t-1}),$$

$$= (1/RHOA_{t-1})[1 + (1-RHOA_{t-1})((EXA_t/EXA_{t-1}) -1)],$$

$$= (1/RHOA_{t-1})[RHOA_{t-1} + (1-RHOA_{t-1})EXA_t/EXA_{t-1}].$$

Or, $$RHOA_t = RHOA_{t-1}/[RHOA_{t-1} + (1-RHOA_{t-1})(EXA_t/EXA_{t-1})], \qquad [A.4]$$

which is equations [2] in the main text. Equations for RHOL and RHO are derived analogously.

The revaluation effect on the outstanding stock of assets is derived as follows:

$$FADD_t = FAD\$_t + FADN_t . EXA_t .$$

If only the exchange rate changes,

$$\Delta FADD_t = FADN_{t-1} . \quad EXA_t .$$

Substituting $FADN_{t-1} = (1-RHOA_{t-1})\ FADD_{t-1}/EXA_{t-1}$,

$$\Delta FADD_t = FADD_{t-1}\ (1-RHOA_{t-1})\ \Delta EXA_t/EXA_{t-1}. \qquad [A.5]$$

This is the revaluation effect on the outstanding stock of assets due to an exchange-rate change.

The standard stock-flow identity, without a revaluation effect is:

$$FADD_t = FADD_{t-1} + KFO_t$$

where KFO is the capital outflow (1). The revaluation effect is given in [A.5] so the stock-flow identity becomes:

$$FADD_t = FADD_{t-1} + [FADD_{t-1}\ (1-RHOA_{t-1})\Delta\ EXA_t/EXA_{t-1}] + KFO_t$$

where the term in the square bracket is the revaluation effect. Rearranging,

$$FADD_t = FADD_{t-1}\ [1 + (1-RHOA_{t-1})((EXA_t/EXA_{t-1})-1)] + KFO_t$$

$$= FADD_{t-1}\ [RHOA_{t-1} + (1-RHOA_{t-1})(EXA_t/EXA_{t-1})] + KFO_t \qquad [A.6]$$

$$FADD_t = FADD_{t-1}\ (RHOA_{t-1}/RHOA_t) + KFO_t,$$

where [A.4] has been substituted in the final step. This is equations [3] in the main text. Equations for FADD and NFAD are derived analogously.

NOTES

1. Note that since FADD (and the other stock variables) is mid-period (rather than end-period), KFO (and the other capital-flow variables) must be a two-period moving average of the capital outflow.

Annex II

INTERLINK NON-OECD REGIONS' COUNTRY CLASSIFICATION

LOP	Less absorptive OPEC countries	Bahrein, Kuwait, the Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, the United Arab Emirates
HOP	More absorptive OPEC countries	Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Nigeria, Venezuela
OOP	Other oil-producing countries	Brunei, Cameroons, Congo, Egypt, Mexico, Malaysia, Peru, Syria, Trinidad and Tobago, Tunisia
NIC	Newly-industrialising countries	Argentina, Brazil, Hong Kong, Israel, South Korea, Philipines, Singapore, South Africa, Taiwan, Thailand, Yugoslavia
LMI	Low- and middle-income countries	All other non-OECD countries, including trade not specified in terms of origin or destination
SOV	USSR and Eastern European countries	Albania, Bulgaria, Czechoslovakia, Germany (Dem. Rep.), Hungary, Poland, Rumania, Union of Soviet Socialist Republics

Annex III

DUMMY VARIABLES

The dummy variables used in the estimated equations reported in Tables 2, 3 and 4 are reported in Table A1.

Annex IV

TIME-SERIES ESTIMATES OF EFFECTIVE RATES OF RETURN AND STOCKS OF ASSETS AND LIABILITIES

Calculated time series for the proportion of dollar-denominated assets and liabilities, the mid-period stocks of foreign assets and liabilities, and the effective rates of return on foreign assets and liabilities for the Group I countries are presented in Table A2. Similar data for the Group II countries are presented in Table A3.

Table A1

DUMMY VARIABLES

	Equation	Non-zero values of dummy variables	Estimated coefficient	Standard error
United States	RAE	1.0 in 73II	-1.14	0.34
		1.0 in 74II	-1.24	0.34
		1.0 in 79I	1.08	0.34
		1.0 in 79II	1.72	0.34
	RLE	1.0 in 73II	1.10	0.58
		1.0 in 83I	-1.15	0.55
Japan	RLE	1.0 in 73II	-1.32	0.55
Germany	RAE	1.0 in 79II	0.75	0.38
	RLE	1.0 in 75II	-1.50	0.48
United Kingdom	RLE	1.0 up to 79II	-1.17	0.43
Canada	RAE	1.0 in 81I	-0.76	0.21
		1.0 in 73I to 74II	-0.21	0.12
		1.0 in 79II, 80II, -1.0 in 80I	-0.28	0.11
Austria	RAE	1.0 up to 75II	-0.79	0.20
	RLE	1.0 up to 75II	-0.90	0.21
Belgium	RAE	1.0 up to 75I	-0.69	0.36
		1.0 in 79I to 81I	2.53	0.33
	RLE	1.0 up to 78I	-1.34	0.33
		1.0 in 80I, 81I, 81II	2.32	0.37
Denmark	RAE	1.0 up to 75II	-1.27	0.30
	RLE	1.0 up to 75II	-1.07	0.36
Finland	RAE	1.0 in 76I	2.53	0.87
		1.0 in 77I	-1.80	0.86
	RLE	1.0 in 79I	1.18	0.45
Greece	XSIID	1.0 in 77II	-0.37	0.13
		1.0 in 82I, 82II	-0.40	0.10
		1.0 in 83I	-0.77	0.13
Iceland	RE	1.0 in 74I, 74II	-0.55	0.14
		1.0 in 79II	0.46	0.18
	XSIID	1.0 in 75II	-1.25	0.39
Ireland	RE	1.0 in 81I, -1.0 in 81II	-2.73	0.56
	XSIID	1.0 in 80I	0.17	0.06
		1.0 in 80II	0.13	0.06

Table A1 continued

	Equation	Non-zero values of dummy variables	Estimated coefficient	Standard error
Netherlands	RAE	1.0 in 74I	1.96	0.53
Norway	RAE	1.0 in 82II	1.36	0.53
	RLE	1.0 in 80I	-1.24	0.48
Portugal	RE	1.0 in 73II, 74I	-7.30	2.65
		1.0 in 75I, 76I	4.55	2.46
	XSIID	1.0 in 76II	-0.64	0.15
		1.0 in 80I to 82II	-0.46	0.12
Spain	RE	1.0 in 73II	-6.62	1.93
		1.0 in 74I	-10.74	2.00
Sweden	RAE	1.0 in 78I	1.96	0.49
	RLE	1.0 in 81II, 82II -1.0 in 82I	2.50	0.26
Turkey	RE	1.0 in 79I, 79II	0.66	0.09
		1.0 in 82I	-0.60	0.13
	XSIID	1.0 in 75I to 76II	-2.55	0.49
Australia	RAE	2.0 in 81II, 1.0 in 82I	-1.35	0.33
		1.0 in 83I to 84I	2.46	0.38
		1.0 in 76I to 81I	-0.77	0.26
	RLE	1.0*TIME up to 83I	-0.15	0.05
New Zealand	RE	1.0 in 74I	-1.46	0.36
		1.0 in 74II, 75II -1.0 in 75I, 76I	-0.76	0.19
		1.0 in 79II	-1.37	0.38
NIC	RE	1.0 in 74I	-1.87	0.48
HOP	RE	1.0 up to 82II	-4.42	0.47
	XSIID	1.0 up to 82II	-0.27	0.10
LOP	RE	1.0 in 83I	1.11	0.53
OOP	RE	1.0 up to 81II	-1.46	0.43
		1.0 in 74I to 76I	-0.67	0.18
	XSIID	1.0 in 73I	-0.54	0.16
LMI	RE	1.0 in 75I	-1.11	0.21
		1.0 in 82I	-1.20	0.23
SOV	RE	1.0 up to 75I	-0.73	0.16

Table A2

CALCULATED DATA FOR GROUP I COUNTRIES

UNITED STATES

		RHOA (proportion)	RHOL	FADD ($ billion)	FLDD	RAE (per cent)	RLE
1974	I	0.716	0.983	277.4	108.5	10.1	10.5
	II	0.712	0.983	296.4	124.8	9.2	10.2
1975	I	0.696	0.981	320.7	137.6	7.6	9.3
	II	0.711	0.982	334.3	148.9	7.9	8.3
1976	I	0.711	0.982	356.2	164.2	8.1	8.2
	II	0.708	0.982	383.1	187.6	7.8	7.0
1977	I	0.706	0.981	405.3	211.5	7.8	6.1
	II	0.696	0.980	428.9	236.6	7.7	6.5
1978	I	0.676	0.978	463.2	268.6	8.3	7.2
	II	0.658	0.976	507.1	308.0	9.0	7.8
1979	I	0.656	0.976	539.3	341.2	10.5	8.8
	II	0.648	0.975	576.8	373.5	12.4	9.5
1980	I	0.650	0.975	614.7	414.3	11.7	9.9
	II	0.650	0.975	653.4	452.3	11.2	9.5
1981	I	0.680	0.978	666.3	487.2	12.7	10.6
	II	0.692	0.980	707.0	536.4	12.4	9.9
1982	I	0.696	0.980	772.6	603.4	11.2	9.4
	II	0.710	0.981	814.3	664.3	10.0	8.3
1983	I	0.707	0.981	851.9	711.2	8.7	7.1
	II	0.720	0.982	863.8	758.0	9.5	7.3

JAPAN

		RHOA (proportion)	RHOL	FADD ($ billion)	FLDD	RAE (per cent)	RLE
1974	I	0.461	0.659	77.1	80.0	4.2	4.0
	II	0.463	0.654	80.3	86.5	4.9	5.5
1975	I	0.450	0.635	85.0	91.6	4.5	4.5
	II	0.463	0.651	84.1	91.2	4.1	4.0
1976	I	0.464	0.650	86.4	92.9	3.9	3.9
	II	0.458	0.645	90.3	94.7	3.9	3.9
1977	I	0.452	0.640	93.9	94.6	3.9	3.8
	II	0.435	0.626	100.3	94.1	3.8	3.8
1978	I	0.410	0.599	112.8	96.3	3.9	4.0
	II	0.380	0.574	132.3	102.9	4.6	4.7
1979	I	0.387	0.574	141.7	111.8	5.9	5.4
	II	0.392	0.568	152.2	129.5	6.3	6.1
1980	I	0.398	0.571	162.3	149.4	6.5	6.6
	II	0.387	0.569	180.0	168.4	6.5	6.4
1981	I	0.403	0.601	189.7	176.8	7.5	8.4
	II	0.419	0.615	201.8	189.8	8.5	9.6
1982	I	0.426	0.618	215.2	202.2	8.5	8.6
	II	0.445	0.635	220.5	207.8	8.3	7.6
1983	I	0.433	0.629	243.4	220.4	6.4	5.6
	II	0.443	0.643	260.0	227.0	6.0	5.6

GERMANY

		RHOA (proportion)	RHOL	FADD ($ billion)	FLDD	RAE (per cent)	RLE
1974	I	0.476	0.276	81.1	67.7	6.1	6.7
	II	0.470	0.271	90.5	72.1	5.5	6.5
1975	I	0.448	0.254	102.4	80.4	5.2	5.9
	II	0.469	0.270	106.2	81.9	4.5	4.1
1976	I	0.469	0.269	113.4	87.9	4.7	4.4
	II	0.463	0.263	122.0	94.8	4.7	4.9
1977	I	0.457	0.258	130.3	101.4	4.3	5.1
	II	0.444	0.248	140.4	110.0	4.4	5.6
1978	I	0.420	0.229	154.8	122.5	5.3	4.7
	II	0.400	0.214	170.9	134.9	5.4	4.9
1979	I	0.396	0.211	183.3	144.5	5.3	5.8
	II	0.387	0.205	196.8	161.2	6.3	6.3
1980	I	0.388	0.206	207.9	178.7	5.7	5.4
	II	0.391	0.208	219.6	198.3	6.2	5.6
1981	I	0.429	0.234	211.0	194.2	5.7	5.7
	II	0.444	0.245	215.2	199.9	5.6	6.3
1982	I	0.448	0.247	223.6	207.9	5.8	6.9
	II	0.465	0.260	221.9	202.7	5.4	6.6
1983	I	0.461	0.256	230.4	209.5	5.8	5.8
	II	0.480	0.270	229.3	204.3	5.2	5.1

FRANCE

		RHOA (proportion)	RHOL	FADD ($ billion)	FLDD	RAE (per cent)	RLE
1974	I	0.570	0.681	104.2	81.5	3.9	4.0
	II	0.563	0.674	108.5	87.3	4.7	4.9
1975	I	0.538	0.651	116.5	93.2	4.4	4.9
	II	0.556	0.666	119.6	96.5	3.7	3.9
1976	I	0.560	0.669	126.0	104.1	3.9	4.0
	II	0.561	0.671	134.3	114.2	3.7	3.7
1977	I	0.558	0.669	143.8	124.3	3.4	3.4
	II	0.547	0.658	157.0	136.7	3.7	3.7
1978	I	0.526	0.638	171.5	147.5	4.1	4.0
	II	0.505	0.617	191.2	161.5	4.7	4.5
1979	I	0.502	0.616	206.0	172.1	5.5	5.6
	II	0.494	0.608	224.5	186.7	6.4	6.0
1980	I	0.495	0.609	240.4	202.6	7.8	7.4
	II	0.498	0.611	256.8	221.7	8.2	7.9
1981	I	0.537	0.648	253.5	226.7	9.3	9.1
	II	0.556	0.665	255.4	233.8	10.6	10.6
1982	I	0.564	0.672	260.3	244.4	9.8	9.8
	II	0.586	0.692	259.0	251.7	8.9	8.9
1983	I	0.585	0.690	265.1	263.2	7.6	7.8
	II	0.605	0.708	261.1	263.8	6.9	7.1

Table A2 (continued)

UNITED KINGDOM

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.714	0.674	561.3	519.7	2.6	2.1
	II	0.710	0.670	566.8	529.2	2.5	2.1
1975	I	0.694	0.655	582.5	547.5	2.6	2.4
	II	0.710	0.675	571.3	535.4	2.4	2.2
1976	I	0.711	0.679	573.4	535.5	2.7	2.3
	II	0.709	0.682	578.1	536.9	2.6	2.3
1977	I	0.706	0.679	583.1	543.4	2.5	2.6
	II	0.695	0.667	595.4	556.1	2.7	2.8
1978	I	0.674	0.645	617.9	577.8	3.2	3.2
	II	0.656	0.626	641.6	600.3	3.6	3.6
1979	I	0.653	0.622	651.2	611.3	4.9	4.8
	II	0.645	0.612	667.5	630.4	6.3	6.3
1980	I	0.646	0.611	676.3	641.2	8.0	8.6
	II	0.647	0.608	687.5	651.5	8.1	8.5
1981	I	0.677	0.638	668.3	623.6	10.2	10.6
	II	0.691	0.657	667.3	609.8	12.2	13.0
1982	I	0.694	0.661	675.5	614.6	11.5	12.4
	II	0.709	0.677	672.3	606.6	11.3	12.0
1983	I	0.708	0.679	684.5	611.8	9.5	10.2
	II	0.721	0.691	682.0	608.8	9.1	9.5

CANADA

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.487	0.434	53.8	116.4	2.5	2.8
	II	0.484	0.434	54.9	117.8	2.7	3.0
1975	I	0.470	0.433	57.0	120.5	2.9	3.0
	II	0.486	0.440	56.0	121.8	2.9	3.3
1976	I	0.486	0.433	58.0	127.9	2.8	3.6
	II	0.484	0.431	60.7	133.0	2.7	3.8
1977	I	0.483	0.440	62.4	134.0	2.6	4.1
	II	0.474	0.444	65.0	136.3	2.5	4.2
1978	I	0.456	0.442	70.0	141.1	2.8	4.5
	II	0.439	0.442	76.3	146.9	2.6	5.0
1979	I	0.439	0.443	80.4	153.0	2.6	4.9
	II	0.434	0.441	85.1	159.5	2.6	5.1
1980	I	0.435	0.441	90.2	166.4	3.3	5.5
	II	0.434	0.442	97.9	174.0	3.1	5.2
1981	I	0.460	0.455	99.8	177.6	2.8	6.3
	II	0.474	0.459	104.6	186.3	3.5	6.9
1982	I	0.479	0.463	109.7	191.8	3.8	7.2
	II	0.494	0.470	109.1	190.8	4.0	7.2
1983	I	0.491	0.467	112.3	192.9	3.5	6.7
	II	0.504	0.472	112.3	193.0	3.9	7.0

ITALY

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.656	0.662	65.4	68.9	3.8	4.3
	II	0.651	0.659	67.3	74.7	4.2	5.2
1975	I	0.632	0.641	70.6	79.7	2.6	3.9
	II	0.649	0.657	69.6	78.9	2.0	3.2
1976	I	0.654	0.667	70.1	80.3	1.8	3.1
	II	0.652	0.666	71.4	82.9	1.8	2.8
1977	I	0.649	0.665	72.4	84.2	1.6	2.6
	II	0.638	0.654	74.1	84.7	2.0	3.2
1978	I	0.617	0.635	77.2	85.4	2.2	3.3
	II	0.596	0.615	81.0	86.3	2.9	4.0
1979	I	0.594	0.615	83.6	84.7	3.9	4.7
	II	0.586	0.607	88.0	86.3	4.7	5.2
1980	I	0.589	0.610	90.6	91.0	5.7	6.3
	II	0.591	0.613	92.9	98.2	5.9	6.4
1981	I	0.628	0.650	90.2	100.8	6.1	8.4
	II	0.644	0.667	90.8	105.4	6.8	9.1
1982	I	0.649	0.672	91.9	109.4	6.7	9.1
	II	0.666	0.689	90.6	110.6	5.8	8.4
1983	I	0.663	0.687	92.5	113.4	4.6	7.4
	II	0.680	0.703	92.5	112.8	4.4	6.8

Table A2 (continued)

AUSTRIA

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.579	0.718	20.4	23.7	2.2	2.1
	II	0.571	0.711	20.9	24.3	2.9	3.2
1975	I	0.549	0.691	22.1	25.7	2.8	2.9
	II	0.569	0.708	22.0	25.8	2.6	2.8
1976	I	0.569	0.708	22.8	26.7	2.7	3.0
	II	0.561	0.702	24.0	28.3	2.6	3.0
1977	I	0.555	0.697	25.1	30.2	2.5	3.3
	II	0.541	0.685	26.7	32.6	3.1	3.5
1978	I	0.517	0.663	28.9	35.4	3.1	3.7
	II	0.496	0.644	31.3	37.9	3.4	4.2
1979	I	0.492	0.641	33.4	40.4	4.1	4.6
	II	0.482	0.631	36.6	44.0	4.7	5.0
1980	I	0.482	0.631	39.2	47.5	6.0	6.1
	II	0.484	0.633	41.6	50.7	6.4	6.2
1981	I	0.523	0.668	40.8	50.9	7.1	6.6
	II	0.538	0.680	41.7	52.6	8.2	7.4
1982	I	0.540	0.683	43.5	54.9	7.5	7.0
	II	0.557	0.697	44.3	55.7	6.8	5.9
1983	I	0.552	0.693	47.2	58.1	5.6	5.0
	II	0.570	0.708	48.5	59.8	5.2	5.0

BELGIUM

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.740	0.687	110.5	107.0	3.2	3.1
	II	0.734	0.680	111.8	108.1	3.7	3.5
1975	I	0.716	0.660	115.2	111.4	3.8	3.6
	II	0.732	0.678	113.4	108.9	3.3	3.0
1976	I	0.731	0.678	114.0	109.6	3.3	2.9
	II	0.726	0.673	115.1	110.7	3.7	3.3
1977	I	0.722	0.668	116.2	111.8	3.8	3.5
	II	0.710	0.655	118.6	115.0	4.4	4.1
1978	I	0.688	0.631	123.1	120.4	5.1	4.6
	II	0.668	0.610	127.6	125.8	5.8	5.5
1979	I	0.665	0.607	129.0	127.9	7.3	7.0
	II	0.657	0.599	131.4	132.0	9.4	9.3
1980	I	0.659	0.601	131.9	134.9	12.8	12.6
	II	0.660	0.603	132.2	137.6	14.3	13.7
1981	I	0.693	0.639	126.5	132.8	17.7	16.9
	II	0.706	0.653	124.9	132.6	20.1	19.1
1982	I	0.709	0.660	125.0	134.0	18.9	17.8
	II	0.724	0.678	123.1	132.6	17.2	16.0
1983	I	0.720	0.675	124.7	134.4	14.8	14.1
	II	0.734	0.691	123.5	132.8	13.9	12.9

DENMARK

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.721	0.622	8.8	14.0	3.1	3.5
	II	0.716	0.615	9.0	14.9	3.2	3.7
1975	I	0.698	0.594	9.3	15.6	2.8	3.9
	II	0.715	0.613	9.0	15.3	2.6	3.5
1976	I	0.716	0.614	9.1	16.0	2.6	3.5
	II	0.712	0.609	9.4	17.4	2.9	3.8
1977	I	0.709	0.606	9.8	18.8	3.3	4.2
	II	0.701	0.598	10.4	20.4	4.2	5.2
1978	I	0.681	0.576	11.1	22.3	4.3	5.8
	II	0.663	0.555	11.7	24.1	5.6	6.6
1979	I	0.660	0.553	12.2	25.8	6.4	7.7
	II	0.654	0.548	12.9	28.1	6.9	8.2
1980	I	0.658	0.555	13.2	29.8	7.5	8.8
	II	0.659	0.557	13.4	31.1	7.3	9.2
1981	I	0.693	0.595	13.1	30.3	9.0	9.5
	II	0.707	0.612	13.5	31.1	8.9	11.1
1982	I	0.712	0.619	13.9	32.4	8.3	10.1
	II	0.728	0.638	14.2	33.1	8.0	10.1
1983	I	0.726	0.635	14.9	34.7	6.6	9.0
	II	0.741	0.653	15.5	35.3	6.5	8.2

FINLAND

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1975	I	0.734	0.686	1.2	5.8	10.9	8.8
	II	0.749	0.702	1.1	6.6	8.4	7.5
1976	I	0.749	0.702	1.2	7.4	9.0	7.0
	II	0.745	0.698	1.5	8.2	7.2	7.4
1977	I	0.742	0.696	1.8	9.1	4.1	7.7
	II	0.732	0.688	2.2	9.6	4.7	7.5
1978	I	0.712	0.671	2.6	10.0	5.1	7.5
	II	0.693	0.653	3.1	10.3	5.9	8.6
1979	I	0.691	0.650	3.5	10.4	6.6	9.7
	II	0.683	0.642	4.1	11.1	7.9	9.0
1980	I	0.685	0.643	4.8	12.3	9.1	9.8
	II	0.686	0.643	5.7	13.9	7.3	10.3
1981	I	0.716	0.673	6.3	14.4	8.9	11.2
	II	0.728	0.686	6.9	15.0	9.4	11.1
1982	I	0.731	0.689	7.9	16.1	7.9	11.1
	II	0.746	0.706	9.0	17.2	6.7	10.0
1983	I	0.743	0.706	10.0	18.8	5.3	8.6
	II	0.756	0.719	10.8	19.8	5.3	8.0

Table A2 (continued)

NETHERLANDS

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.617	0.624	32.9	35.2	10.3	7.2
	II	0.610	0.617	35.7	37.0	9.0	8.0
1975	I	0.587	0.595	40.3	40.5	8.5	8.6
	II	0.607	0.615	42.8	42.0	6.8	7.3
1976	I	0.607	0.616	46.5	44.6	6.5	6.8
	II	0.602	0.609	50.4	47.1	7.1	6.6
1977	I	0.596	0.603	54.2	50.2	6.4	6.8
	II	0.584	0.591	59.1	54.7	6.8	6.7
1978	I	0.559	0.566	66.6	62.0	6.8	7.1
	II	0.538	0.545	75.2	71.0	6.7	7.3
1979	I	0.534	0.541	82.4	78.8	7.8	8.1
	II	0.526	0.534	90.5	87.8	8.5	9.0
1980	I	0.527	0.535	96.6	95.6	10.0	10.6
	II	0.529	0.536	102.0	102.4	10.8	11.0
1981	I	0.568	0.575	101.1	101.8	10.7	10.7
	II	0.583	0.590	104.3	103.6	11.2	11.8
1982	I	0.586	0.593	107.5	104.6	10.5	11.7
	II	0.603	0.608	106.3	101.7	10.0	10.4
1983	I	0.599	0.604	107.9	101.5	9.0	9.9
	II	0.617	0.622	106.0	98.0	8.2	8.8

NORWAY

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1975	I	0.704	0.644	9.2	14.1	3.4	4.5
	II	0.721	0.662	9.2	15.2	3.3	4.4
1976	I	0.721	0.661	9.4	16.7	2.7	4.4
	II	0.717	0.656	9.6	18.8	3.2	4.7
1977	I	0.713	0.652	9.9	21.3	2.9	4.9
	II	0.703	0.640	10.4	24.5	2.9	5.3
1978	I	0.685	0.618	11.0	27.7	3.4	5.6
	II	0.667	0.596	11.7	30.2	3.6	6.5
1979	I	0.665	0.595	12.4	31.6	4.5	6.5
	II	0.657	0.587	13.4	33.4	4.6	8.3
1980	I	0.658	0.588	14.3	34.1	6.0	8.0
	II	0.659	0.589	15.1	34.3	7.2	8.9
1981	I	0.689	0.622	15.1	32.3	8.9	10.0
	II	0.703	0.636	15.5	31.2	9.7	10.4
1982	I	0.705	0.639	16.1	31.1	9.7	11.7
	II	0.722	0.657	16.3	30.5	10.3	11.3
1983	I	0.720	0.654	16.9	30.9	8.5	10.8
	II	0.733	0.668	17.3	29.8	7.5	9.5

SWEDEN

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1975	I	0.669	0.639	12.9	29.6	2.2	1.2
	II	0.687	0.658	12.9	29.2	2.9	1.4
1976	I	0.687	0.657	13.3	29.7	3.4	1.9
	II	0.682	0.653	14.0	30.7	3.2	2.3
1977	I	0.679	0.649	14.7	31.9	2.6	2.7
	II	0.673	0.642	15.5	33.2	3.3	2.9
1978	I	0.655	0.621	16.5	34.9	5.7	4.0
	II	0.636	0.600	17.2	36.5	6.4	4.3
1979	I	0.634	0.598	17.7	37.1	6.6	4.1
	II	0.626	0.590	18.4	38.4	7.3	4.8
1980	I	0.627	0.592	18.9	39.3	7.3	5.9
	II	0.628	0.592	19.3	40.3	8.3	7.2
1981	I	0.660	0.625	19.0	39.2	9.3	7.8
	II	0.677	0.642	19.4	39.4	10.2	11.3
1982	I	0.683	0.648	20.3	40.4	9.2	8.7
	II	0.701	0.667	20.8	40.7	8.5	11.0
1983	I	0.704	0.668	21.8	42.3	7.4	8.9
	II	0.717	0.682	22.3	42.8	6.8	8.5

AUSTRALIA

		RHOA (proportion)	RHOL (proportion)	FADD ($ billion)	FLDD ($ billion)	RAE (per cent)	RLE (per cent)
1974	I	0.721	0.375	12.0	10.4	6.4	17.2
	II	0.726	0.384	12.0	11.7	4.8	12.8
1975	I	0.722	0.385	12.3	12.7	4.1	12.3
	II	0.735	0.399	12.3	13.0	3.8	15.5
1976	I	0.738	0.403	12.4	13.9	3.0	14.1
	II	0.739	0.409	12.6	14.8	3.5	14.6
1977	I	0.744	0.424	12.7	15.9	3.1	12.2
	II	0.736	0.417	13.0	17.9	3.3	12.4
1978	I	0.724	0.407	13.4	20.3	3.1	11.1
	II	0.710	0.399	13.7	23.1	4.1	11.2
1979	I	0.715	0.404	13.9	25.2	4.0	11.2
	II	0.715	0.403	14.2	26.8	4.7	12.3
1980	I	0.717	0.403	14.5	28.2	5.7	12.1
	II	0.710	0.395	15.0	31.4	5.4	11.1
1981	I	0.722	0.404	15.2	34.2	5.8	10.7
	II	0.731	0.410	15.6	38.3	4.7	8.7
1982	I	0.740	0.423	15.9	42.6	4.5	8.2
	II	0.756	0.446	16.1	45.1	6.0	6.4
1983	I	0.757	0.456	16.6	47.5	6.8	6.9
	II	0.764	0.463	17.0	50.0	7.0	9.9

Table A3

CALCULATED DATA FOR GROUP II COUNTRIES

PORTUGAL

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1976	I	0.467	-3.4	4.2
	II	0.479	-3.9	3.5
1977	I	0.505	-4.4	3.8
	II	0.515	-5.1	3.7
1978	I	0.517	-5.8	5.1
	II	0.523	-6.2	5.8
1979	I	0.532	-6.2	6.7
	II	0.535	-6.2	7.3
1980	I	0.535	-6.5	9.7
	II	0.539	-7.0	8.4
1981	I	0.574	-7.6	9.9
	II	0.597	-8.6	13.5
1982	I	0.612	-9.9	12.1
	II	0.653	-10.9	11.5
1983	I	0.666	-11.9	9.5
	II	0.709	-12.0	8.6

NEW ZEALAND

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.651	-2.4	6.7
	II	0.650	-3.2	5.4
1975	I	0.638	-4.2	6.3
	II	0.665	-4.7	5.3
1976	I	0.669	-5.1	7.1
	II	0.670	-5.6	8.0
1977	I	0.668	-6.0	6.3
	II	0.657	-6.6	7.3
1978	I	0.638	-7.1	7.4
	II	0.620	-7.5	8.1
1979	I	0.620	-7.9	7.3
	II	0.619	-8.2	5.2
1980	I	0.622	-8.5	6.2
	II	0.622	-9.0	6.1
1981	I	0.650	-9.1	7.1
	II	0.665	-9.5	6.8
1982	I	0.672	-10.2	6.8
	II	0.687	-10.8	7.4
1983	I	0.689	-11.4	6.5
	II	0.701	-11.8	7.3

Table A3 (continued)

ICELAND

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.577	-0.6	2.5
	II	0.577	-1.0	2.1
1975	I	0.565	-1.3	2.1
	II	0.586	-1.3	2.7
1976	I	0.588	-1.4	2.7
	II	0.585	-1.4	3.1
1977	I	0.582	-1.4	3.2
	II	0.571	-1.5	2.9
1978	I	0.553	-1.5	3.4
	II	0.537	-1.6	3.5
1979	I	0.539	-1.5	3.6
	II	0.537	-1.6	5.1
1980	I	0.543	-1.6	5.2
	II	0.550	-1.6	5.4
1981	I	0.588	-1.6	6.6
	II	0.605	-1.6	7.6
1982	I	0.615	-1.7	7.4
	II	0.641	-1.7	6.8
1983	I	0.647	-1.8	6.8
	II	0.668	-1.8	7.1

IRELAND

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1975	I	0.352	-9.0	0.4
	II	0.378	-8.4	0.7
1976	I	0.395	-8.1	1.2
	II	0.415	-7.9	1.9
1977	I	0.413	-8.1	2.6
	II	0.403	-8.5	3.8
1978	I	0.387	-9.0	5.3
	II	0.375	-9.6	6.3
1979	I	0.370	-10.3	6.6
	II	0.361	-11.4	6.7
1980	I	0.363	-12.3	7.1
	II	0.366	-13.0	7.1
1981	I	0.408	-12.6	6.4
	II	0.429	-13.1	8.6
1982	I	0.438	-13.8	10.0
	II	0.457	-13.9	11.0
1983	I	0.462	-14.2	11.1
	II	0.489	-14.0	11.3

GREECE

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.529	-10.1	0.9
	II	0.527	-10.6	1.0
1975	I	0.520	-11.2	0.9
	II	0.547	-11.0	0.9
1976	I	0.557	-11.2	0.9
	II	0.560	-11.6	1.1
1977	I	0.560	-12.2	1.2
	II	0.552	-12.9	1.1
1978	I	0.546	-13.6	1.1
	II	0.538	-14.2	1.0
1979	I	0.538	-14.9	0.9
	II	0.538	-15.9	1.2
1980	I	0.555	-16.5	1.5
	II	0.568	-17.2	1.7
1981	I	0.608	-17.2	3.0
	II	0.629	-17.8	3.7
1982	I	0.642	-18.4	3.3
	II	0.667	-18.6	3.7
1983	I	0.690	-19.1	4.3
	II	0.709	-19.5	3.9

SWITZERLAND

		RHOA (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.491	57.0	3.4
	II	0.481	58.3	3.5
1975	I	0.456	62.3	3.2
	II	0.474	61.2	3.3
1976	I	0.471	63.1	3.3
	II	0.466	65.6	3.3
1977	I	0.464	67.5	3.5
	II	0.448	71.7	3.7
1978	I	0.418	78.8	4.1
	II	0.392	86.3	4.3
1979	I	0.392	88.2	4.7
	II	0.384	91.3	4.8
1980	I	0.387	90.8	5.0
	II	0.388	90.2	5.1
1981	I	0.425	82.9	6.9
	II	0.435	82.2	7.7
1982	I	0.437	83.7	7.5
	II	0.457	82.1	6.9
1983	I	0.452	84.9	7.4
	II	0.468	83.8	7.2

SPAIN

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1975	I	0.542	-8.2	1.5
	II	0.557	-9.7	3.2
1976	I	0.575	-11.2	4.0
	II	0.580	-13.2	4.1
1977	I	0.581	-15.4	4.3
	II	0.607	-15.8	4.7
1978	I	0.594	-16.1	6.2
	II	0.570	-15.9	6.9
1979	I	0.557	-14.9	6.6
	II	0.550	-14.6	7.9
1980	I	0.558	-15.9	8.1
	II	0.571	-18.1	9.2
1981	I	0.609	-19.9	10.8
	II	0.630	-21.7	11.4
1982	I	0.642	-23.2	9.7
	II	0.665	-24.5	10.8
1983	I	0.686	-25.9	9.0
	II	0.709	-26.3	9.1

TURKEY

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1976	I	0.268	-22.9	1.2
	II	0.274	-23.4	1.4
1977	I	0.281	-24.2	1.4
	II	0.288	-25.3	1.4
1978	I	0.311	-24.5	1.4
	II	0.318	-24.6	2.2
1979	I	0.333	-24.0	3.7
	II	0.412	-20.2	5.3
1980	I	0.476	-18.5	5.8
	II	0.507	-19.1	6.1
1981	I	0.547	-19.8	7.0
	II	0.590	-19.4	7.6
1982	I	0.621	-19.0	7.0
	II	0.655	-18.6	7.6
1983	I	0.675	-18.7	7.2
	II	0.709	-18.8	7.6

Table A3 (continued)

LOP

		RHOA (proportion)	NFAD ($ bil.)	RE (%)
1975	I	0.583	27.3	8.2
	II	0.602	38.3	6.0
1976	I	0.600	51.9	4.7
	II	0.595	65.7	3.5
1977	I	0.590	78.5	2.5
	II	0.575	91.9	2.5
1978	I	0.549	103.7	3.2
	II	0.525	112.5	3.0
1979	I	0.522	120.2	2.0
	II	0.514	140.9	1.5
1980	I	0.516	173.4	1.5
	II	0.517	213.7	1.9
1981	I	0.554	241.8	2.6
	II	0.568	267.3	3.1
1982	I	0.571	278.4	3.5
	II	0.588	274.3	4.2
1983	I	0.583	272.9	4.8
	II	0.600	260.0	4.9

HOP

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1975	I	0.586	-112.3	2.3
	II	0.604	-105.7	2.6
1976	I	0.603	-104.8	2.9
	II	0.598	-104.3	3.1
1977	I	0.594	-103.0	3.2
	II	0.578	-104.9	3.4
1978	I	0.552	-112.7	3.7
	II	0.527	-123.0	3.8
1979	I	0.525	-125.5	4.2
	II	0.517	-117.6	4.6
1980	I	0.519	-96.9	5.3
	II	0.519	-84.4	5.8
1981	I	0.555	-77.5	6.1
	II	0.569	-82.5	6.3
1982	I	0.572	-98.6	6.4
	II	0.589	-108.9	7.1
1983	I	0.584	-117.5	7.9
	II	0.600	-118.5	8.9

LMI

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.515	-80.5	3.6
	II	0.508	-82.7	3.7
1975	I	0.485	-88.8	2.6
	II	0.505	-87.6	2.9
1976	I	0.503	-89.2	3.1
	II	0.498	-93.1	3.4
1977	I	0.493	-97.1	3.8
	II	0.478	-103.6	3.9
1978	I	0.451	-115.9	3.6
	II	0.426	-130.9	3.4
1979	I	0.424	-140.8	3.2
	II	0.416	-154.2	3.4
1980	I	0.418	-166.9	3.9
	II	0.419	-184.1	4.0
1981	I	0.454	-187.8	4.4
	II	0.468	-200.4	4.7
1982	I	0.471	-216.7	3.5
	II	0.489	-220.2	3.5
1983	I	0.483	-232.6	3.4
	II	0.500	-235.2	3.4

OOP

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.663	-118.8	2.6
	II	0.657	-121.9	2.7
1975	I	0.636	-129.3	2.1
	II	0.654	-129.5	2.3
1976	I	0.653	-132.3	2.4
	II	0.648	-135.1	2.6
1977	I	0.644	-136.7	2.5
	II	0.630	-140.3	2.7
1978	I	0.604	-147.2	3.1
	II	0.580	-154.2	3.3
1979	I	0.578	-156.0	3.3
	II	0.570	-158.6	3.6
1980	I	0.572	-156.0	4.1
	II	0.572	-156.0	4.6
1981	I	0.607	-151.6	5.8
	II	0.620	-154.9	6.9
1982	I	0.623	-162.6	8.8
	II	0.640	-164.5	8.9
1983	I	0.635	-167.7	8.1
	II	0.650	-164.0	8.0

NIC

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	1.000	-115.7	2.7
	II	1.000	-123.5	3.4
1975	I	1.000	-132.7	3.1
	II	1.000	-141.9	3.9
1976	I	1.000	-149.4	3.6
	II	1.000	-154.3	3.9
1977	I	1.000	-156.9	4.2
	II	1.000	-159.9	4.5
1978	I	1.000	-163.4	4.9
	II	1.000	-167.7	5.5
1979	I	1.000	-175.8	6.2
	II	1.000	-186.6	7.1
1980	I	1.000	-197.9	8.2
	II	1.000	-213.1	9.1
1981	I	1.000	-233.3	10.1
	II	1.000	-250.9	10.9
1982	I	1.000	-266.3	11.6
	II	1.000	-282.2	11.0
1983	I	1.000	-294.6	9.7
	II	1.000	-302.4	9.4

SOV

		RHOL (proportion)	NFAD ($ bil.)	RE (%)
1974	I	0.515	-76.5	1.0
	II	0.508	-76.0	1.1
1975	I	0.485	-81.2	1.2
	II	0.505	-82.7	1.5
1976	I	0.503	-87.6	1.7
	II	0.498	-91.9	2.3
1977	I	0.493	-94.7	3.0
	II	0.478	-98.8	3.6
1978	I	0.451	-106.2	3.7
	II	0.426	-114.1	3.9
1979	I	0.424	-115.5	4.2
	II	0.416	-117.8	4.7
1980	I	0.418	-117.8	5.5
	II	0.419	-118.8	6.0
1981	I	0.454	-110.5	7.1
	II	0.468	-107.0	7.5
1982	I	0.471	-104.4	7.5
	II	0.489	-96.6	7.7
1983	I	0.483	-92.7	7.3
	II	0.500	-84.1	7.4

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