

EBS/85/268

CONFIDENTIAL

December 6, 1985

To: Members of the Executive Board
From: The Secretary
Subject: Indicators of Real Effective Exchange Rates

There is attached for the information of Executive Directors the latest paper in the quarterly series presenting indicators of real effective exchange rates of member countries.

Mr. Boughton (ext. 7477) is available to answer technical or factual questions relating to this paper.

Att: (1)



INTERNATIONAL MONETARY FUND

Indicators of Real Effective Exchange Rates

Prepared by the Research Department

(In consultation with the Exchange and Trade Relations
Department, Area Departments, and the Bureau of Statistics)

Approved by Wm. C. Hood

December 4, 1985

This paper presents charts and tables of quarterly data on indicators of real effective exchange rates for member countries. ^{1/} Real effective exchange rates are defined as nominal effective exchange rates adjusted for relative movements in local currency prices between the home country and the rest of the world. The period covered by the indicators extends over several years, in order to permit the examination of changes in a medium-term perspective.

There are various concepts of the real effective exchange rate corresponding to different analytical purposes. For example, such indices may be used as one element in assessing the international competitiveness of particular industries, the export sector as a whole, or the import-competing sector. Each specific purpose leads to a different method of calculation and yields a different result. In this paper, the focus is on indices that attempt to measure the overall international cost and price competitiveness of each country. Each real exchange rate indicator is defined in such a way that an increase in its level indicates a loss in overall cost and price competitiveness.

Although indicators of a country's overall cost and price competitiveness are a useful input in the analysis of its balance of payments position, many other factors in both goods and capital markets are also important determinants. Since the evolution of the real effective exchange rate has to be interpreted in the context of other economic developments, a change in the real effective exchange rate is not per se a sign that the exchange rate is becoming inappropriate. Conversely, a lack of change is not an indication that it continues to be appropriate. There are also many statistical and conceptual problems involved in the calculation of these variables. ^{2/}

^{1/} It should be noted that the term "country" used in this report does not in all cases refer to a territorial entity that is a state as understood by international law and practice. The term also covers some territorial entities that are not states but for which statistical data are maintained and provided internationally on a separate and independent basis.

^{2/} A review of the conceptual problems that arise in the measurement of real effective exchange rates is presented in Edouard B. Maciejewski, "'Real' Effective Exchange Rate Indices: A Re-Examination of the Major Conceptual and Methodological Issues," IMF Staff Papers, Vol. 30 (September 1983).

The present report makes use of readily-available cost and price indicators and relatively simple weighting schemes, so that the indicators can be calculated easily and consistently for a large number of member countries.

The three types of indices presented in this paper are described in detail in the statistical appendix, which also lists the countries for which each index is calculated. The first index, calculated for 14 industrial countries, is based on relative normalized unit labor costs adjusted for exchange rate changes. The second index is calculated for 22 countries, not including those in the first group, in which the share of manufacturing in production and exports is sizable and for which the relevant data are readily available. This index is generally based on consumer prices and is weighted so as to allow for the relative importance of bilateral trade as well as competition in third markets. The third index is calculated for 112 countries that are mainly producers and exporters of primary commodities. ^{1/} This index, also based on consumer price indices, generally reflects only bilateral trade flows between the country for which the index is calculated and the group of 36 countries covered by the first and second indices.

The attached charts present the results for a selection of 55 industrial and developing countries. The tables that follow give the estimates for all countries, flagging changes in the indicators of real effective exchange rates that are particularly large in a medium-term perspective. The indicators are the same as those used by the staff in the system of information notices on large changes in real effective exchange rates (see EBS/83/138, 7/6/83), except that in the present report the base period of the indicators has been chosen as 1978--the last year before the second wave of oil price increases, the major rise in interest rates, and the recession in industrial countries. The changes that are flagged are those that exceed 20 percent and 30 percent from the 1978 base period.

* * *

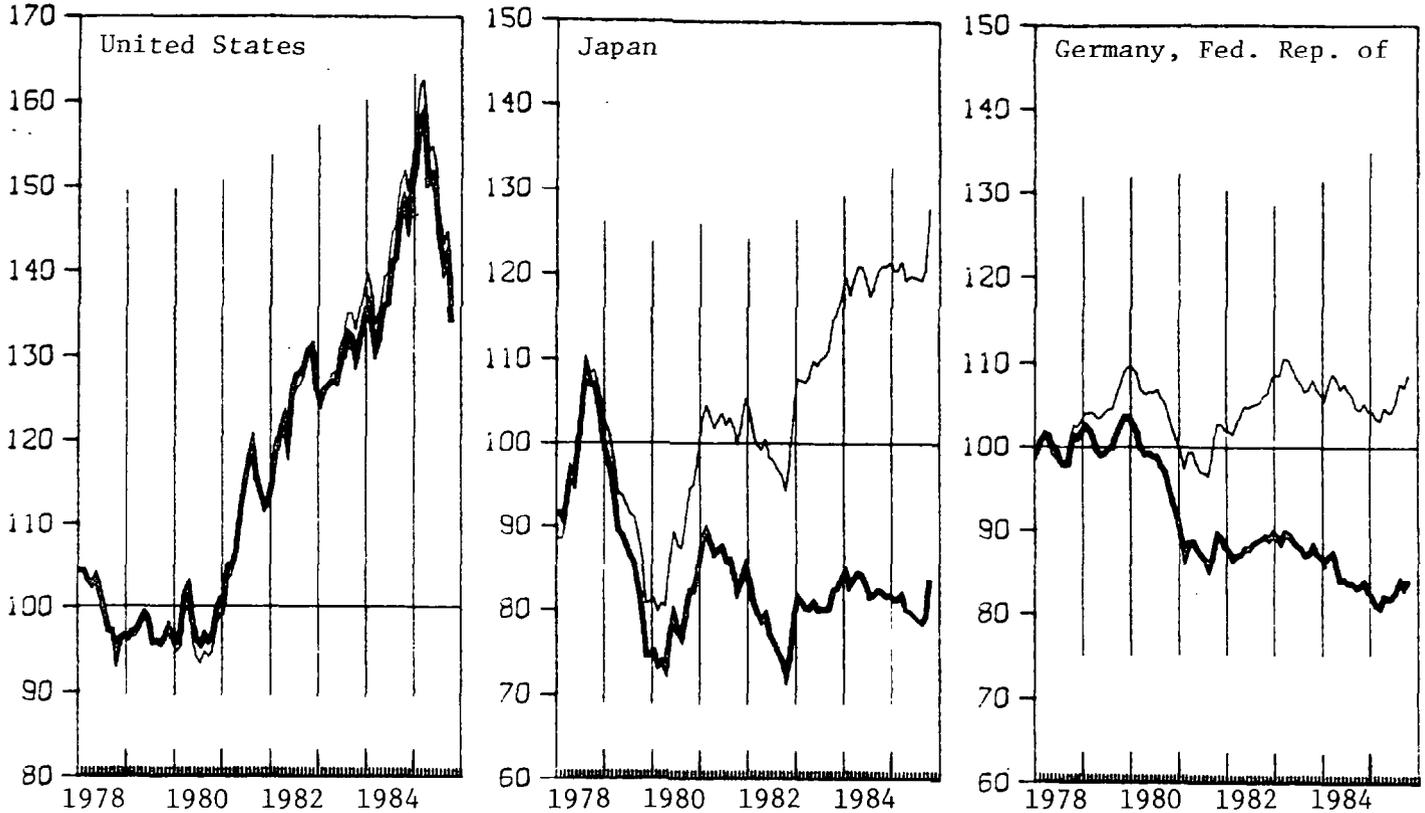
The staff will continue to refine the indices as experience is gained. It will also seek improvement in the data in the course of its normal consultations with members.

^{1/} For 25 of these countries only the nominal effective exchange rate is currently calculated, owing to unavailability of satisfactory price indices.

**FOURTEEN INDUSTRIAL COUNTRIES:
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985**
(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on normalized unit labor costs in manufacturing



Change in Real Effective Exchange Rate ^{1/}
(In percent)

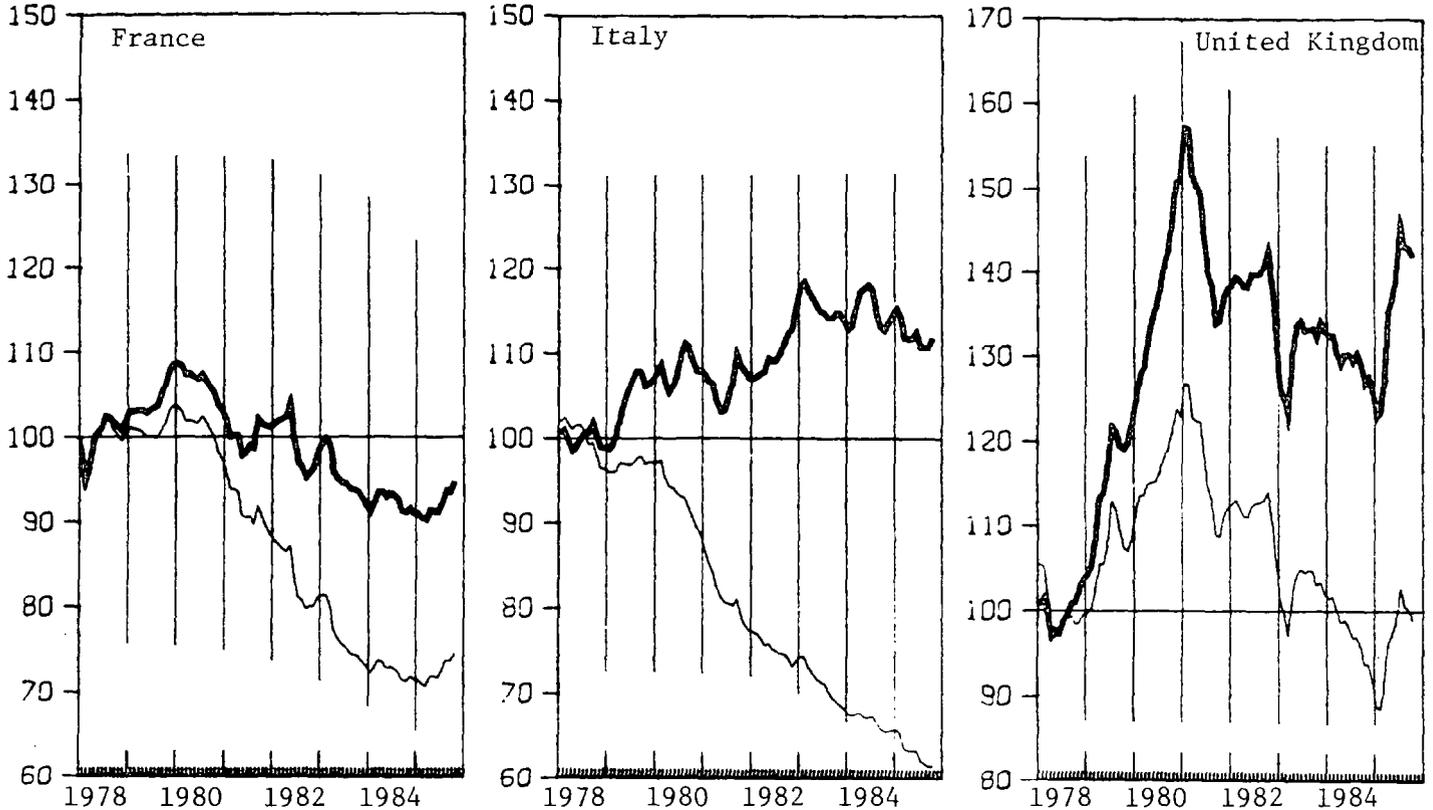
Terminal Period	United States				Japan				Germany, Fed. Rep. of			
	Initial period 1978	1980	1982	Q3 80	Initial period 1978	1980	1982	Q4 82	Initial period 1978	1980	1982	Q4 79
1980	-2.0				-22.2				-2.2			
1982	24.7	27.3			-22.6	-0.5			-11.8	-9.8		
1983	29.1	31.8	3.6		-18.9	4.2	4.7		-11.9	-9.9	-0.1	
April- Sept. 1985	46.0	49.1	17.2	52.2	-20.9	1.8	2.2	5.3	-17.4	-15.6	-6.4	-20.0
Sept. 1985	41.8	44.8	13.7	47.7	-20.7	1.9	2.4	5.5	-16.9	-15.0	-5.8	-19.5

^{1/} For each terminal period shown in the stub, the table indicates the percentage changes in the real effective exchange rate from the four base periods indicated in the heading. The fourth base period corresponds to the last major peak or trough, and differs from country to country. All the data refer to period averages.

**FOURTEEN INDUSTRIAL COUNTRIES:
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985**
(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on normalized unit labor costs in manufacturing



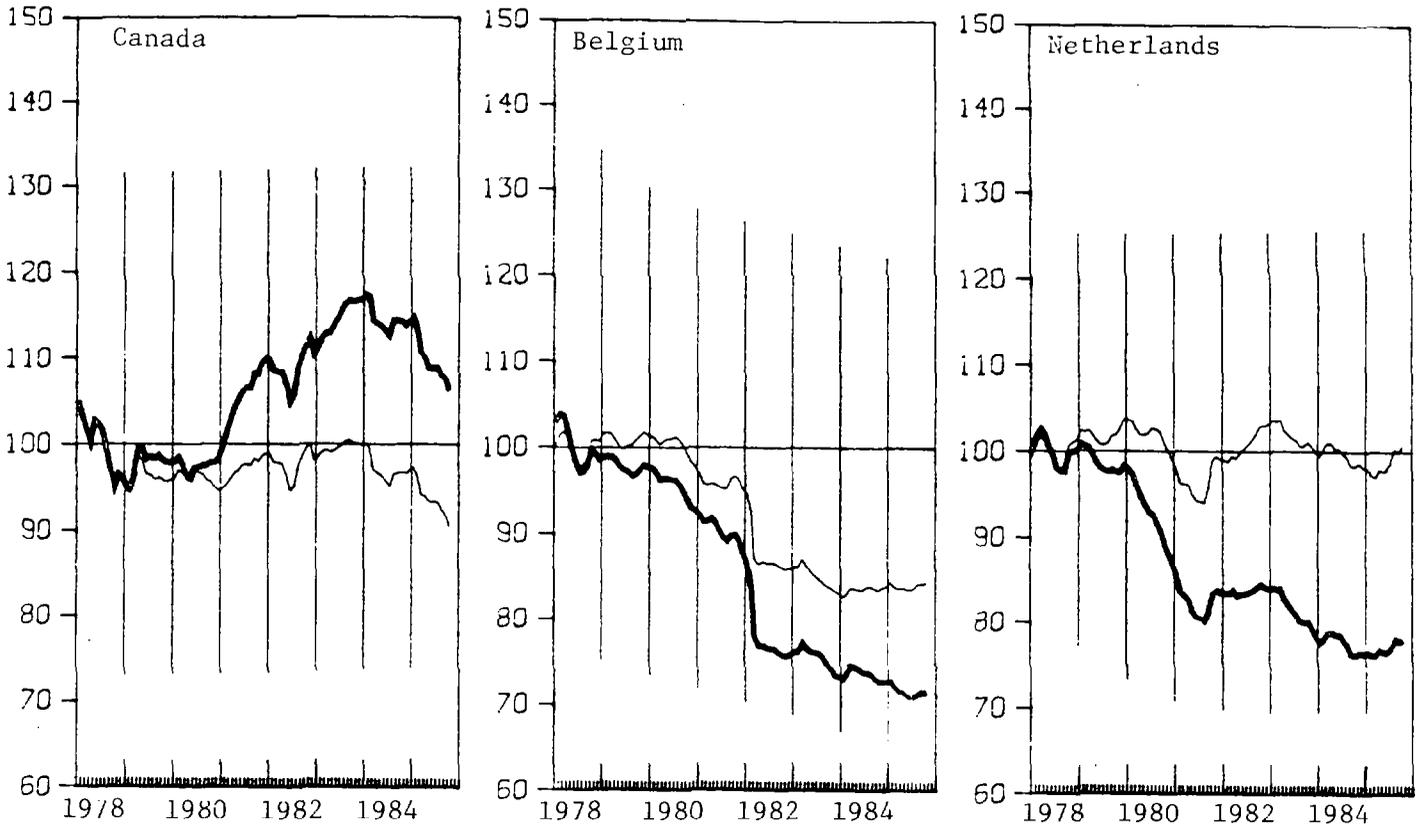
Change in Real Effective Exchange Rate
(In percent)

Terminal Period	France				Italy				United Kingdom			
	1978	Initial period			1978	Initial period			1978	Initial period		
	1978	1980	1982	Q1 80	1978	1980	1982	Q1 83	1978	1980	1982	Q1 81
1980	6.4				8.2				37.9			
1982	-0.8	-6.8			10.0	1.7			38.8	0.7		
1983	-4.7	-10.5	-4.0		15.6	6.9	5.1		30.9	-5.1	-5.7	
April- Sept. 1985	-7.8	-13.4	-7.1	-14.7	11.3	2.9	1.2	-5.6	40.6	2.0	1.3	-9.4
Sept. 1985	-6.5	-12.2	-5.8	-13.6	10.6	2.3	0.6	-6.2	43.0	3.7	3.0	-7.8

**FOURTEEN INDUSTRIAL COUNTRIES:
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985**
(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on normalized unit labor costs in manufacturing



Change in Real Effective Exchange Rate
(In percent)

Terminal Period	Canada				Belgium				Netherlands			
	Initial period				Initial period				Initial period			
	1978	1980	1982	Q4 80	1978	1980	1982	Q4 79	1978	1980	1982	Q4 79
1980	-2.4				-4.6				-7.5			
1982	8.8	11.6			-22.2	-18.5			-16.3	-9.6		
1983	14.7	17.5	5.4		-24.6	-21.0	-3.1		-18.6	-12.1	-2.8	
April- Sept. 1985	8.7	11.4	-0.1	10.8	-28.9	-25.4	-8.5	-27.2	-22.9	-16.6	-7.8	-21.2
Sept. 1985	7.6	10.3	-1.2	9.7	-28.7	-25.3	-8.3	-27.0	-22.3	-16.0	-7.1	-20.6

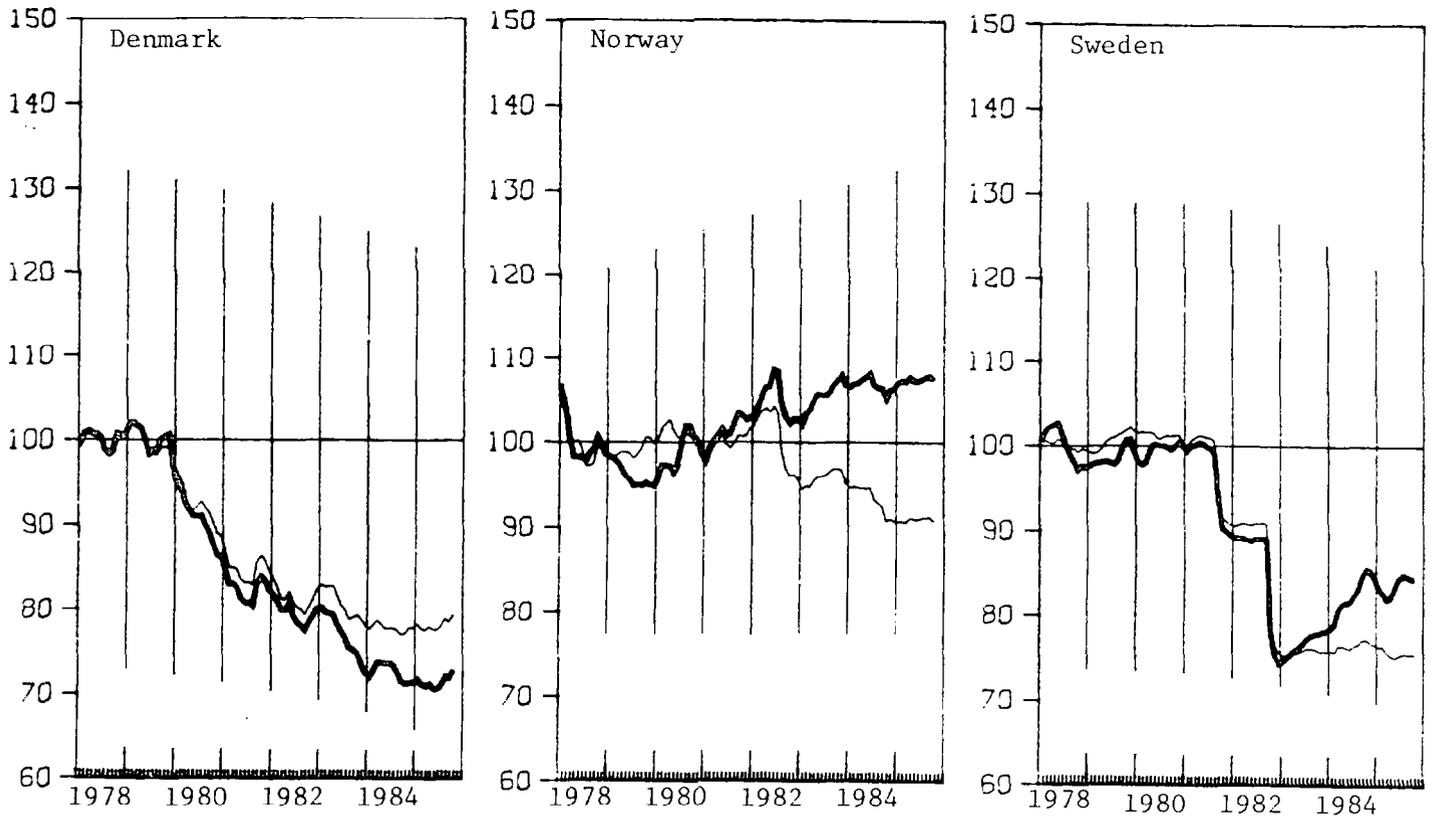


FOURTEEN INDUSTRIAL COUNTRIES: NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on normalized unit labor costs in manufacturing



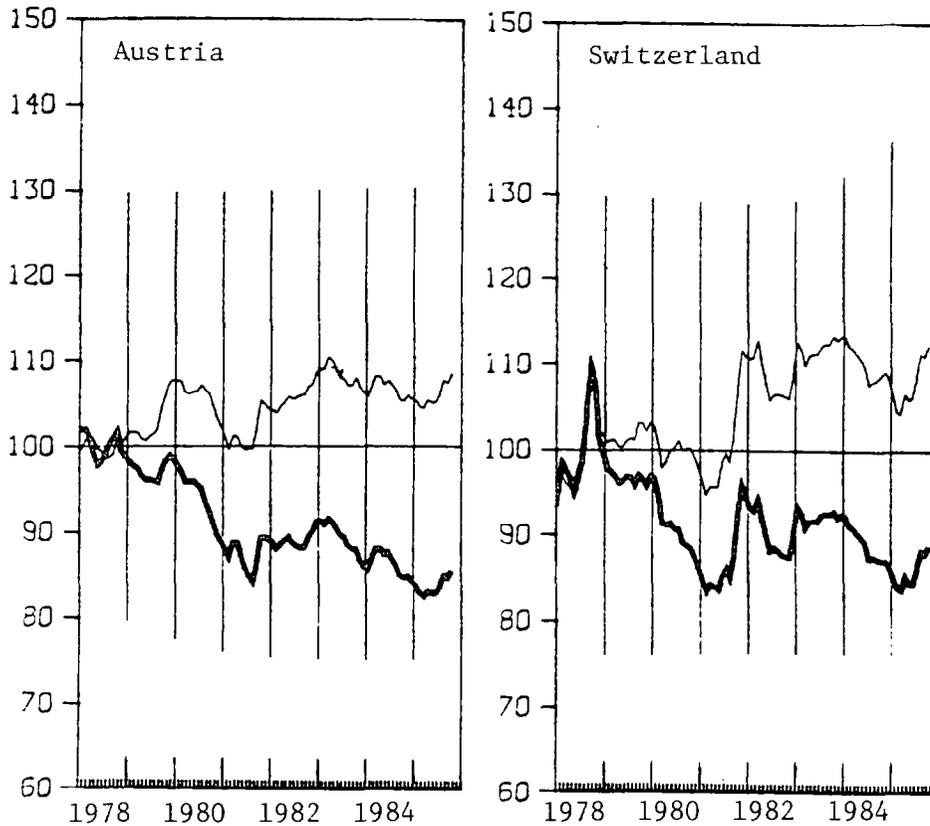
Change in Real Effective Exchange Rate
(In percent)

Terminal Period	Denmark				Norway				Sweden			
	Initial period				Initial period				Initial period			
	1978	1980	1982	Q4 79	1978	1980	1982	Q2 82	1978	1980	1982	Q2 81
1980	-9.6				-1.3				-0.6			
1982	-20.5	-12.1			4.8	6.2			-14.3	-13.8		
1983	-23.2	-15.1	-3.4		5.6	7.0	0.7		-23.2	-22.8	-10.4	
April- Sept. 1985	-28.8	-21.3	-10.4	-28.3	7.6	9.1	2.7	0.3	-16.0	-15.6	-2.1	-16.2
Sept. 1985	-28.2	-20.6	-9.6	-27.7	7.9	9.4	2.9	0.5	-15.7	-15.2	-1.6	-15.8

FOURTEEN INDUSTRIAL COUNTRIES:
 NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985
 (Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on normalized unit labor costs in manufacturing



Change in Real Effective Exchange Rate
 (In percent)

Terminal Period	Austria				Switzerland			
	Initial period				Initial period			
	1978	1980	1982	Q4 79	1978	1980	1982	Q4 81
1980	-6.1				-9.6			
1982	-11.0	-5.2			-10.0	-0.5		
1983	-10.8	-5.0	0.3		-7.7	2.1	2.6	
April- Sept. 1985	-16.3	-10.9	-6.0	-15.1	-13.9	-4.8	-4.3	-8.5
Sept. 1985	-15.3	-9.9	-4.9	-14.1	-12.1	-2.8	-2.3	-6.6

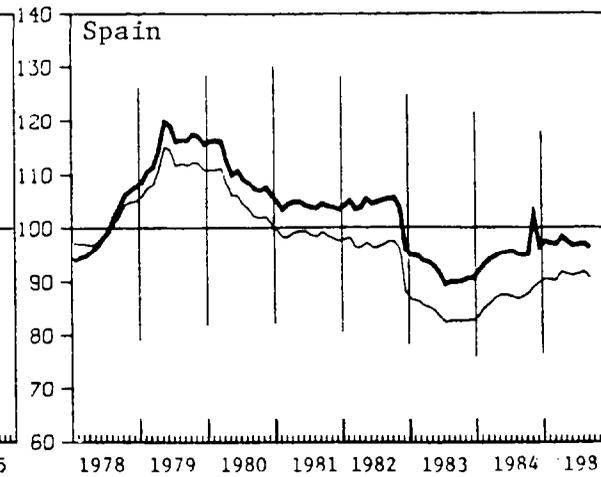
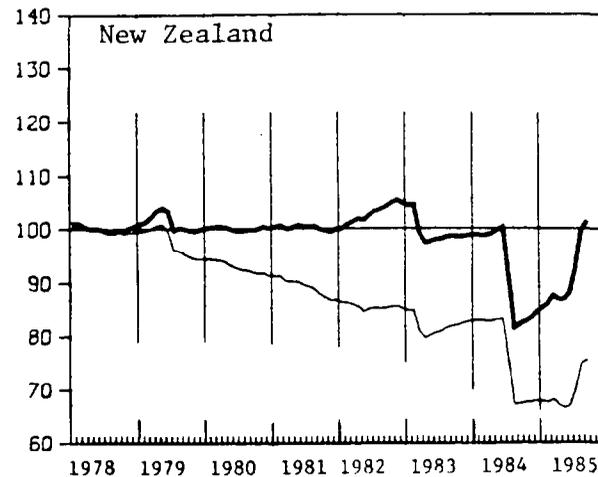
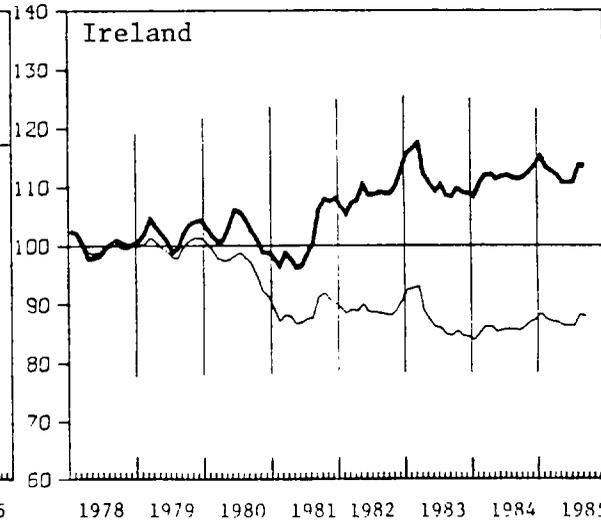
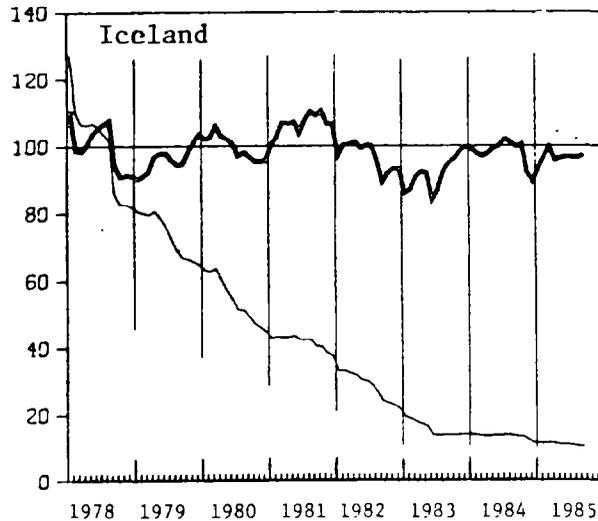
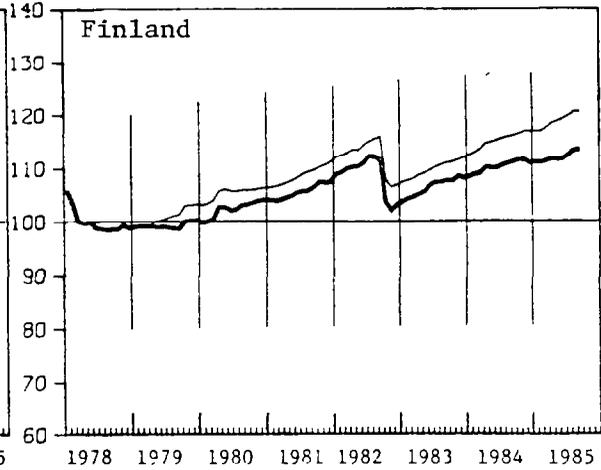
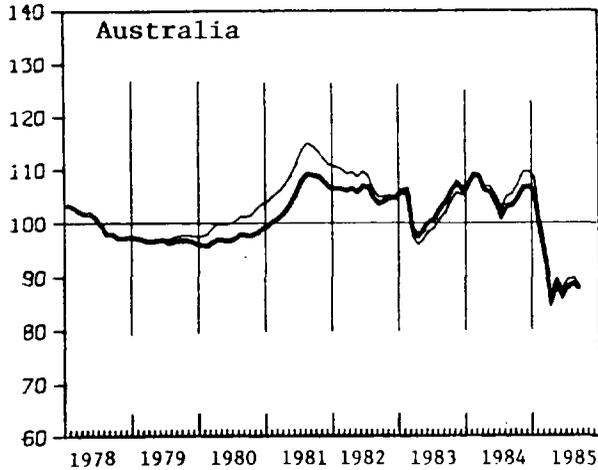


OTHER INDUSTRIAL COUNTRIES: NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



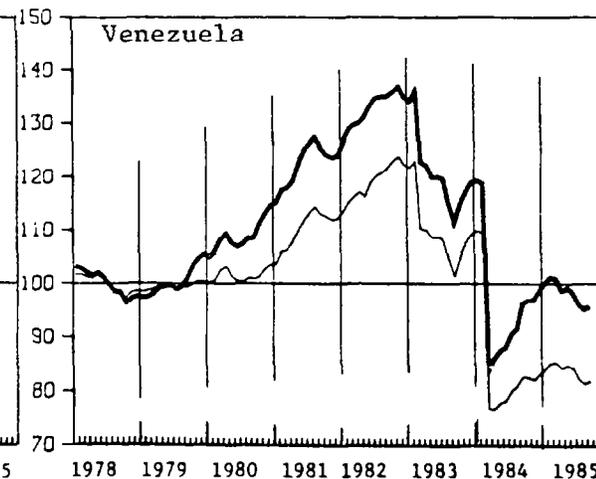
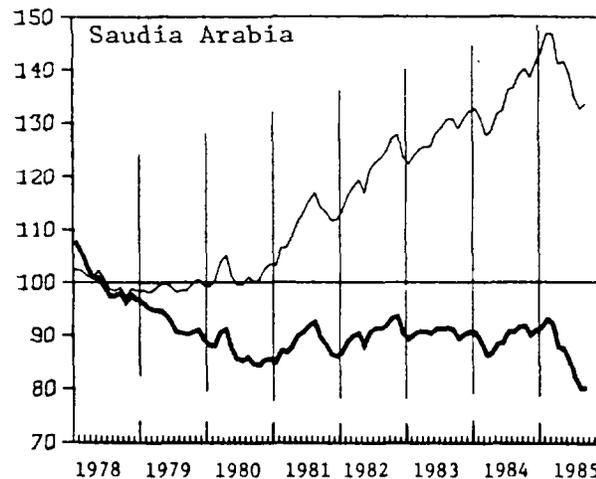
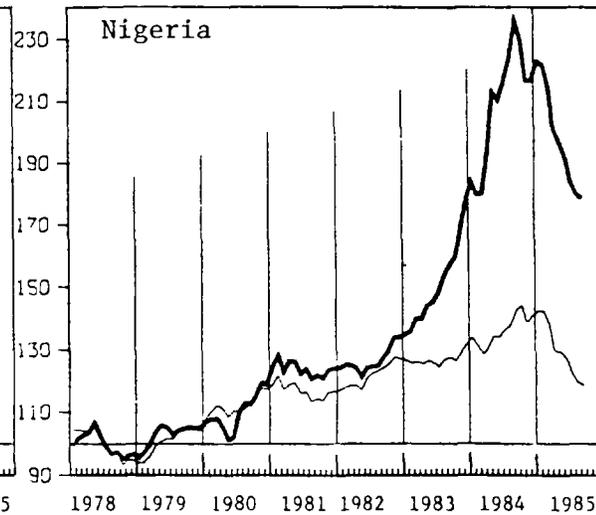
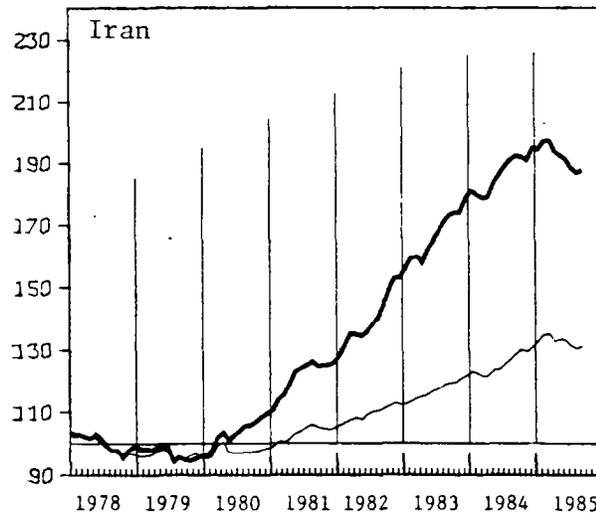
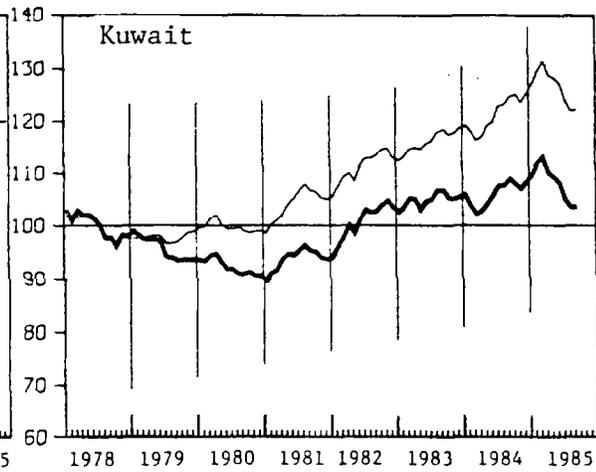
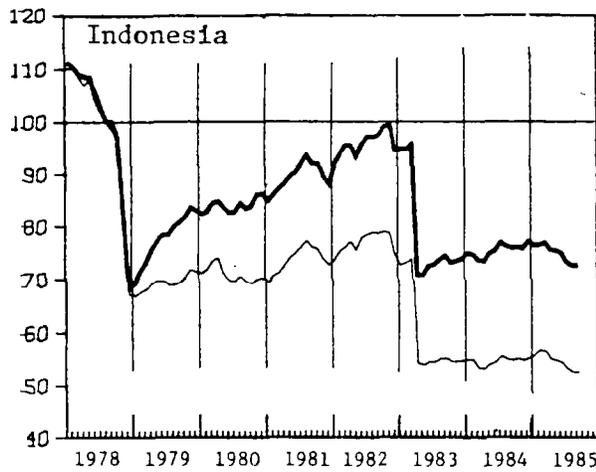


DEVELOPING COUNTRIES - OIL EXPORTING NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices





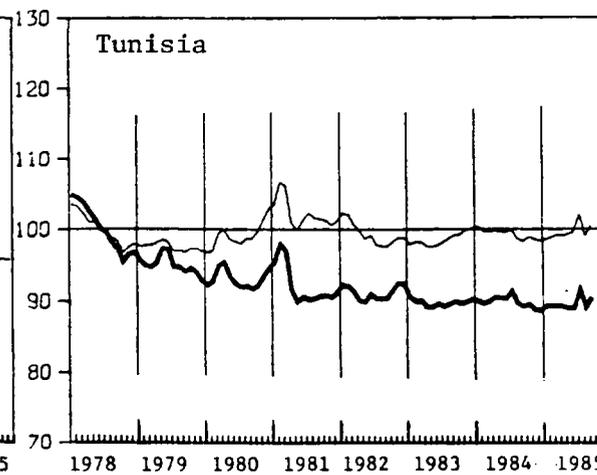
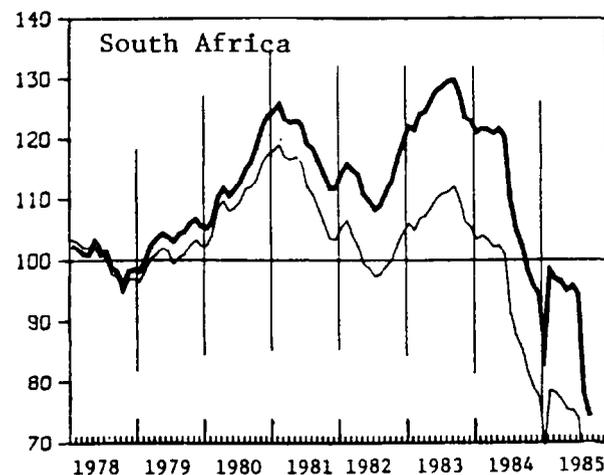
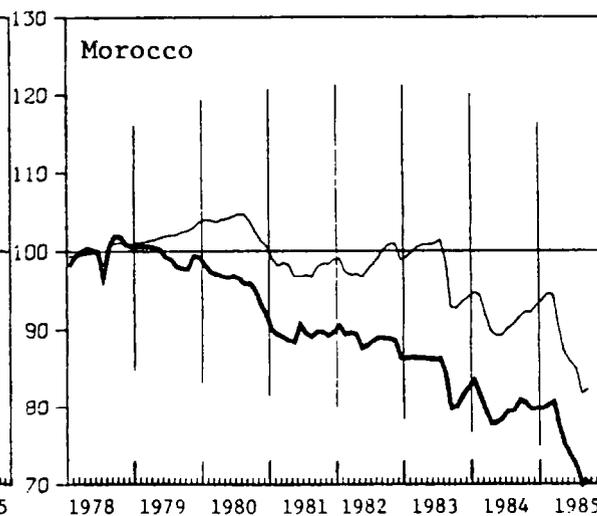
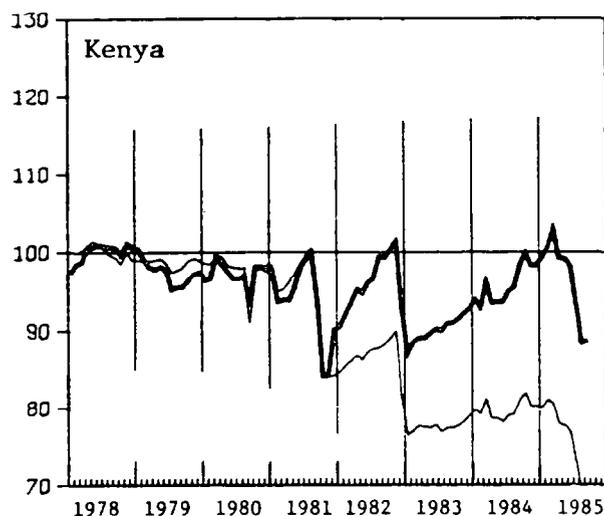
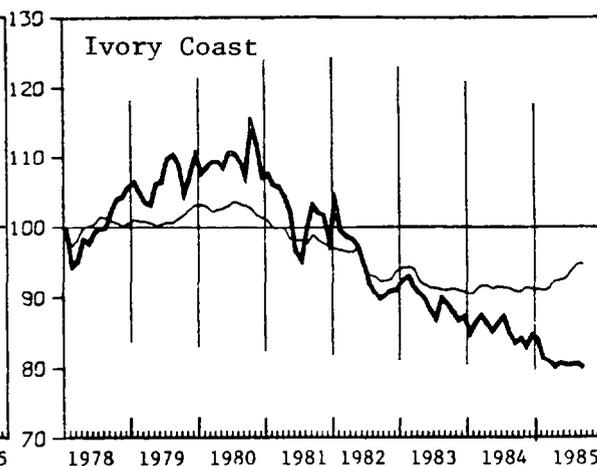
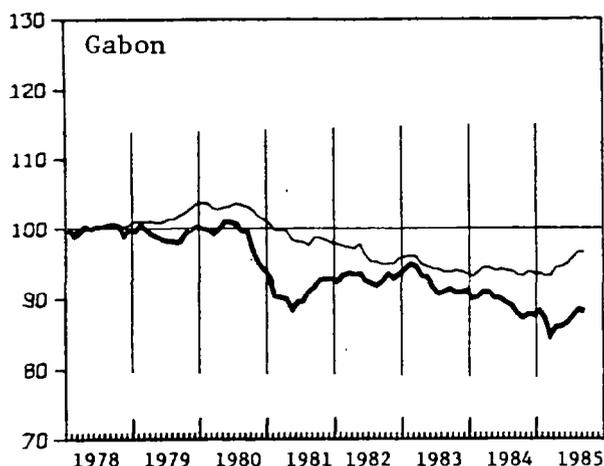
DEVELOPING COUNTRIES - AFRICA

NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices





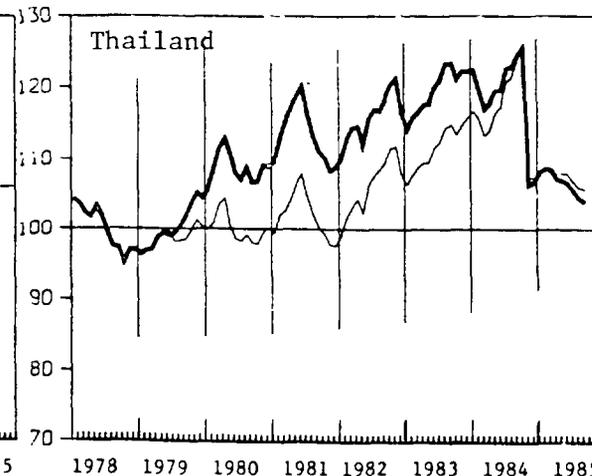
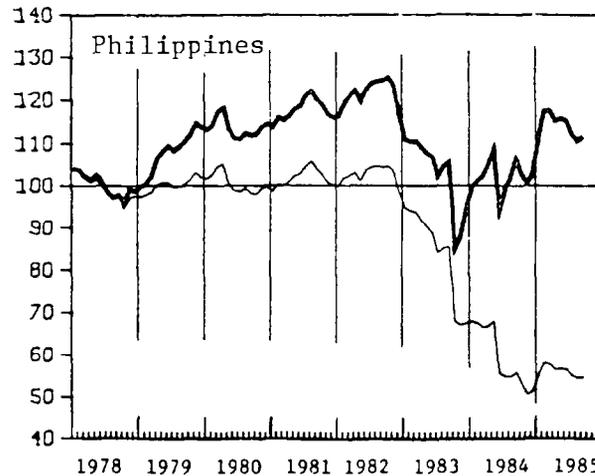
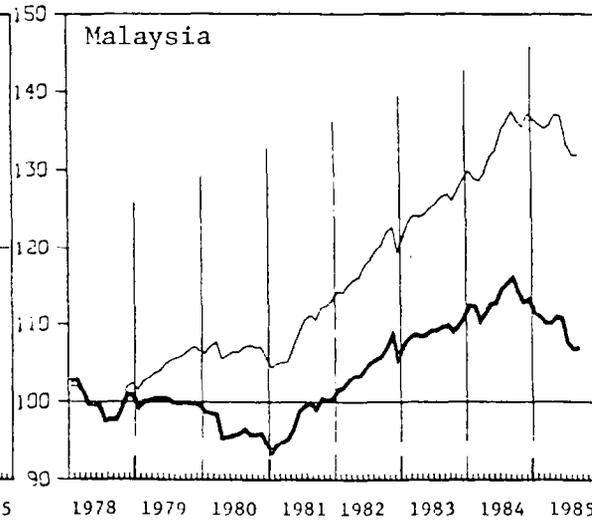
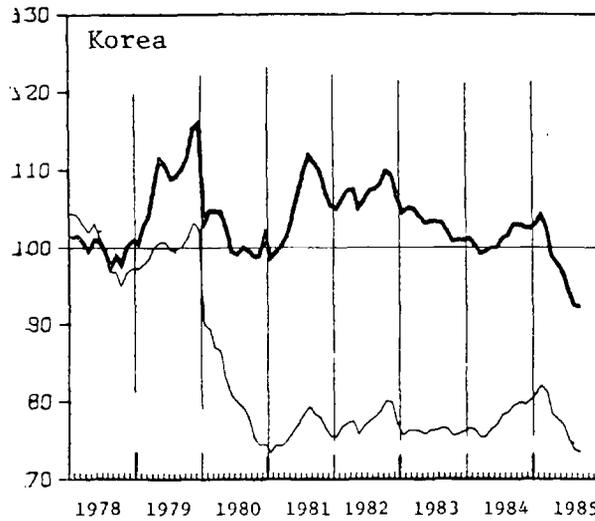
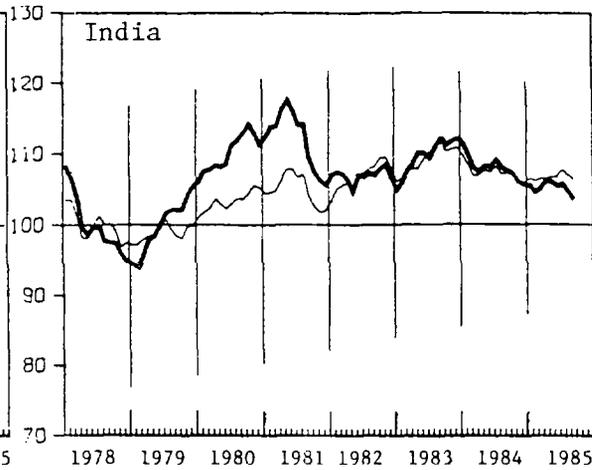
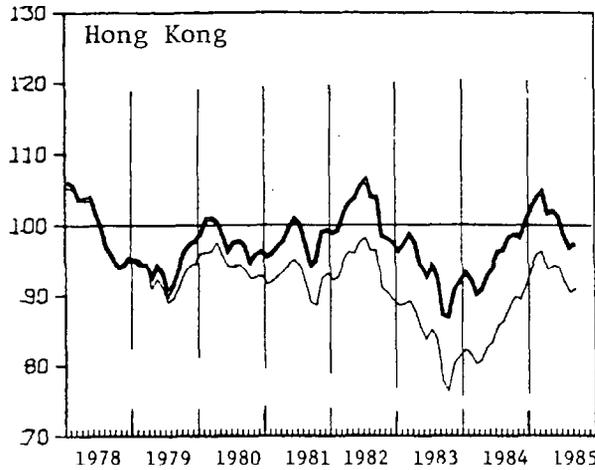
DEVELOPING COUNTRIES - ASIA

NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



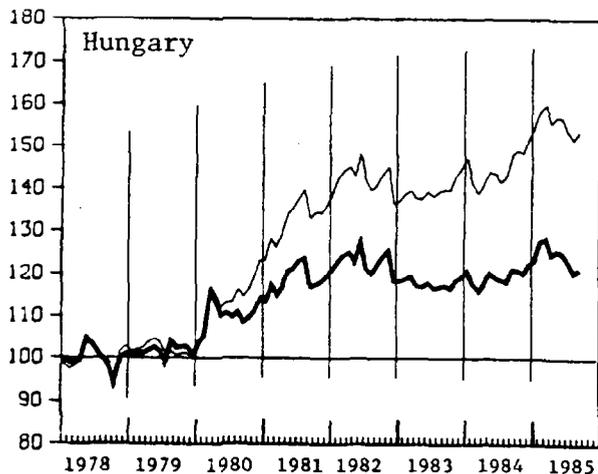
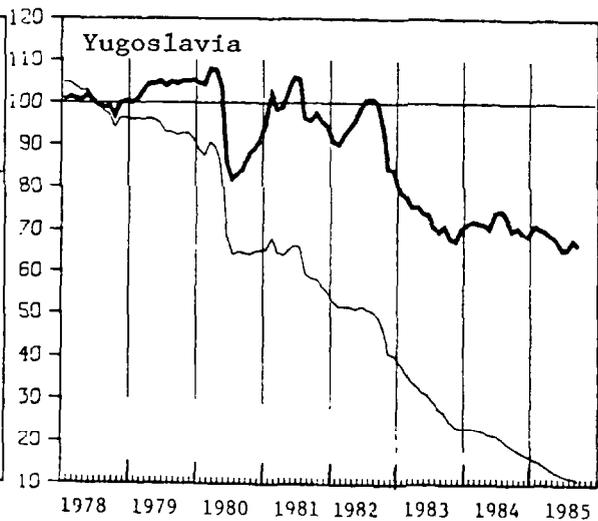
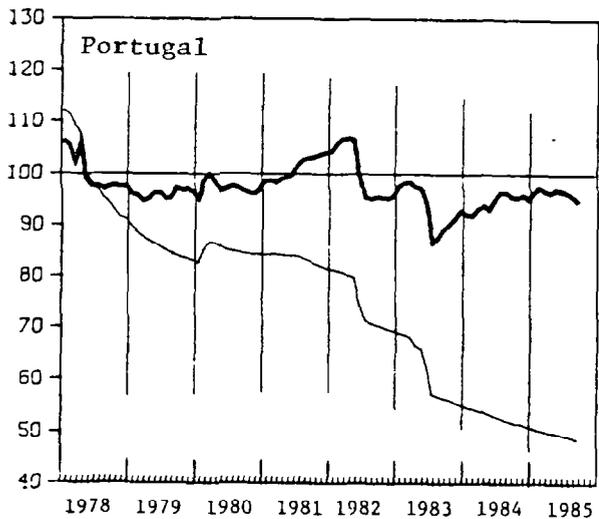
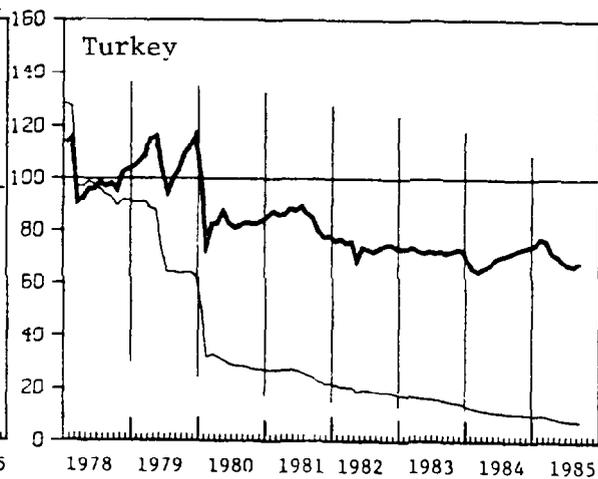
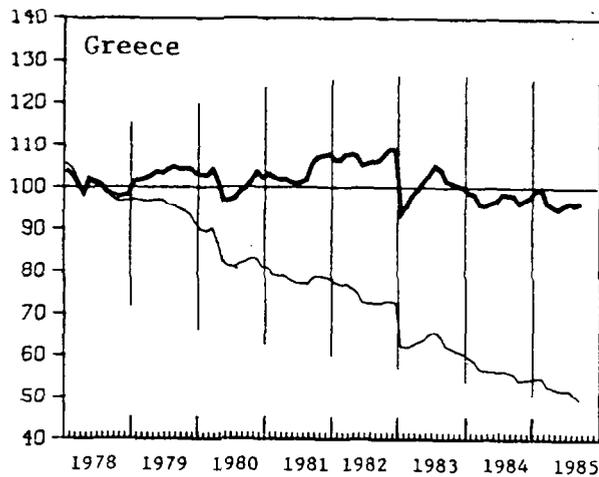


DEVELOPING COUNTRIES - EUROPE NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices

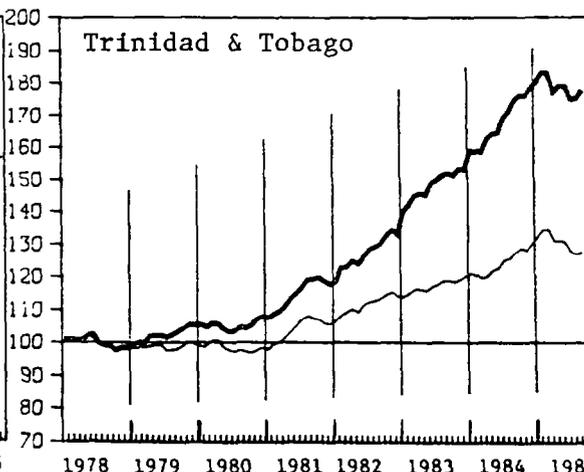
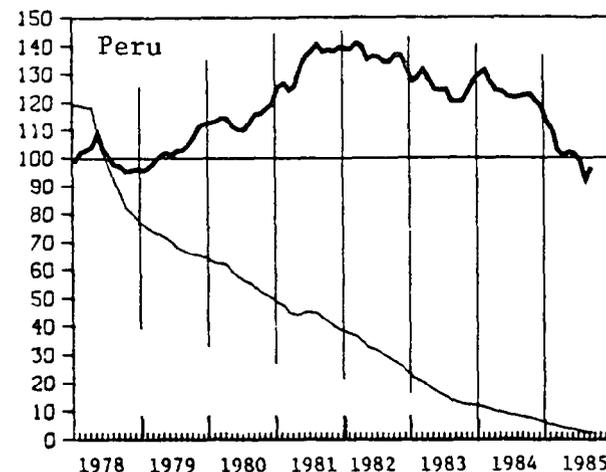
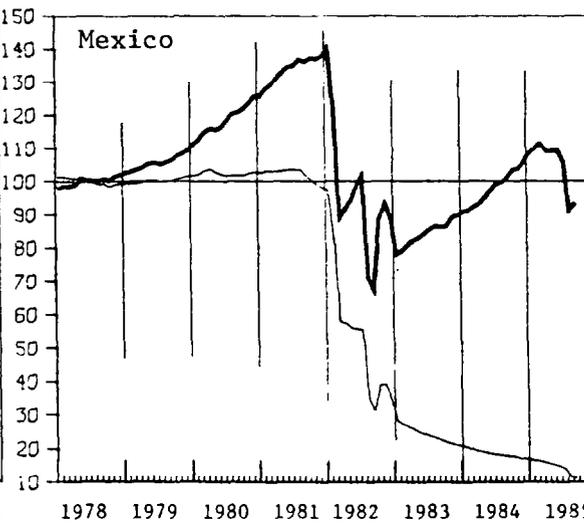
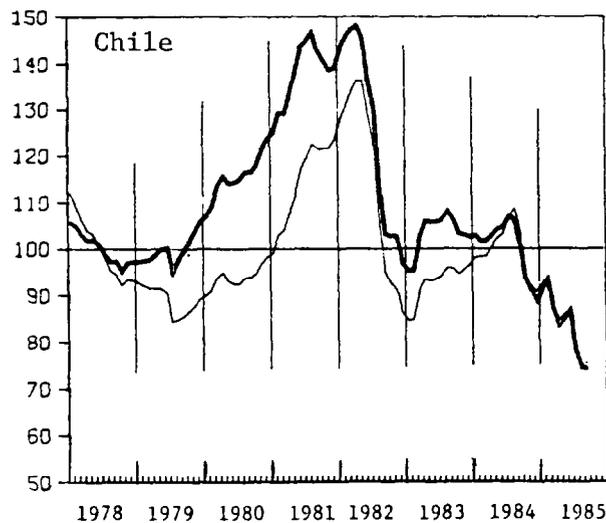
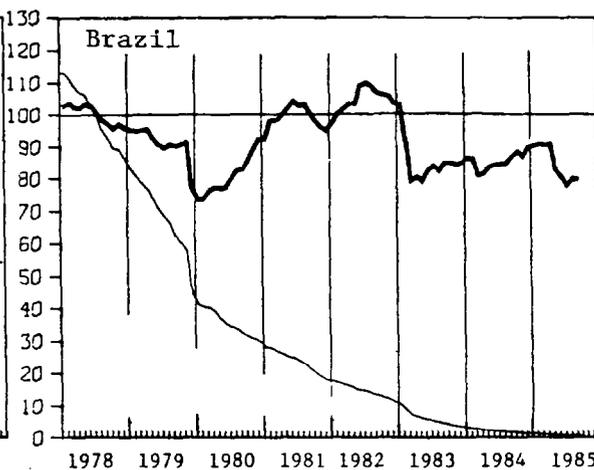
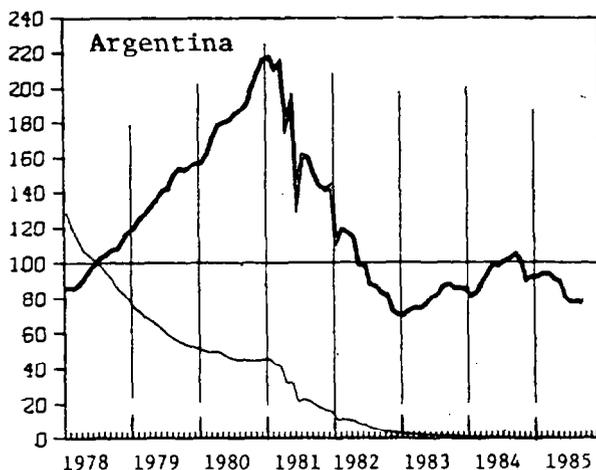




DEVELOPING COUNTRIES - WESTERN HEMISPHERE NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985 (Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



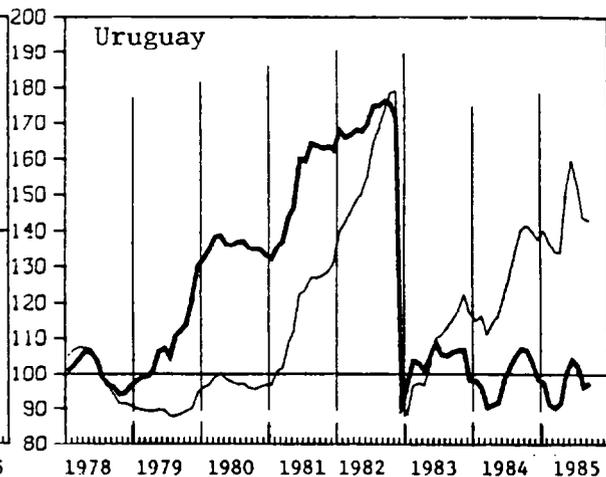
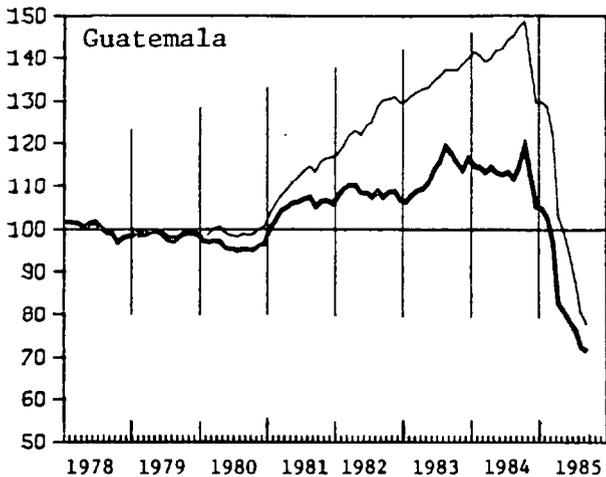
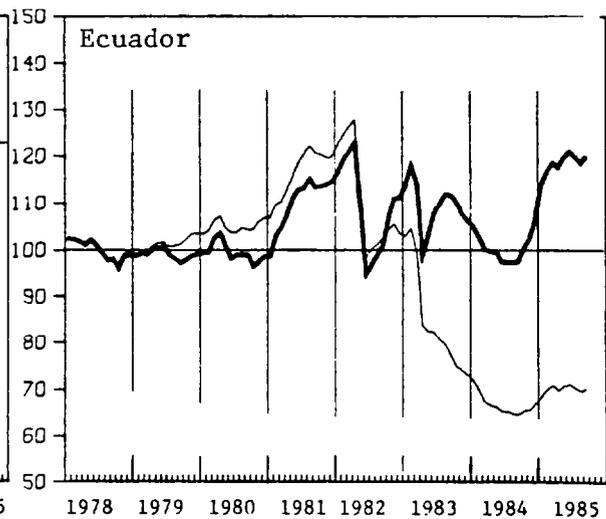
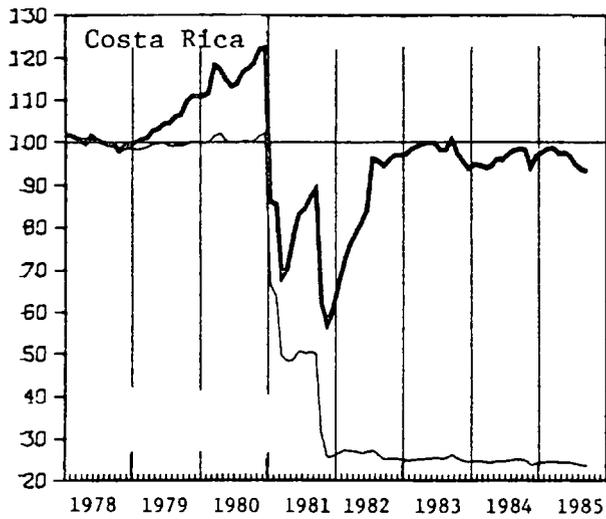
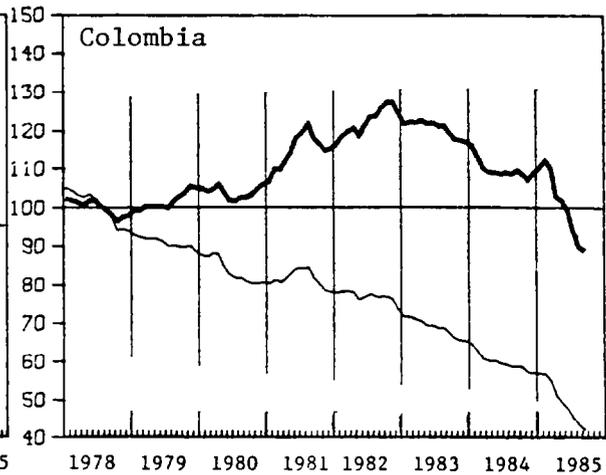
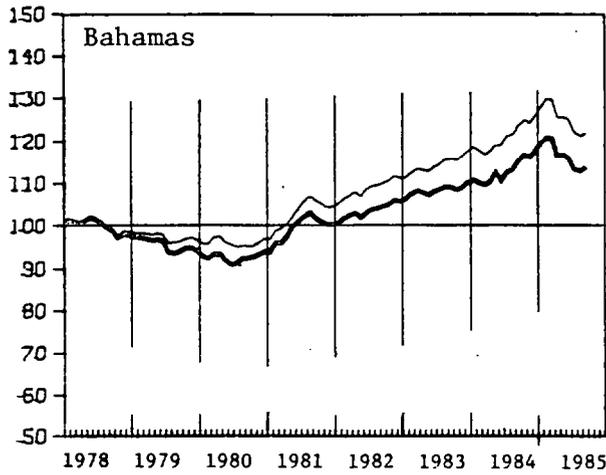


DEVELOPING COUNTRIES - WESTERN HEMISPHERE NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - SEP. 1985

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices





Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

African Department

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Algeria	III.N	101.1	111.0	122.0	133.9	148.4	159.6	157.6
Benin	III.N	100.9	96.9	91.8	88.0	86.6	88.1	88.9
Botswana	III.R	96.8	101.2	96.7	93.4	95.7	86.8	89.6
	III.N	98.1	100.9	97.8	94.6	99.6	93.7	95.5
Burkina Faso (b)	III.R	106.9	96.9	94.8	91.6	87.6	91.0	94.8
	III.N	101.6	95.5	91.2	87.1	84.3	84.3	85.1
✓✓ Burundi	III.R	119.8	141.8	155.4	166.5	151.8	153.6	150.8
	III.N	95.9	111.0	124.2	129.9	109.1	110.8	110.1
Cameroon (b)	III.R	97.3	92.8	91.0	94.7	97.0	99.3	100.5
	III.N	101.5	97.3	92.5	88.7	87.1	88.3	89.1
Cape Verde (b)	III.N	90.2	89.8	88.7	87.6	88.3	89.5	91.3
Central African Rep. (b)	III.R	106.4	105.8	106.2	104.6	102.5	103.6	105.9
	III.N	107.2	107.6	109.3	112.1	120.2	132.2	134.9
Chad	III.N	104.9	99.5	96.9	96.9	97.1	99.7	101.1
Comoros	III.N	99.5	95.9	93.2	91.2	89.7	89.4	89.8

1/ All data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 percent between the average level for 1978 and that for September 1985 are flagged by one check mark. Countries with changes that exceed 30 percent are flagged by two check marks.

Letters in parentheses next to country names refer to qualifications of the data used as follows: (a) price index significantly affected by price controls; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index based on out-of-date consumer basket; and (d) price index believed to underestimate the actual rate of inflation.

2/ N refers to the nominal effective exchange rate and R to the real effective exchange rate. The notations, I, II, and III indicate whether the first, second, and third index is used.

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

African Department (continued)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Congo (a,b)	III.R	95.9	95.8	95.5	93.5	96.3	102.3	104.1
	III.N	110.0	110.0	112.8	119.7	130.2	148.8	152.9
Djibouti	III.N	97.1	114.8	132.2	145.3	160.5	167.6	162.7
Equatorial Guinea	III.N	75.1	49.7	48.7	46.2	46.3	8.7	8.9
✓✓ Ethiopia (a,b,c,d)	III.R	96.0	105.6	114.5	115.4	129.4	158.2	154.6
	III.N	100.3	117.7	133.3	147.5	167.4	184.3	181.2
Gabon (b)	III.R	98.8	91.0	93.0	92.3	89.2	87.1	88.0
	III.N	102.8	98.7	96.2	94.6	93.8	95.5	96.5
Gambia, The	III.R	99.1	97.6	98.0	99.5	94.3	99.4	106.3
	III.N	109.5	112.8	111.1	108.1	89.3	87.9	88.1
✓✓ Ghana (a)	III.R	102.7	230.3	287.5	193.8	73.9	51.4	48.2
	III.N	51.4	58.6	64.8	26.2	6.0	4.1	3.8
Guinea	III.N	98.3	104.9	110.5	120.1	127.5	131.2	130.7
Guinea-Bissau	III.N	105.0	116.8	132.0	154.8	74.7	53.2	48.3
✓ Ivory Coast (b,c)	III.R	109.5	101.8	94.7	89.3	85.3	80.3	79.9
	III.N	102.7	98.6	94.5	91.9	91.1	93.4	94.7
Kenya (b)	III.R	97.1	93.6	96.0	90.1	95.7	94.4	88.7
	III.N	98.0	94.0	86.7	77.6	79.8	73.8	68.6
Lesotho	III.R	105.3	104.1	104.5	105.9	104.6	103.2	104.0
	III.N	100.2	100.4	99.9	100.1	99.4	97.9	97.0
✓ Liberia	III.R	101.0	114.5	123.3	128.8	134.8	132.4	127.9
	III.N	95.9	111.5	122.5	132.0	144.2	150.2	146.4

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

African Department (continued)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Madagascar (a,b)	III.R	112.1	122.6	131.6	132.0	113.0	104.8	106.5
	III.N	101.9	94.9	84.8	75.9	62.9	56.1	55.4
Malawi <u>3/</u>	III.R	101.8	103.2	100.8	102.0	103.0	100.0	103.2
	III.N	94.9	98.0	95.8	92.3	88.8	81.0	82.5
Mali (b)	III.R	96.3	94.0	86.1	86.0	87.5	86.1	87.1
	III.N	99.6	95.9	93.0	90.7	89.4	89.6	90.0
Mauritania (b)	III.R	92.4	115.5	128.4	128.2	124.0	109.2	105.4
	III.N	95.3	112.2	122.6	131.6	128.1	109.6	105.1
Mauritius	III.R	97.2	101.9	96.3	97.0	94.2	91.0	92.8
	III.N	74.6	76.0	71.1	72.6	70.2	68.1	68.6
✓ Morocco	III.R	95.9	89.4	88.7	84.3	79.9	73.2	70.6
	III.N	103.4	97.9	98.6	98.0	91.5	85.3	82.4
Niger	III.R	97.4	102.1	100.5	87.6	86.5	82.9	84.2
	III.N	102.3	97.9	95.1	92.1	89.8	90.5	91.2
✓✓ Nigeria <u>4/</u> (a)	III.R	110.1	123.9	126.7	150.5	208.3	188.2	178.4
	III.N	112.0	117.0	121.9	127.0	136.2	124.5	118.8
✓✓ Rwanda	III.R	99.6	111.3	130.2	137.8	140.6	143.3	144.3
	III.N	96.8	111.5	125.1	131.7	135.0	138.2	136.8
Sao Tome & Principe	III.N	101.8	112.3	122.9	140.0	158.0	167.6	165.7
Senegal	III.R	95.2	84.8	87.4	87.8	89.9	97.2	96.1
	III.N	102.6	98.3	96.5	96.0	96.5	101.4	102.9

3/ Price index is composite of various local price indices for differing income classes and geographical areas.

4/ Price index is a composite of consumer prices.

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

African Department (concluded)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
✓✓ Seychelles (a)	III.R	101.0	117.1	116.8	122.9	129.7	129.9	130.3
	III.N	99.7	116.7	127.7	135.0	145.2	152.9	153.8
✓✓ Sierra Leone	III.R	98.1	114.0	146.1	180.9	227.4	210.3	237.4
	III.N	90.8	94.9	99.7	80.6	60.8	27.9	27.5
✓✓ Somalia (b,c)	III.R	146.6	177.7	140.8	155.6	249.5	170.5	160.7
	III.N	97.6	93.7	68.1	60.4	54.9	29.0	27.8
Swaziland	III.R	110.3	115.5	109.2	112.8	110.0	102.6	96.6
	III.N	101.9	100.9	96.4	97.6	91.0	80.5	75.1
✓✓ Tanzania (a,b,d)	III.R	105.7	139.4	165.2	182.9	189.3	211.0	213.1
	III.N	90.9	105.8	107.6	101.0	84.8	78.9	78.3
Togo (b,c)	III.R	100.5	103.6	99.6	98.2	87.5	81.4	84.5
	III.N	101.0	96.6	91.5	88.4	87.3	89.0	89.8
Tunisia	III.R	93.1	92.2	91.2	89.8	89.9	89.8	90.6
	III.N	99.2	102.2	99.3	98.6	99.3	100.0	100.5
✓✓ Uganda (b)	III.R	302.9	204.3	60.5	46.9	29.7	32.8	35.8
	III.N	98.7	48.5	9.6	6.4	3.4	2.0	2.0
✓✓ Zaire (b)	III.R	71.3	66.1	68.3	79.4	31.1	27.5	25.6
	III.N	31.1	25.0	20.9	17.2	4.6	3.7	3.4
Zambia	III.R	95.4	101.8	111.9	101.7	87.1	89.5	98.0
	III.N	97.2	101.4	107.8	87.6	66.9	55.6	57.5
Zimbabwe (a)	III.R	92.5	99.3	110.0	96.7	99.0	91.2	89.2
	III.N	97.8	104.7	110.4	88.3	83.5	76.6	74.7

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Asian Department

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Bangladesh	III.R	102.4	99.3	92.6	91.1	98.7	100.0	94.0
	III.N	95.9	88.3	78.2	73.9	76.5	74.0	69.0
Bhutan	III.N	100.5	100.6	101.0	101.1	101.0	101.4	101.3
Burma (a,b)	III.R	94.5	83.7	85.1	86.9	88.0	91.9	91.8
	III.N	106.2	103.5	107.5	109.9	113.3	120.0	121.3
✓/ China, People's Rep. (a)	III.R	103.8	90.6	85.4	83.6	73.6	63.9	61.2
	III.N	115.9	109.1	109.0	111.9	103.2	88.3	84.7
Fiji	III.R	102.2	103.2	102.9	102.1	102.8	104.6	102.9
	III.N	102.3	102.8	104.4	103.1	103.4	107.3	106.4
India	II.R	110.2	112.3	107.0	109.6	108.0	105.4	103.7
	II.N	103.4	105.1	106.9	109.2	107.4	106.9	106.4
✓ Indonesia	III.R	84.0	89.4	95.9	78.4	75.4	74.0	72.6
	III.N	70.9	73.7	76.9	59.2	54.5	53.6	52.5
✓ Japan	I.R	77.8	86.1	77.4	81.1	82.8	79.2	79.3
	I.N	87.6	102.7	99.0	110.8	119.7	119.5	120.5
Korea	II.R	101.4	105.4	107.2	103.1	101.2	95.4	92.3
	II.N	81.4	76.3	77.6	76.2	77.8	75.9	73.4
Lao P. D. Rep. <u>5/</u>	III.N	38.4	27.0	12.2	12.6	13.1	14.2	14.0
Malaysia	II.R	96.5	97.8	104.6	109.1	113.3	108.9	107.0
	II.N	106.7	108.8	118.0	125.3	133.1	134.4	131.9
Maldives	III.N	114.2	125.1	148.6	156.7	168.9	177.6	173.2
Nepal	III.R	94.3	100.0	109.3	111.1	102.8	102.5	101.8
	III.N	100.2	105.8	108.3	103.5	98.9	96.8	96.2

5/ Index takes the value of the nominal effective exchange rate as of May 1978 = 100.

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Asian Department (concluded)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Papua New Guinea	III.R	106.6	111.1	110.6	105.3	106.1	104.1	104.8
	III.N	105.6	110.2	111.2	103.3	100.9	98.0	96.8
Philippines	II.R	113.6	117.7	121.6	103.0	102.1	113.5	111.7
	II.N	100.6	101.9	102.7	84.2	59.4	55.8	54.8
Singapore	II.R	97.9	105.5	110.1	112.5	115.2	112.2	109.3
	II.N	106.9	118.2	128.3	137.9	147.4	151.8	149.4
Solomon Islands	III.R	106.4	113.1	117.9	106.2	107.1	104.1	93.2
	III.N	103.9	103.0	101.5	89.5	84.2	78.1	68.9
✓ Sri Lanka	III.R	122.0	128.9	137.6	137.8	152.9	142.3	139.3
	III.N	94.0	89.8	94.0	91.5	94.8	97.1	95.9
Thailand	II.R	108.6	113.5	115.8	119.6	118.7	105.7	103.8
	II.N	100.0	102.0	106.1	111.6	116.6	107.0	105.7
Vanuatu	III.R	103.1	100.5	101.4	101.8	109.9	108.9	107.4
	III.N	106.4	89.7	92.8	98.2	105.2	108.4	106.9
Viet Nam	III.N	94.6	53.7	26.1	27.0	28.6	28.3	16.2
Western Samoa	III.R	96.3	99.8	102.7	95.2	92.0	84.8	81.3
	III.N	80.3	76.5	73.1	61.7	55.6	51.0	49.9

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

European Department

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Australia	II.R	97.2	105.1	105.5	102.9	105.6	87.4	87.5
	II.N	100.5	110.1	107.6	101.3	107.0	88.7	88.2
Austria (a)	I.R	93.9	87.3	89.0	89.2	86.3	83.7	84.7
	I.N	105.8	101.5	105.8	108.2	106.6	106.1	107.3
✓ Belgium	I.R	95.4	90.2	77.8	75.4	73.5	71.1	71.3
	I.N	100.1	95.8	87.4	84.7	83.4	83.7	84.0
Cyprus	III.R	97.7	95.1	92.9	91.8	91.6	91.3	92.2
	III.N	104.6	106.1	110.0	115.1	122.2	131.2	133.0
✓ Denmark	I.R	90.4	82.4	79.5	76.8	72.6	71.2	71.8
	I.N	91.6	84.6	81.2	80.6	77.8	78.1	78.4
Finland	II.R	102.3	105.7	108.7	106.5	110.2	112.4	113.5
	II.N	105.4	108.7	112.2	109.8	115.1	119.7	120.5
France	I.R	106.4	100.1	99.2	95.3	92.2	92.2	93.5
	I.N	101.1	91.5	83.4	76.2	72.3	72.5	73.5
Germany	I.R	97.8	87.7	88.2	88.1	84.5	82.6	83.1
	I.N	105.6	99.1	104.7	108.2	106.3	105.6	107.0
Greece (a)	II.R	100.6	103.5	107.2	100.3	97.2	95.8	96.5
	II.N	84.3	78.2	74.0	62.7	56.1	51.1	49.3
Hong Kong	II.R	97.9	97.6	101.7	93.3	95.1	99.6	97.5
	II.N	94.6	92.3	94.2	83.9	85.1	92.5	91.0

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

European Department (continued)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
✓ Hungary (a)	II.R	110.4	118.8	123.1	117.9	119.6	123.4	121.5
	II.N	114.3	132.9	142.7	139.9	145.0	154.8	153.7
Iceland	II.R	99.6	106.7	96.9	91.9	98.0	96.6	97.5
	II.N	54.4	41.7	28.2	15.4	13.3	10.7	10.4
Ireland	II.R	102.1	101.0	108.7	111.3	111.5	111.8	113.3
	II.N	96.9	88.8	88.9	87.5	85.9	87.1	88.0
Israel (a)	II.R	109.9	110.8	115.9	127.3	119.1	116.4	119.9
	II.N	34.5	17.6	9.2	4.6	1.2	0.2	0.2
Italy	I.R	108.2	106.3	110.0	115.6	115.1	111.3	110.6
	I.N	93.1	81.3	75.1	71.0	66.7	62.4	61.3
Luxembourg	III.R	96.1	93.5	88.0	88.1	87.9	88.6	89.5
	III.N	99.6	97.5	90.5	88.4	87.6	87.9	88.0
Malta	III.R	103.0	111.4	114.7	112.1	110.9	107.4	106.1
	III.N	104.6	113.7	122.0	130.0	138.7	145.0	144.6
✓ Netherlands	I.R	92.5	82.4	83.7	81.4	77.5	77.1	77.7
	I.N	101.9	96.3	100.8	101.7	99.5	98.8	99.9
✓ Netherlands Antilles	III.R	100.0	111.1	116.9	120.3	123.6	124.6	122.7
	III.N	98.6	108.6	116.8	124.1	133.9	140.8	139.0
New Zealand	II.R	100.0	100.1	102.8	99.3	91.8	92.7	101.5
	II.N	92.8	89.1	85.5	82.0	75.9	70.2	75.7

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

European Department (concluded)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Norway	I.R	98.7	101.3	104.8	105.6	106.8	107.6	107.9
	I.N	100.9	100.0	100.6	95.8	93.1	91.1	91.1
Portugal	II.R	97.2	101.1	100.2	93.4	94.5	96.0	94.5
	II.N	84.9	83.3	74.8	61.4	52.9	49.3	48.5
✓ Romania (a)	III.R	82.7	106.6	123.7	117.1	100.3	123.0	122.1
	III.N	100.4	143.9	162.5	161.1	152.0	205.6	207.3
✓ South Africa	II.R	113.7	119.3	113.1	125.8	111.0	88.9	74.2
	II.N	110.2	112.2	101.5	108.3	93.2	69.7	57.3
Spain	II.R	110.4	104.0	103.8	91.9	95.3	97.0	96.1
	II.N	105.6	98.6	96.2	84.0	87.1	91.3	90.6
Sweden	I.R	99.4	96.8	85.7	76.8	82.4	84.0	84.4
	I.N	101.2	97.8	87.5	75.7	76.5	75.4	75.5
Switzerland	I.R	90.5	87.2	90.0	92.3	88.8	86.1	87.9
	I.N	99.9	100.5	108.2	112.0	109.9	108.3	110.9
✓✓ Turkey (a)	III.R	83.8	84.8	74.2	72.8	69.8	68.9	68.6
	III.N	31.1	25.2	19.2	15.6	10.9	8.1	7.6
✓✓ United Kingdom	I.R	137.9	144.1	138.8	130.9	129.5	140.6	143.0
	I.N	117.1	117.2	111.7	102.5	97.3	99.3	100.0
✓✓ Yugoslavia (a)	II.R	94.3	98.9	93.9	72.7	71.6	66.9	66.3
	II.N	74.7	62.3	49.0	30.0	20.4	12.1	11.0

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Middle Eastern Department

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Bahrain	III.N	102.7	121.5	141.5	160.8	185.1	207.0	202.5
✓✓ Egypt (a,b,c,d)	III.R	85.7	92.0	100.9	114.5	131.6	139.8	140.1
	III.N	82.5	90.8	96.1	102.7	111.0	114.5	112.7
✓✓ Iran, I.R. of (a,b,c)	III.R	103.8	121.7	140.0	166.6	186.7	190.1	188.0
	III.N	97.6	103.2	109.5	117.3	125.8	132.0	131.3
Iraq	III.N	100.5	117.5	133.9	144.0	163.5	179.6	175.9
Jordan (b)	III.R	105.6	106.3	109.7	108.9	108.6	110.0	110.7
	III.N	102.5	102.0	106.2	109.3	110.8	113.3	113.0
Kuwait (a)	III.R	92.2	93.7	100.8	105.0	106.1	106.6	103.8
	III.N	99.8	104.2	111.2	116.1	121.3	125.3	122.3
Lebanon	III.N	83.6	79.6	82.9	96.1	75.4	30.6	27.1
Libya	III.N	97.1	118.3	135.4	150.5	169.0	180.5	176.1
Oman	III.N	96.7	106.6	119.0	126.4	136.8	143.7	139.9
Pakistan (a)	II.R	97.1	109.6	99.8	97.9	100.0	94.1	91.6
	II.N	100.3	113.2	106.2	104.7	108.3	102.4	99.9
Qatar	III.N	104.5	118.2	133.6	146.1	161.8	173.0	169.4
Saudi Arabia	III.R	86.9	88.5	90.6	90.6	89.7	83.9	80.4
	III.N	101.4	111.1	121.2	127.7	134.6	137.1	133.6
Sudan (a,b,c)	III.R	87.9	94.2	77.4	77.0	97.9	92.4	95.8
	III.N	69.7	69.6	51.5	43.9	47.5	32.6	32.1

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Middle Eastern Department (concluded)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Syrian Arab Rep.	III.N	97.3	118.3	135.1	151.9	172.1	185.2	181.0
United Arab Emirates	III.N	101.7	113.7	126.4	134.7	145.2	151.7	148.2
Yemen Arab Rep.	III.N	99.3	113.2	127.4	137.5	130.0	114.1	111.5
Yemen, P.D. Rep.	III.N	97.9	111.9	126.5	136.4	148.6	158.4	154.9

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Western Hemisphere Department

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
Antigua & Barbuda	III.R	106.1	111.0	112.6	113.2	117.5	118.8	117.4
	III.N	97.1	100.9	105.5	108.8	114.1	116.4	115.1
Argentina <u>6/</u>	II.R	185.2	170.8	95.0	80.3	94.6	82.0	77.1
	II.N	46.8	27.0	7.0	1.6	0.4	0	0
Bahamas	III.R	92.6	99.5	103.7	108.5	113.1	114.8	113.8
	III.N	96.0	102.9	108.8	114.5	121.0	123.6	122.0
✓✓ Barbados	III.R	99.7	108.3	117.1	123.3	128.9	131.3	130.3
	III.N	98.6	105.0	112.0	118.9	127.0	132.7	131.6
Belize	III.N	95.0	100.7	106.4	111.8	117.5	119.1	117.4
Bolivia <u>6/</u>	III.R	110.0	145.4	158.4	141.5	211.9	377.1	108.0
	III.N	91.6	110.3	73.2	20.5	4.9	0.1	0
✓ Brazil	II.R	80.7	99.1	104.5	84.9	85.1	81.7	79.4
	II.N	35.2	23.5	14.3	5.7	2.0	0.7	0.5
Canada	I.R	97.6	105.7	108.8	114.7	114.4	108.7	107.6
	I.N	96.0	97.3	97.6	99.6	97.0	92.9	91.7
✓ Chile	III.R	115.3	137.5	126.0	103.2	100.3	80.3	74.4
	III.N	93.8	114.5	115.4	92.8	99.7	80.9	75.6
Colombia	III.R	103.9	114.9	122.4	120.5	109.7	96.0	88.7
	III.N	83.6	81.5	76.7	68.7	59.7	46.2	41.9
Costa Rica	III.R	116.5	76.0	86.2	98.1	96.1	95.5	93.2
	III.N	100.8	46.7	26.3	25.2	24.7	24.2	23.7

6/ Nominal effective exchange rates for Argentina and Bolivia equal 0.056 and 0.009 in September 1985, respectively.

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Western Hemisphere Department (continued)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
✓✓ Dominica	III.R	113.4	122.6	126.7	134.6	145.7	146.1	143.9
	III.N	96.3	102.4	109.2	118.0	134.8	142.6	140.9
✓ Dominican Republic	III.R	100.4	102.0	101.0	94.0	68.1	75.5	78.4
	III.N	98.8	103.5	102.3	95.5	58.5	48.6	49.2
✓ Ecuador	III.R	99.5	110.3	109.2	109.4	100.5	119.4	120.1
	III.N	105.0	116.4	111.0	84.5	66.5	70.3	70.2
✓✓ El Salvador	III.R	107.3	121.5	127.2	131.1	140.8	155.3	148.8
	III.N	99.0	110.9	116.3	112.6	113.3	110.9	103.8
✓✓ Grenada	III.R	110.8	128.1	136.0	143.1	152.6	151.9	148.6
	III.N	94.4	102.0	108.6	114.5	122.9	125.6	123.4
✓ Guatemala	III.R	96.0	105.3	108.5	113.0	113.2	77.0	71.6
	III.N	99.3	111.8	125.3	135.1	141.6	90.4	77.7
✓✓ Guyana (a,d)	III.R	100.3	108.4	123.1	161.4	168.7	180.1	186.0
	III.N	96.1	95.9	97.9	106.7	91.6	86.3	87.5
✓✓ Haiti (d)	III.R	105.9	111.4	116.0	125.9	131.7	140.0	141.4
	III.N	100.5	106.3	111.3	115.5	120.7	124.2	123.5
✓✓ Honduras	III.R	104.6	110.9	118.5	126.7	131.6	136.2	135.9
	III.N	100.4	109.3	117.2	122.3	129.0	139.2	139.7
✓✓ Jamaica (a)	III.R	101.2	109.6	114.8	108.7	75.1	64.4	63.5
	III.N	76.1	81.3	86.4	77.1	44.2	31.4	30.0
Mexico	III.R	118.2	133.5	95.6	84.3	98.0	103.0	93.6
	III.N	102.3	102.0	53.4	24.0	18.4	13.6	11.3

Nominal and Real Effective Exchange Rates 1/

(Index 1978 = 100)

Western Hemisphere Department (concluded)

Countries	Type of Index <u>2/</u>	1980	1981	1982	1983	1984	Apr.- Sept '85	Sept 1985
✓✓ Nicaragua (a)	III.R	112.4	134.2	146.9	183.8	223.8	334.6	420.5
	III.N	71.4	77.4	74.2	76.1	74.3	38.2	37.7
Panama	III.R	98.8	100.2	102.0	102.7	102.4	101.8	100.6
	III.N	101.7	107.2	113.0	118.0	124.1	129.9	129.2
Paraguay	III.R	113.5	129.1	141.2	162.2	129.2	90.8	83.8
	III.N	159.7	242.8	388.1	732.2	1055.0	1491.8	1396.3
Peru (a,b)	III.R	113.9	133.6	136.7	125.1	123.7	98.5	96.5
	III.N	56.7	43.7	31.1	15.7	8.6	3.0	2.4
St. Christopher & Nevis <u>7/</u>	III.R	97.7	101.0	103.7	104.7	106.7	106.0	104.9
	III.N	95.4	99.4	104.1	108.6	114.4	116.1	114.9
St. Lucia (b)	III.R	97.4	106.9	109.6	111.3	115.9	113.3	112.9
	III.N	95.9	101.6	107.3	113.0	122.0	125.6	124.1
St. Vincent	III.R	99.6	109.6	113.3	117.4	119.3	117.2	114.8
	III.N	95.2	99.8	104.6	109.1	114.9	116.6	115.3
✓✓ Suriname	III.R	102.9	114.2	122.5	130.1	138.3	143.3	141.7
	III.N	99.3	113.4	124.0	135.5	150.8	161.4	158.9
✓✓ Trinidad & Tobago	III.R	105.3	114.8	127.4	148.2	167.9	177.0	177.5
	III.N	98.4	104.1	111.6	117.3	124.3	129.1	127.5
✓✓ United States	I.R	98.0	111.2	124.7	129.1	139.7	146.0	141.8
	I.N	96.0	110.4	123.4	131.1	143.2	149.2	144.7
Uruguay	III.R	135.7	152.7	164.3	103.8	98.9	98.7	97.4
	III.N	97.3	117.3	153.3	107.3	126.3	147.2	143.0
Venezuela	III.R	108.9	122.5	132.8	121.0	96.3	97.2	95.8
	III.N	101.5	110.2	119.1	109.8	85.0	83.0	81.9

7/ Index takes the value of the nominal effective exchange rate as of January 1978 = 100.

Statistical AppendixFirst Index

Countries for which the index is calculated:

Austria	France	Japan	Switzerland
Belgium	Germany, Fed.	Netherlands	United Kingdom
Canada	Rep. of	Norway	United States
Denmark	Italy	Sweden	

This index of the real effective exchange rate for the above countries is based on one of the indicators of competitiveness in manufacturing already published in International Financial Statistics (IFS). Out of the five indicators in IFS, that for relative normalized unit labor costs adjusted for exchange rate changes was selected as the most reliable one for the purpose at hand. This indicator is subject to errors in the estimation of the cyclically-adjusted rate of growth of output per manhour, but as long as the period considered is confined to a few years, the size of possible errors remains moderate. Its weighting scheme has the advantage of being built up from disaggregated trade data for manufactures, with the weights reflecting both the relative importance of a country's trading partners in its direct bilateral trade relations and that resulting from competition in third markets. Since the data on unit labor costs generally become available only after a considerable lag, estimates of the indicators of real effective exchange rates for recent periods must generally be obtained by using staff estimates of changes in unit labor costs for the most recent months, combined with actual data on exchange rates.

The use of normalized unit labor costs in manufacturing is intended to abstract from cyclical swings in conventionally-measured productivity which often distort the actual unit labor cost series (mainly because cyclical changes in reported employment do not correspond closely to those in effective inputs of labor). The normalized series are calculated by dividing an index of actual hourly compensation per worker by an index of output per manhour adjusted so as to eliminate the estimated effects of cyclical swings. Quarterly data on hourly compensation per worker and on output per manhour are obtained from national sources. However, these data are often available with a considerable lag, and this *obliges the staff to update the series on the basis of its own estimates*. The monthly series for these variables are obtained by simple interpolation of the quarterly series. All the data are seasonally adjusted. Finally, the adjustment for cyclical swings is estimated by the staff.

The index of the real effective exchange rate for each of the 14 countries represents the ratio of the country's index of normalized unit labor costs to a weighted geometric average of corresponding indices for the other thirteen countries, after expression of all of the national indices of normalized unit labor costs in terms of a common currency. In mathematical terms, the formula is

$$R_i = C_i \cdot E_i / \prod_{j \neq i} (C_j \cdot E_j)^{W_{ij}} \quad (1)$$

where R_i = real effective exchange rate for country i,

C_i = normalized unit labor cost in manufacturing in terms of local currency for country i,

E_i = exchange rate of country i in terms of U.S. cents,

W_{ij} = weight of country j in the real effective exchange rate of country i.

The weights are designed to make the indicators particularly relevant with respect to movements in costs and prices affecting exports of manufactures. They are built up from disaggregated (i.e., four-digit SITC) trade data for manufactures in 1975. At this disaggregated level, they take account of the relative importance of each of the other 13 countries (as measured by market shares) in the home market of the country considered, as well as in all of its foreign markets.

As a by-product of the calculations, a nominal effective exchange rate index is obtained by ignoring the movements in normalized unit labor costs. This nominal effective exchange rate can differ substantially from the normally used MERM effective exchange rate because both the weights and the number of countries included in the calculations are different.

Second Index

Countries for which the index is calculated:

Argentina	Hungary	Malaysia	South Africa
Australia	Iceland	New Zealand	Spain
Brazil	India	Pakistan	Thailand
Finland	Ireland	Philippines	Yugoslavia
Greece	Israel	Portugal	
Hong Kong	Korea	Singapore	

Statistical AppendixFirst Index

Countries for which the index is calculated:

Austria	France	Japan	Switzerland
Belgium	Germany, Fed.	Netherlands	United Kingdom
Canada	Rep. of	Norway	United States
Denmark	Italy	Sweden	

This index of the real effective exchange rate for the above countries is based on one of the indicators of competitiveness in manufacturing already published in International Financial Statistics (IFS). Out of the five indicators in IFS, that for relative normalized unit labor costs adjusted for exchange rate changes was selected as the most reliable one for the purpose at hand. This indicator is subject to errors in the estimation of the cyclically-adjusted rate of growth of output per manhour, but as long as the period considered is confined to a few years, the size of possible errors remains moderate. Its weighting scheme has the advantage of being built up from disaggregated trade data for manufactures, with the weights reflecting both the relative importance of a country's trading partners in its direct bilateral trade relations and that resulting from competition in third markets. Since the data on unit labor costs generally become available only after a considerable lag, estimates of the indicators of real effective exchange rates for recent periods must generally be obtained by using staff estimates of changes in unit labor costs for the most recent months, combined with actual data on exchange rates.

The use of normalized unit labor costs in manufacturing is intended to abstract from cyclical swings in conventionally-measured productivity which often distort the actual unit labor cost series (mainly because cyclical changes in reported employment do not correspond closely to those in effective inputs of labor). The normalized series are calculated by dividing an index of actual hourly compensation per worker by an index of output per manhour adjusted so as to eliminate the estimated effects of cyclical swings. Quarterly data on hourly compensation per worker and on output per manhour are obtained from national sources. However, these data are often available with a considerable lag, and this obliges the staff to update the series on the basis of its own estimates. The monthly series for these variables are obtained by simple interpolation of the quarterly series. All the data are seasonally adjusted. Finally, the adjustment for cyclical swings is estimated by the staff.

The index of the real effective exchange rate for each of the 14 countries represents the ratio of the country's index of normalized unit labor costs to a weighted geometric average of corresponding indices for the other thirteen countries, after expression of all of the national indices of normalized unit labor costs in terms of a common currency. In mathematical terms, the formula is

$$R_i = C_i \cdot E_i / \prod_{j \neq i} (C_j \cdot E_j)^{W_{ij}} \quad (1)$$

where R_i = real effective exchange rate for country i,

C_i = normalized unit labor cost in manufacturing in terms of local currency for country i,

E_i = exchange rate of country i in terms of U.S. cents,

W_{ij} = weight of country j in the real effective exchange rate of country i.

The weights are designed to make the indicators particularly relevant with respect to movements in costs and prices affecting exports of manufactures. They are built up from disaggregated (i.e., four-digit SITC) trade data for manufactures in 1975. At this disaggregated level, they take account of the relative importance of each of the other 13 countries (as measured by market shares) in the home market of the country considered, as well as in all of its foreign markets.

As a by-product of the calculations, a nominal effective exchange rate index is obtained by ignoring the movements in normalized unit labor costs. This nominal effective exchange rate can differ substantially from the normally used MERM effective exchange rate because both the weights and the number of countries included in the calculations are different.

Second Index

Countries for which the index is calculated:

Argentina	Hungary	Malaysia	South Africa
Australia	Iceland	New Zealand	Spain
Brazil	India	Pakistan	Thailand
Finland	Ireland	Philippines	Yugoslavia
Greece	Israel	Portugal	
Hong Kong	Korea	Singapore	

Statistical AppendixFirst Index

Countries for which the index is calculated:

Austria	France	Japan	Switzerland
Belgium	Germany, Fed.	Netherlands	United Kingdom
Canada	Rep. of	Norway	United States
Denmark	Italy	Sweden	

This index of the real effective exchange rate for the above countries is based on one of the indicators of competitiveness in manufacturing already published in International Financial Statistics (IFS). Out of the five indicators in IFS, that for relative normalized unit labor costs adjusted for exchange rate changes was selected as the most reliable one for the purpose at hand. This indicator is subject to errors in the estimation of the cyclically-adjusted rate of growth of output per manhour, but as long as the period considered is confined to a few years, the size of possible errors remains moderate. Its weighting scheme has the advantage of being built up from disaggregated trade data for manufactures, with the weights reflecting both the relative importance of a country's trading partners in its direct bilateral trade relations and that resulting from competition in third markets. Since the data on unit labor costs generally become available only after a considerable lag, estimates of the indicators of real effective exchange rates for recent periods must generally be obtained by using staff estimates of changes in unit labor costs for the most recent months, combined with actual data on exchange rates.

The use of normalized unit labor costs in manufacturing is intended to abstract from cyclical swings in conventionally-measured productivity which often distort the actual unit labor cost series (mainly because cyclical changes in reported employment do not correspond closely to those in effective inputs of labor). The normalized series are calculated by dividing an index of actual hourly compensation per worker by an index of output per manhour adjusted so as to eliminate the estimated effects of cyclical swings. Quarterly data on hourly compensation per worker and on output per manhour are obtained from national sources. However, these data are often available with a considerable lag, and this obliges the staff to update the series on the basis of its own estimates. The monthly series for these variables are obtained by simple interpolation of the quarterly series. All the data are seasonally adjusted. Finally, the adjustment for cyclical swings is estimated by the staff.

The index of the real effective exchange rate for each of the 14 countries represents the ratio of the country's index of normalized unit labor costs to a weighted geometric average of corresponding indices for the other thirteen countries, after expression of all of the national indices of normalized unit labor costs in terms of a common currency. In mathematical terms, the formula is

$$R_i = C_i \cdot E_i / \prod_{j \neq i} (C_j \cdot E_j)^{W_{ij}} \quad (1)$$

where R_i = real effective exchange rate for country i,

C_i = normalized unit labor cost in manufacturing in terms of local currency for country i,

E_i = exchange rate of country i in terms of U.S. cents,

W_{ij} = weight of country j in the real effective exchange rate of country i.

The weights are designed to make the indicators particularly relevant with respect to movements in costs and prices affecting exports of manufactures. They are built up from disaggregated (i.e., four-digit SITC) trade data for manufactures in 1975. At this disaggregated level, they take account of the relative importance of each of the other 13 countries (as measured by market shares) in the home market of the country considered, as well as in all of its foreign markets.

As a by-product of the calculations, a nominal effective exchange rate index is obtained by ignoring the movements in normalized unit labor costs. This nominal effective exchange rate can differ substantially from the normally used MERM effective exchange rate because both the weights and the number of countries included in the calculations are different.

Second Index

Countries for which the index is calculated:

Argentina	Hungary	Malaysia	South Africa
Australia	Iceland	New Zealand	Spain
Brazil	India	Pakistan	Thailand
Finland	Ireland	Philippines	Yugoslavia
Greece	Israel	Portugal	
Hong Kong	Korea	Singapore	

For this index, the real effective exchange rate is based on monthly consumer price indices and weights that reflect the geographical pattern of total imports and exports. ^{1/} Consumer price indices have the advantage of being relatively timely and easy to obtain, but their reliability as an indicator of a country's international cost and price competitiveness may be limited to the extent that large weights are given to nontraded goods, or to goods that are subsidized or subject to price controls. The weighting scheme for each country considered takes into account the relative importance of its bilateral trade with the other countries in this group and with the countries for which the first index is calculated, as well as competition in third markets. This scheme suffers from being based on aggregate trade flows, thus ignoring the greater degree of competition among certain countries that results from similarities in their structures of production. However, this weakness is lessened somewhat by the fact that most of the countries included are mainly exporters of manufactures.

The data are normally obtained from International Financial Statistics (IFS). Where data are not available for recent months, but are available with not more than a six month lag, estimates for the most recent months are obtained by mechanical extrapolation of the rate of inflation or, where possible, on the basis of partial information. The price data are seasonally adjusted by the staff. In general, the exchange rate used is the monthly average of market rates (line a.h. in IFS).

For each country in this second group, the index of the real effective exchange rate is calculated by taking into account the relative importance of the other 35 countries in the first two groups in the imports of the country concerned, as well as in its export markets. On the export side, competition in home markets and in third markets is considered. The weighting scheme is based on the following formula:

$$W_{ij} = K_m \frac{X_{ji}}{X_{.i}} + K_x \left(\frac{1}{2} \sum_{k \neq j} \frac{X_{ik}}{X_{i.}} \frac{X_{jk}}{X_{.k}} + \frac{1}{2} \frac{X_{ij}}{X_{i.}} \right) \quad (2)$$

①
②

where W_{ij} = weight of country j in the real effective exchange rate of country i,

^{1/} For India, use is made of the wholesale price index, which is considered as better suited to the present exercise; for Brazil a composite index of wholesale and retail prices is used.

X_{ij} or X_{ik} = exports of country i to country j or market k ,

K_m = the ratio of total imports from the group of 36 countries over the sum of these imports plus the total exports to all 37 foreign markets,

K_x = the ratio of total exports to all 37 foreign markets over the sum of these exports plus the total imports from the group of 36 countries,

\cdot = indicates summation over the relevant index.

The subscripts i and j range over all 36 countries, with $X_{ij} = X_{ik} = 0$ for $i = j$ or $i = k$. The subscript k ranges over 38 geographical markets (the 36 countries plus 2 other markets consisting of the "oil exporting countries" and the "rest of the world").

The formula includes 2 components, labeled ① and ② . The first component reflects the weight of country j in country i 's total imports from the group of 36 countries. The second component consists of two parts. The first part reflects the weight of country j in country i 's foreign markets (excluding j as a market); that is, it takes into account the competition between country i and country j in third markets. The second part of the second component reflects the weight of country j in country i 's total exports; that is, it takes into account the competition between country i and country j in country j 's home market. The two parts are arbitrarily assumed to have equal weights in the second component. The first component can be viewed as the "import component" and the second component as the "export component." The import and export components are then weighted by the relative importance of total imports from the group of 36 countries and total exports to all 37 foreign markets. It can readily be seen that $\sum_j W_{ij} = 1$.

The data on trade flows refer to 1980 and are obtained from Direction of Trade. For countries that are major entrepots (Hong Kong and Singapore), goods in transit are excluded from both the import and export sides. The formula used to average the bilateral real exchange rates is the same as formula (1).

Third Index

Countries for which the index is calculated (with the asterisk denoting countries for which only the nominal effective exchange rate could be calculated):

* Algeria	Madagascar	Bangladesh	* Bahrain	Antigua &
* Benin	Malawi	* Bhutan	Egypt	Barbuda
Botswana	Mali	Burma	Iran, I.R. of	Bahamas
Burkina Faso	Mauritania	China	* Iraq	Barbados
Burundi	Mauritius	Fiji	Jordan	* Belize
Cameroon	Morocco	Indonesia	Kuwait	Bolivia
* Cape Verde	Niger	* Lao, P.D.	* Lebanon	Chile
Central African	Nigeria	Republic	* Libya	Colombia
Republic	Rwanda	* Maldives	* Oman	Costa Rica
* Chad	* Sao Tome &	Nepal	* Qatar	Dominica
* Comoros	Principe	Papua New	Saudi Arabia	Dominican
Congo	Senegal	Guinea	Sudan	Republic
* Djibouti	Seychelles	Solomon	* Syrian Arab	Ecuador
* Equatorial	Sierra Leone	Islands	Republic	El Salvador
Guinea	Somalia	Sri Lanka	* United Arab	Grenada
Ethiopia	Swaziland	Vanuatu	Emirates	Guatemala
Gabon	Tanzania	* Viet Nam	* Yemen Arab	Guyana
Gambia	Togo	Western	Republic	Haiti
Ghana	Tunisia	Samoa	* Yemen, P.D.R.	Honduras
* Guinea	Uganda			Jamaica
* Guinea Bissau	Zaire			Mexico
Ivory Coast	Zambia			Nicaragua
Kenya	Zimbabwe			Panama
Lesotho				Paraguay
Liberia				Peru
				St. Christopher
				& Nevis
		Cyprus		St. Lucia
		Luxembourg		St. Vincent
		Malta		Suriname
		Netherlands		Trinidad &
		Antilles		Tobago
		Romania		Uruguay
		Turkey		Venezuela

This index is calculated for countries that are mainly producers and exporters of primary commodities. For this group, the real effective exchange rate is also based on the use of consumer price indices 1/ and

1/ For Central African Republic and Costa Rica, use is made of the wholesale price index which is considered as better suited to the present exercise; for Malawi, the price index is a composite of various local price indices for differing income classes.

weights that reflect aggregate trade flows. In general, only bilateral trade flows between each country in this group and the 36 countries for which the first two indices are calculated are taken into account. That is, the real effective exchange rate index for each country in the third group is calculated by weighting its bilateral real exchange rates with countries in the group of 36 on the basis of the relative sizes of its bilateral trade flows (imports plus exports) with these latter countries. ^{1/} To alleviate one of the weaknesses of this weighting scheme, oil exports have been excluded from the trade data used to derive the weights, since changes in real effective exchange rates have very limited relevance for the volume of oil exports. Also, since the weights for this group are based on their bilateral trade with the earlier group of 36 countries, imports of energy products by countries in the third group are effectively excluded from the weighting scheme. Other adjustments have been made on an ad hoc basis for a number of countries. One of the main remaining weaknesses of the weighting scheme used for this group is that it ignores the competition among suppliers of specific primary products.

The real effective exchange rate index for this group of countries makes use of monthly data on consumer prices and exchange rates. The price data are normally obtained from IFS (line 64), but in some cases other CPI indices or wholesale price indices are used; these indices are updated as necessary on the basis of staff estimates, and seasonally adjusted by the staff. The data on exchange rates are also normally obtained from IFS. For some countries with multiple exchange rates (e.g., Egypt and Paraguay) the calculations are based on an appropriately weighted average of the various rates. For a number of other countries with multiple exchange rates, the data necessary for such a calculation are being gathered, and revised series will be presented in future issues of this paper.

The index of the real effective exchange rate for this group of countries is generally based on a weighting scheme that takes into account only the bilateral trade flows with the group of 36 countries. Therefore, direct competition among primary producing countries is ignored. In mathematical terms, the weights are defined as

$$W_{ij} = K_m \frac{X_{ji}}{X_{.i}} + K_x \frac{X_{ij}}{X_{i.}} \quad (3)$$

^{1/} In the case of four Central American countries (Costa Rica, El Salvador, Guatemala, and Honduras) this approach has been modified to take account of intra-regional trade; namely, bilateral non-oil trade among the countries in the group just mentioned, as well as their trade with Mexico and Panama. This is the first issue in which the approach for these four countries has been modified.

The subscript i ranges over all of the countries included in the third set of countries. The subscript j ranges over all the group of 36 countries. Again $\sum_j W_{i,j} = 1$.

Here again, the data on trade flows normally refer to 1980, and are obtained from Direction of Trade. The formula used to average the bilateral real exchange rate is the same as formula (1).

A large number of ad hoc adjustments have been made to the trade flows of countries in this third group to enhance the relevance of the results. As mentioned above, exports of oil have been excluded from the exports of the countries that are net oil exporters. Similarly, exports of diamonds and gold have been excluded from the exports of Sierra Leone and the Dominican Republic, respectively. In a number of cases, trade statistics have been adjusted to take into account the original source of the goods imported. Foreign travel receipts have been included in cases where such receipts play a major role and where the required data are available (Antigua and Barbuda, Bahamas, Dominica, Grenada, Seychelles, St. Lucia, and St. Vincent).

Although the third group totals 112 countries in all, for 25 of these countries the real effective exchange rate cannot be calculated, owing to the lack of reliable price data; in these cases calculation is confined to the nominal effective exchange rate. ^{1/} The usefulness of this nominal effective exchange rate is very limited because of the marked differences in inflation rates among countries. It is hoped that real effective exchange rate indices can be developed eventually for all Fund members.

^{1/} For two member countries (Afghanistan and Kampuchea), neither the nominal nor the real effective exchange rate is calculated.

