

EBS/83/139

CONFIDENTIAL

July 7, 1983

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

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

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

July 6, 1983

This paper is the first in a new quarterly series presenting indicators of real effective exchange rates for member countries in the form of charts and tables. Real effective exchange rates are defined as nominal effective exchange rates adjusted for movements in relative local currency prices. The period covered extends over several years in order to permit examination of changes in a medium-term perspective. The indicators are the same as those used by the staff to implement the experimental system of information notices on large changes in real effective exchange rates. (See EBS/83/138, 7/6/83.)

There are various concepts of the real effective exchange rate corresponding to different analytical purposes. For example, one may be interested in an index of the real effective exchange rate in order to assess 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 a different result. In this paper, the focus is on 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.

An indicator of overall cost and price competitiveness is a useful analytical tool in balance of payments and exchange rate analysis. First, it is useful in analyzing past balance of payments trends, particularly the evolution of the market shares for a country's products at home and abroad. It also assists in predicting what may happen to the balance of payments, in particular because long lags between changes in competitiveness and changes in trade shares often imply that most of the effects of recent competitiveness changes are still "in the pipeline." However, a country's overall cost and price competitiveness is not the only determinant of its balance of payments position. Many other factors, in both goods and capital markets, are also important

determinants. Therefore, a change in the real effective exchange rate is not per se a sign that the exchange rate is becoming inappropriate. Nor is a lack of change a sign that it continues to be appropriate. The evolution of the real effective exchange rate has to be interpreted in the context of other economic developments.

Another reason for caution in interpreting movements in real exchange rates is that there are many statistical and conceptual problems involved in the calculation of these variables. In particular, it is difficult to find indices that are representative of changes in overall cost and price levels at home and abroad. It is also difficult to determine the appropriate weight to place on the bilateral real exchange rate with each partner country in order to obtain an overall average. In theory, each bilateral rate should be given a weight that represents its relative importance in the determination of the overall foreign trade performance of the country considered. This relative importance depends on the relative size of the trade flows affected by each bilateral rate, as well as the relative price sensitivity of these flows. In practice, this would require complex economic models involving matrices of price elasticities of supply and demand for all relevant countries, markets, and goods. ^{1/} In the present context, it was decided to use readily available cost and price indicators and relatively simple weighting schemes so that the calculations could be made easily and consistently for a large number of member countries.

Three sets of calculations are presented. The first, for 14 industrial 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

^{1/} Examples of such models can be found in Jacques R. Artus and A. K. McGuirk, "A Revised Version of the Multilateral Exchange Rate Model," IMF Staff Papers, Vol. 28, No. 2 (June 1981); Gerard Belanger, "An Indicator of Effective Exchange Rates for Primary Producing Countries," IMF Staff Papers, Vol. 23, No. 1 (March 1976); and Andrew Feltenstein, Morris Goldstein, and Susan M. Schadler, "A Multilateral Exchange Rate Model for Primary Producing Countries," IMF Staff Papers, Vol. 26, No. 3 (September 1979). For a broad review of the conceptual problems involved in the measurement of real effective exchange rates, see Edouard B. Maciejewski, "Real Effective Exchange Rate Indices: A Re-Examination of the Major Conceptual and Methodological Issues," DM/82/70 (October 29, 1982).

output per manhour, but, as long as only a period of a few years is considered, the size of the possible errors remains moderate. Its weighting scheme has the advantage of being built up from disaggregated trade data for manufactures, with the weights reflecting the relative importance of a country's trading partners in its direct bilateral trade relations with them and in third markets. As 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 second set of calculations applies to 36 countries for which the share of manufactures in total production and exports is sizable and for which the relevant data are readily available. This group of 36 countries includes all those classified in the World Economic Outlook as industrial countries except Luxembourg (i.e., the preceding 14 countries plus Australia, Finland, Iceland, Ireland, New Zealand, Spain), or as "developing countries that are major exporters of manufactures," plus India, Hungary, Pakistan, Thailand, Philippines, and Malaysia. For countries in this second group, the real effective exchange rate is based on 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. However, they have the major disadvantage of being an unreliable indicator of a country's international cost and price competitiveness for a number of reasons, in particular because of the large weights often given to nontraded goods and to goods under price controls or subsidized. The weighting scheme for each country takes into account the relative importance of bilateral trade between the country considered and the other 35 countries, as well as competition in third markets. It suffers from the weakness of being based on aggregate trade flows, thus ignoring the greater degree of competition among certain countries that results from the similarity of their structures of production. However, this weakness is lessened somewhat by the fact that most of the countries included are mainly exporters of manufactures.

Finally, the third set of calculations applies to 107 countries that are mainly producers and exporters of primary commodities. For this group of countries, the real effective exchange rate is also based on the use of consumer price indices and weights that reflect aggregate trade flows. However, only the bilateral trade flows with the previous 36 countries are taken into account. That is, the real effective

^{1/} For Brazil and India, use is made of the wholesale price index, which is considered as better suited to the present exercise.

exchange rate indices for countries in the third group are calculated by weighting their bilateral real exchange rates with countries in the group of 36 on the basis of the relative sizes of the bilateral trade flows (imports plus exports) with these latter countries. To alleviate one of the weaknesses of this weighting scheme, oil exports have been excluded from the trade data used to derive the weights. The reason for this adjustment is that the price of oil exported by a given country is not related to its exchange rate or its domestic price level. Other adjustments have been made on an ad hoc basis for a number of countries. One of the main remaining weaknesses of the scheme is that it ignores the competition among suppliers of specific primary products.

For a number of the countries included in the third group, the real effective exchange rate could not be calculated because of a lack of reliable price data, and the calculation was limited 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. Over time, it is hoped that real effective exchange rate indexes can be developed for all members.

The attached charts present the results for a sample of 55 industrial and developing countries. The tables that follow present 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 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--and the changes that are flagged are those that exceed 20 per cent from that base period. For the 14 industrial countries included in the first and second groups, the charts and tables are based on the first set of calculations--the set using the normalized unit labor costs in manufacturing. A description of the formulas and statistical data and a listing of the countries in the three sets of calculations are given in the appendix.

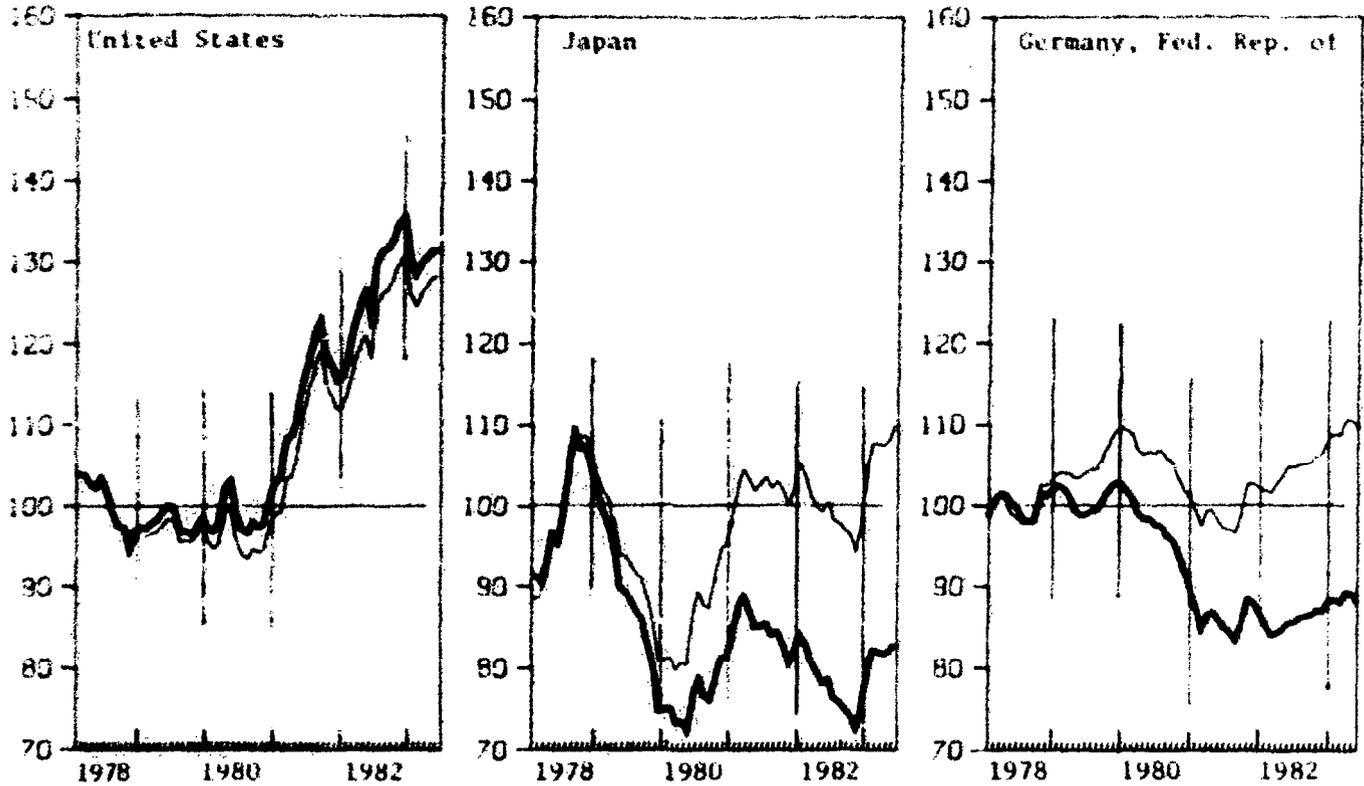
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The staff will be continuing to examine the data and will refine the indexes as experience is gained. It will also continue to seek improvement in the data in the course of its normal consultations with members.

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

**FOURTEEN INDUSTRIAL COUNTRIES: NOMINAL AND REAL EFFECTIVE
EXCHANGE RATES, 1978 - APRIL 1983**
(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 per cent)

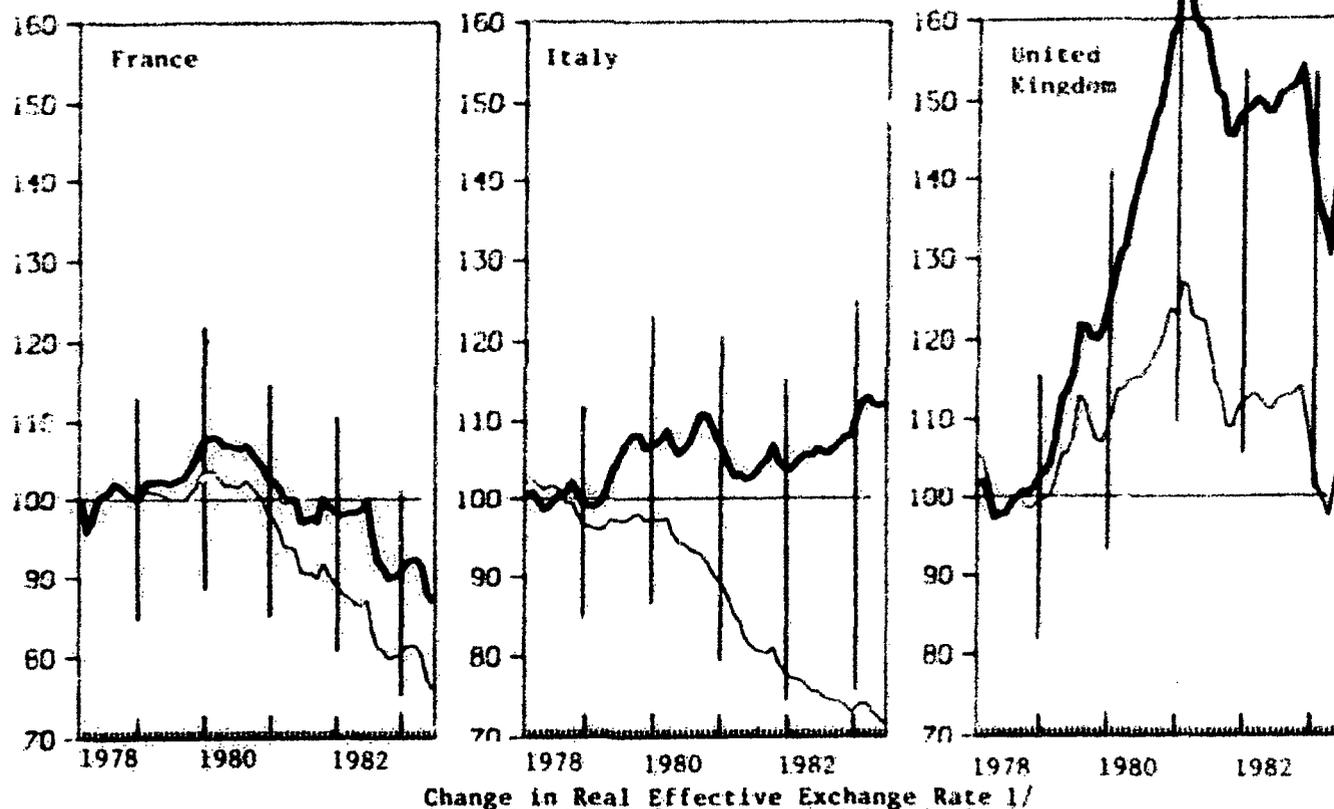
Terminal period	United States				Japan				Germany, Fed. Rep. of			
	Initial period				Initial period				Initial period			
	1978	1980	1982	Q3 80	1978	1980	1982	Q1 81	1978	1980	1982	Q4 79
1979		-2.2				-13.1				0.8		
1980		-0.9				-22.7				-3.4		
1982		28.3	29.5			-22.7	9.2			-14.0	-11.0	
Feb-Apr '83		30.5	31.8	1.5		-18.2	5.9	5.8		-13.4	-10.3	0.9
Apr '83		31.3	32.6	2.2	35.5	-17.9	6.2	6.2	-7.5	-11.2	-8.0	3.3

^{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 - APRIL 1983

(Index 1978 = 100)

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



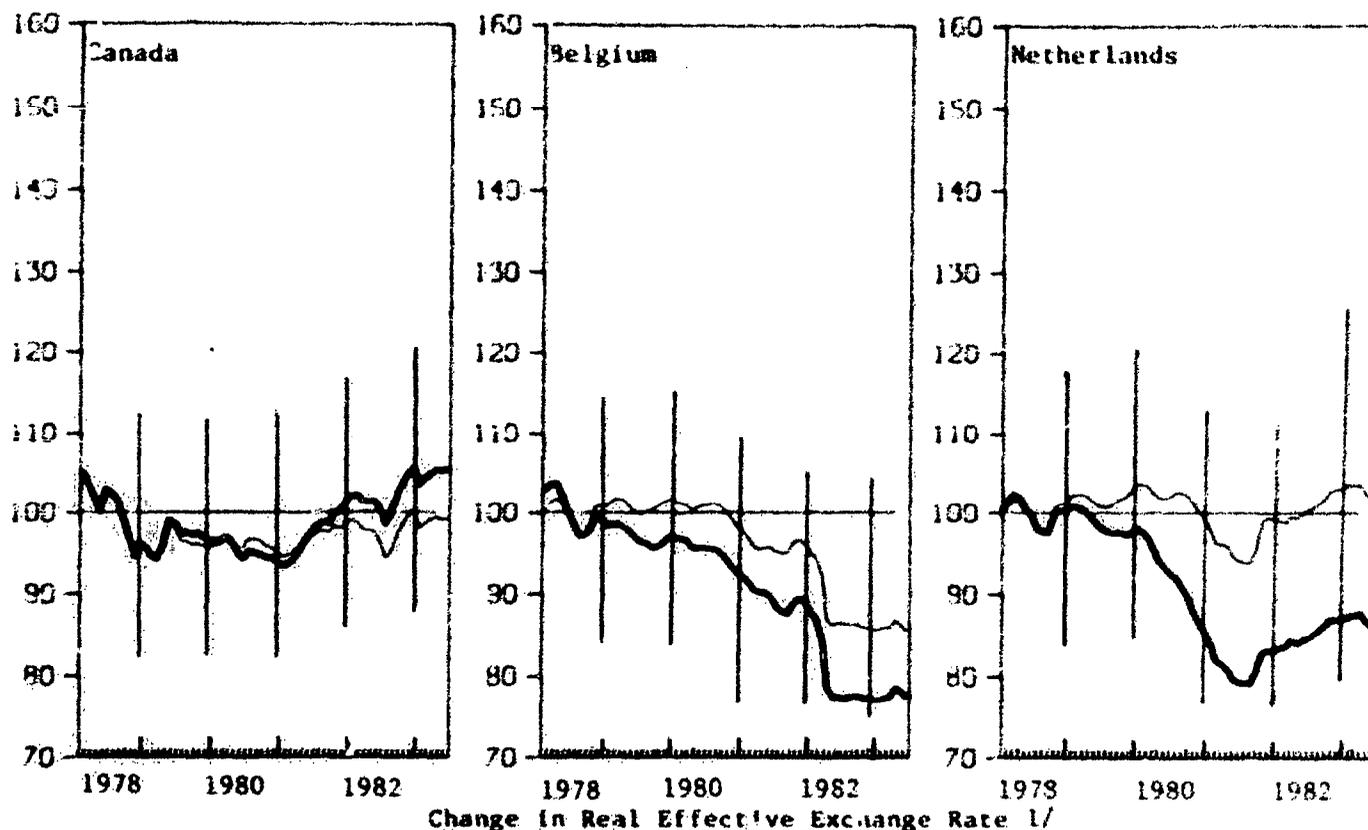
Change in Real Effective Exchange Rate ^{1/}
(In per cent)

Terminal period	France				Italy				United Kingdom			
	Initial period		Initial period		Initial period		Initial period		Initial period		Initial period	
	1978	1980	1982	Q1 80	1978	1980	1982	Q3 80	1978	1980	1982	Q1 81
1979	3.6				4.6				15.5			
1980	7.7				7.8				42.8			
1982	-5.6	10.7			6.5	-1.2			49.6	4.7		
Feb-Apr '83	-9.6	-14.5	-4.2		12.1	3.9	7.9		34.2	-6.0	-10.3	
Apr '83	-12.2	-16.9	-6.9	-18.4	11.7	3.6	7.6	4.2	37.3	-3.9	-8.2	-17.3

^{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.

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EXCHANGE RATES, 1978 - APRIL 1983**
(Index 1978 = 100)

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



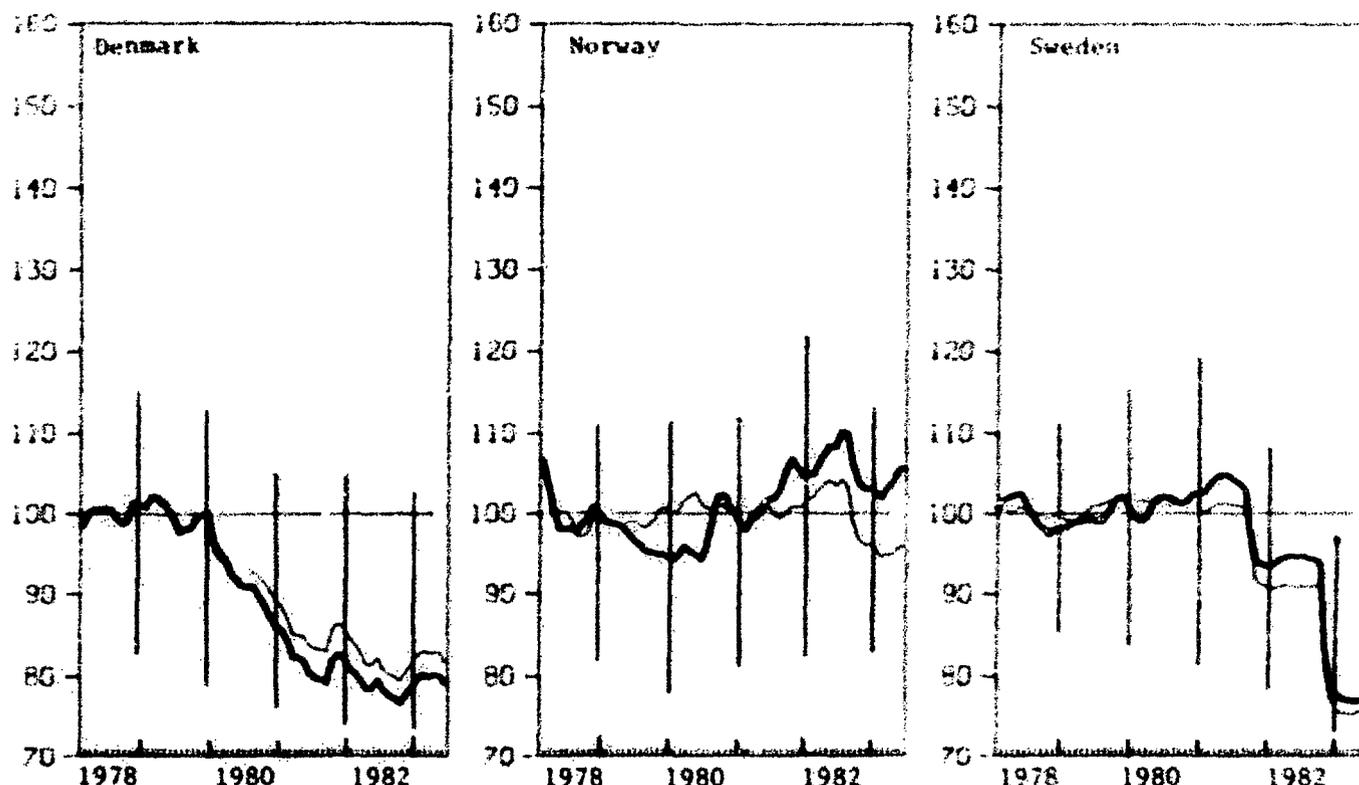
Change in Real Effective Exchange Rate 1/
(In per cent)

Terminal period	Canada				Belgium				Netherlands			
	1978	1980	1982	Q4 80	1978	1980	1982	Q4 79	1978	1980	1982	Q4 79
1979	-3.2				-3.0				-1.3			
1980	-4.9				-5.1				-8.2			
1982	2.1	7.4			-21.2	-16.9			-14.8	-7.2		
Feb-Apr '83	5.2	10.7	3.0		-21.9	-17.8	0.9		-12.6	-4.9	2.5	
Apr '83	5.2	10.7	3.0	12.0	-22.0	-17.8	1.0	-19.6	-13.2	-5.5	1.8	-11.0

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 - APRIL 1983**
(Index 1978 = 100)

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



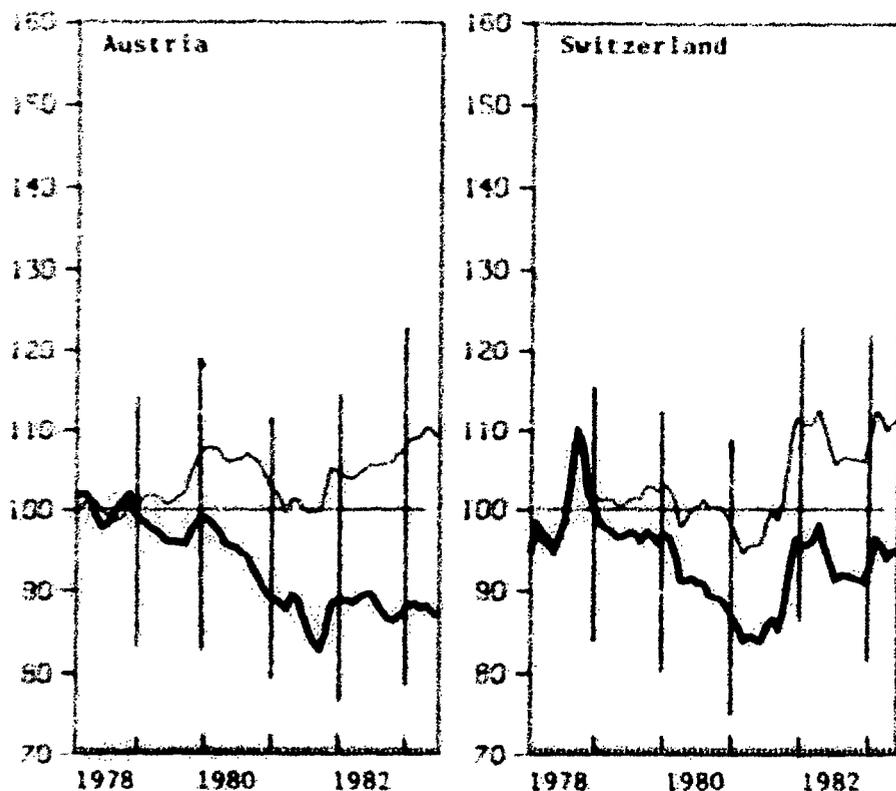
Change in Real Effective Exchange Rate ^{1/}
(In per cent)

Terminal period	Denmark				Norway				Sweden			
	Initial period 1978	1980	1982	Q4 79	Initial period 1978	1980	1982	Q2 82	Initial period 1978	1980	1982	Q2 81
1979	-0.5				-3.8				-3.0			
1980	-9.9				-2.2				-9.2			
1982	-21.7	-13.1			6.1	8.5			-6.6	2.9		
Feb-Apr'83	-20.0	-11.3	2.1		4.1	6.4	-1.9		-5.2	4.4	1.5	
Apr'83	-19.9	-11.2	2.1	-20.0	5.3	7.7	-0.8	-2.7	-5.1	4.6	1.7	-26.6

^{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 - APRIL 1983
(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 per cent)

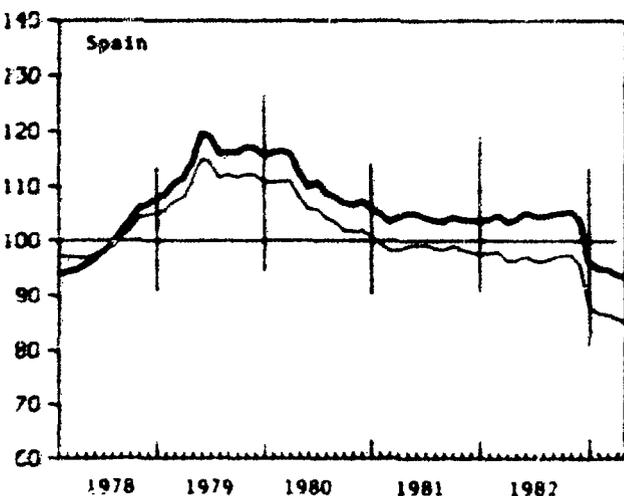
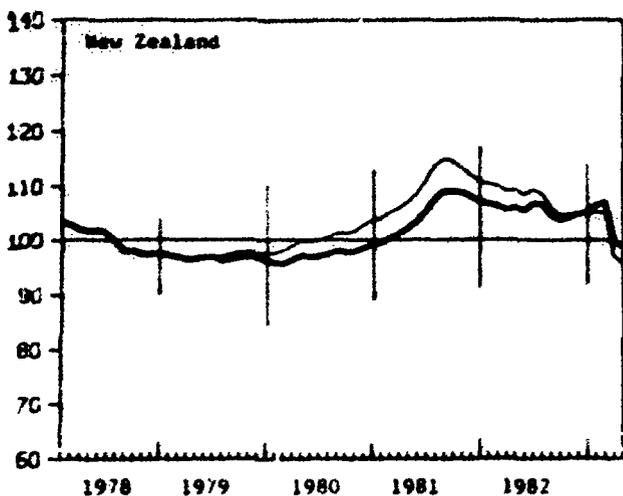
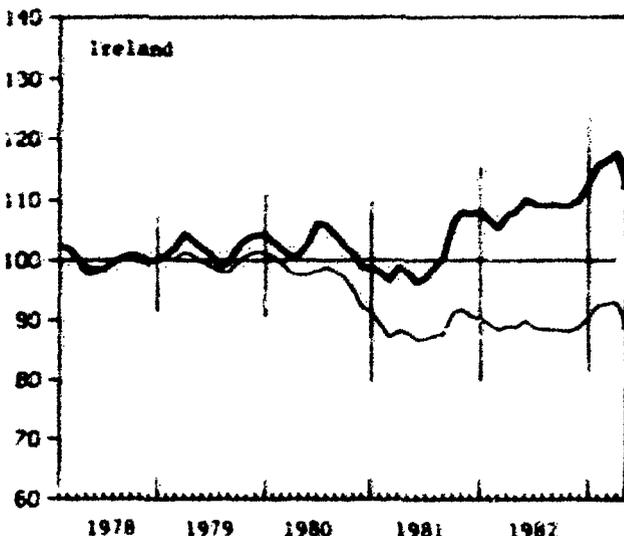
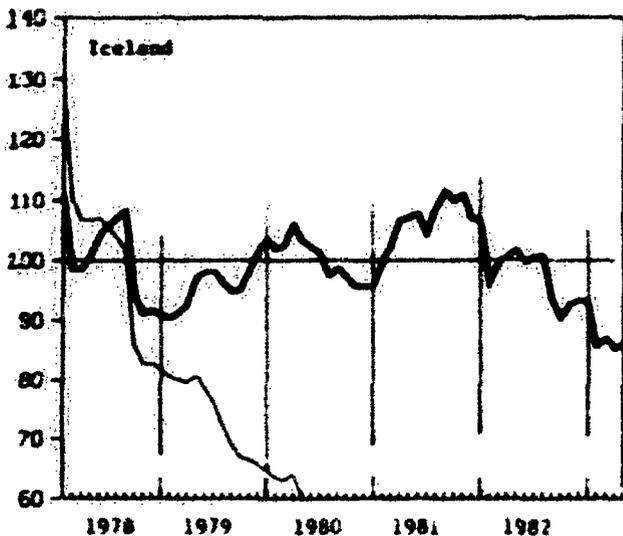
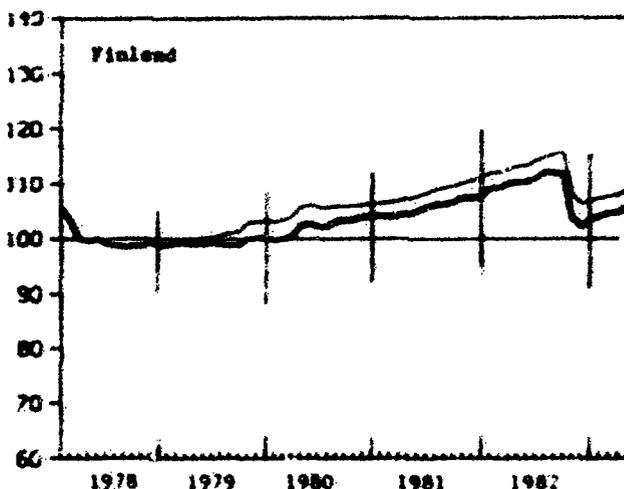
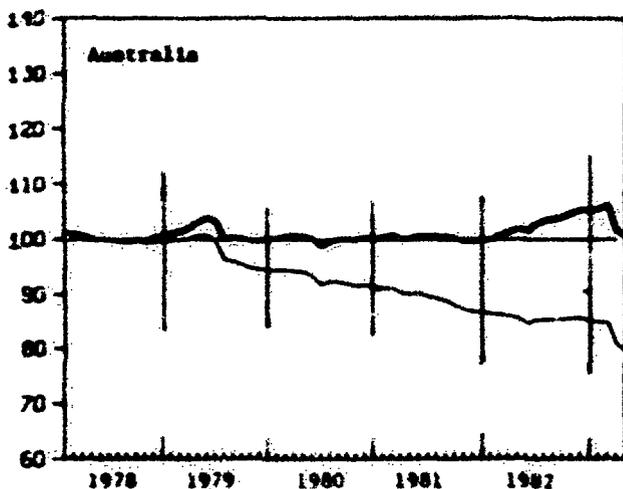
Terminal period	Austria				Switzerland			
	Initial period				Initial period			
	1978	1980	1982	Q4 79	1978	1980	1982	Q2 81
1979								
1980								
1982								
Feb-Apr'83								
Apr'83								

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.

OTHER INDUSTRIAL COUNTRIES: NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - APRIL 1983 (Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



DEVELOPING COUNTRIES--OIL EXPORTING

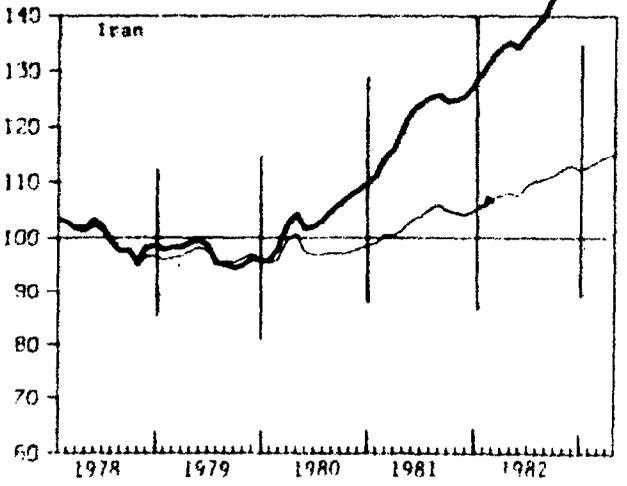
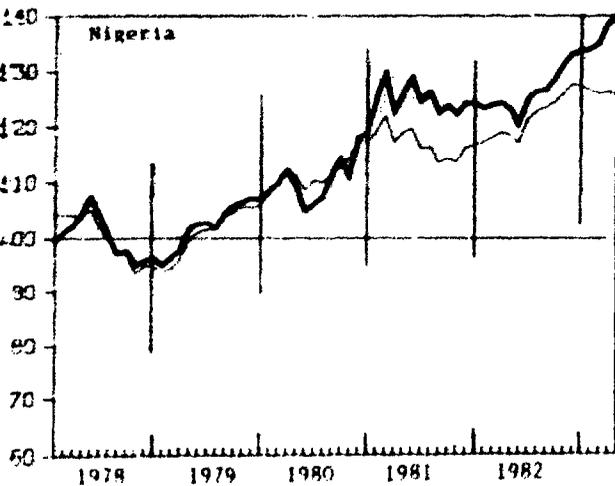
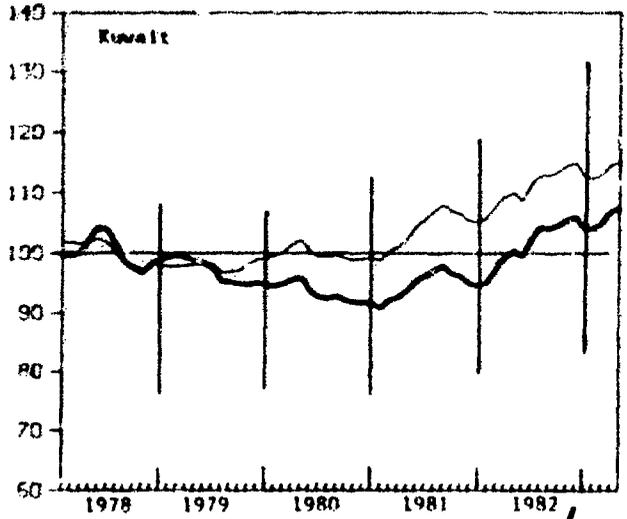
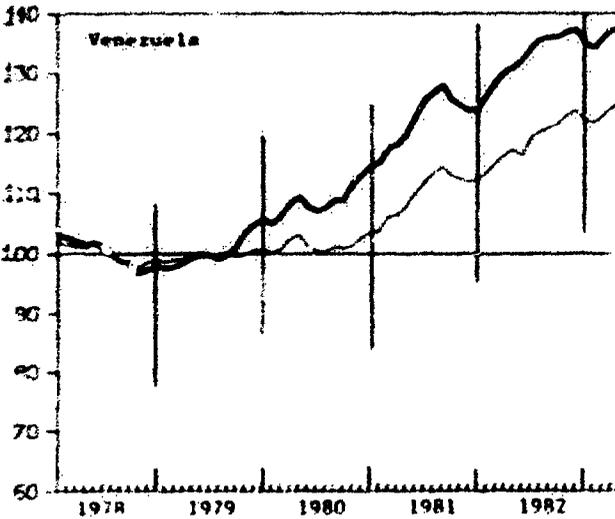
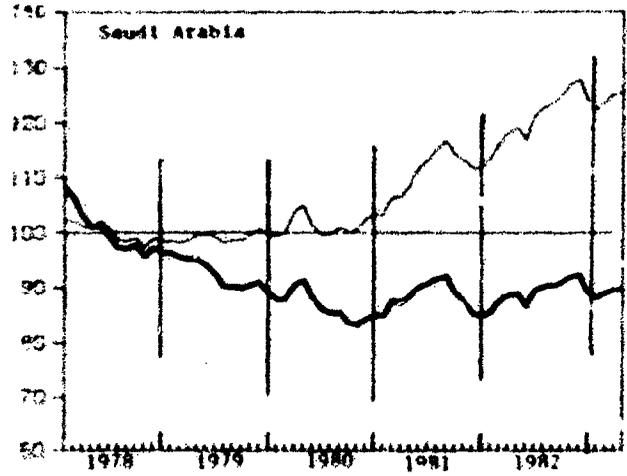
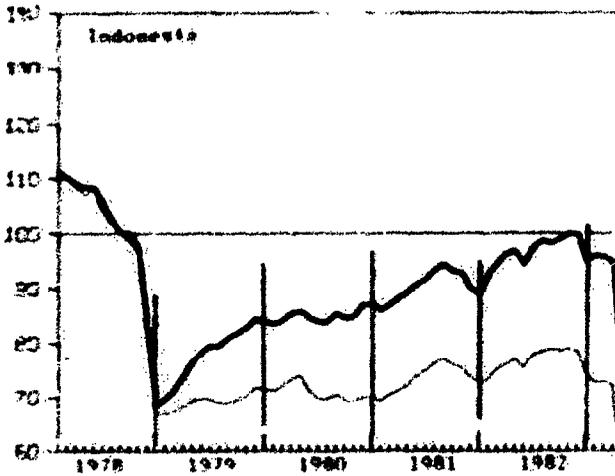
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES,

1978 - APRIL 1983

(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



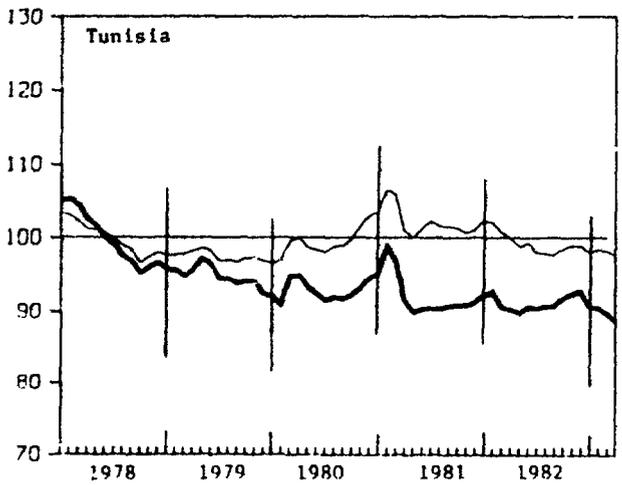
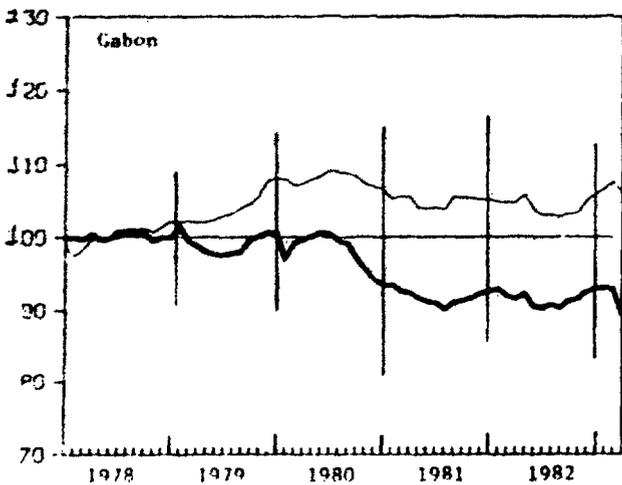
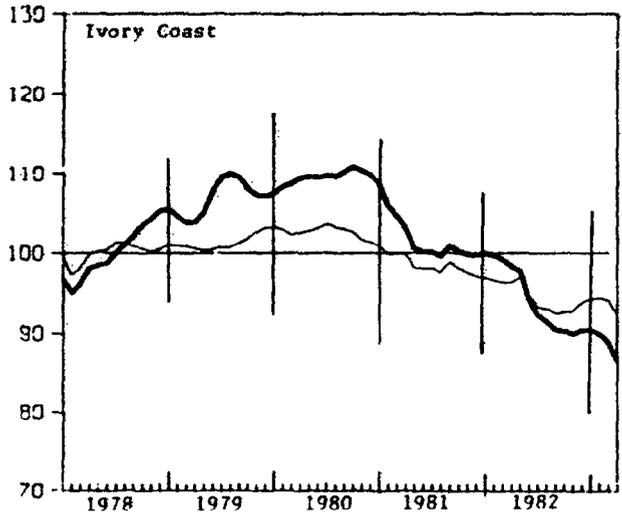
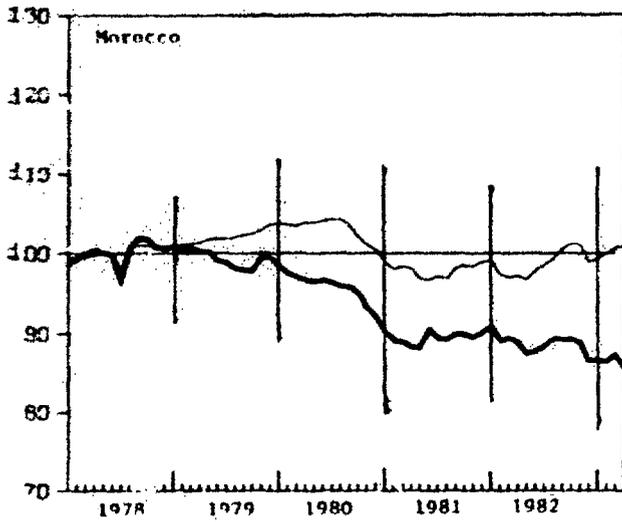
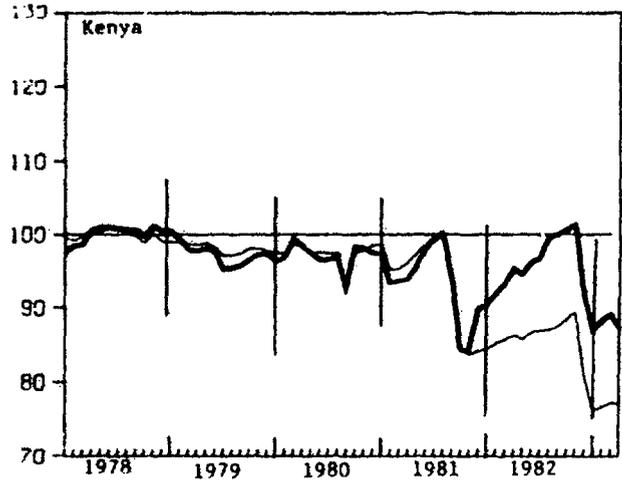
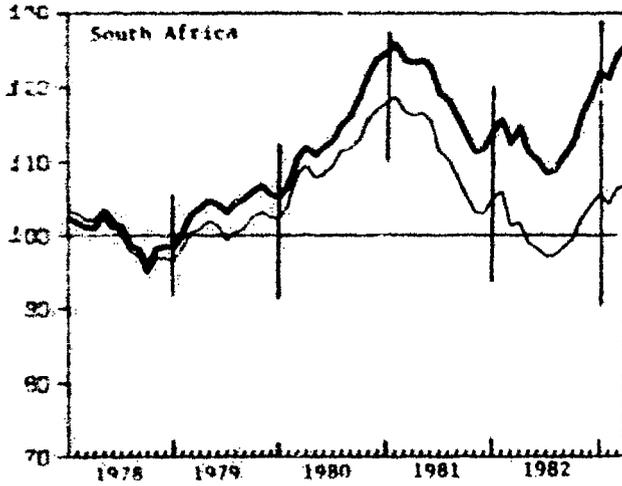
DEVELOPING COUNTRIES --AFRICA

NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - APRIL 1983

(Index 1978 = 100)

— Nominal effective exchange rate

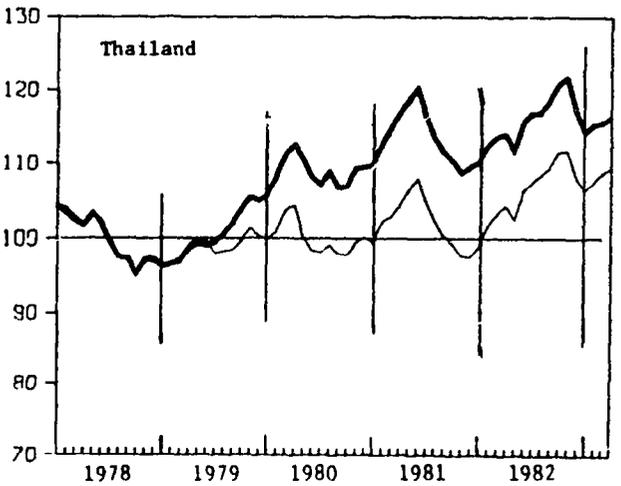
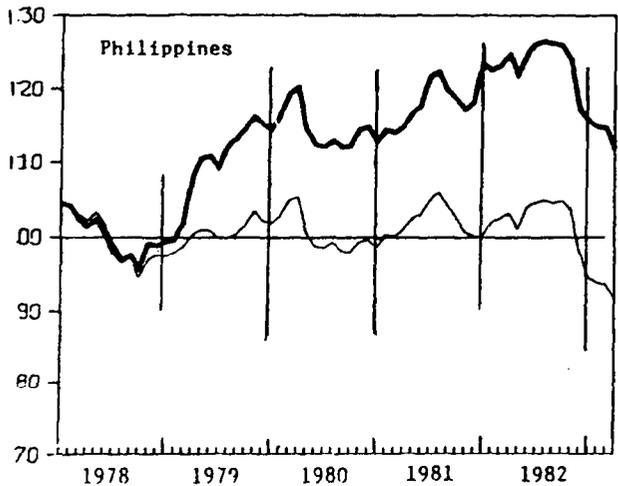
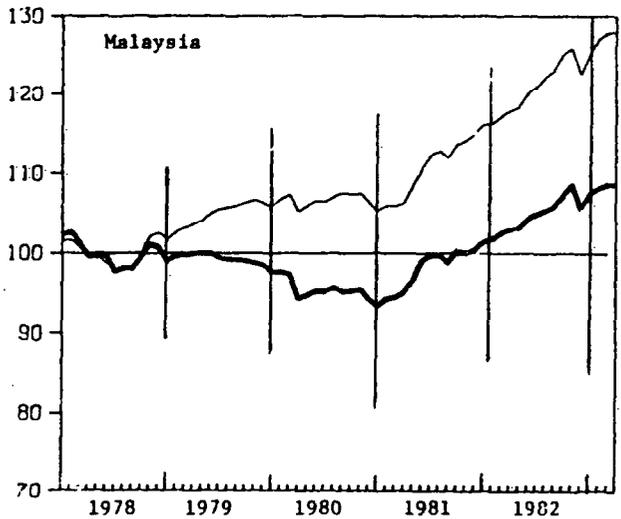
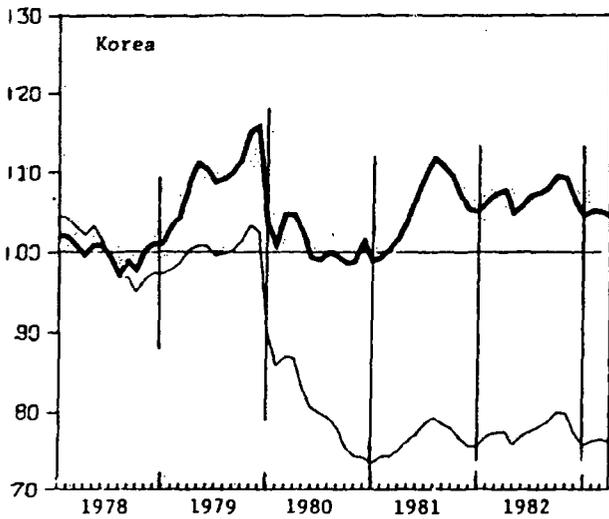
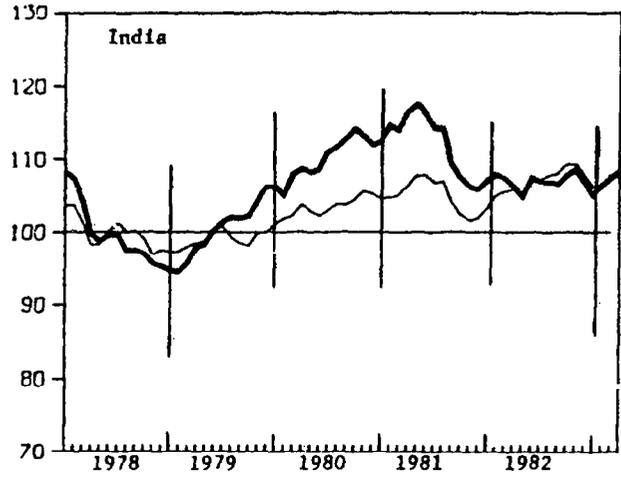
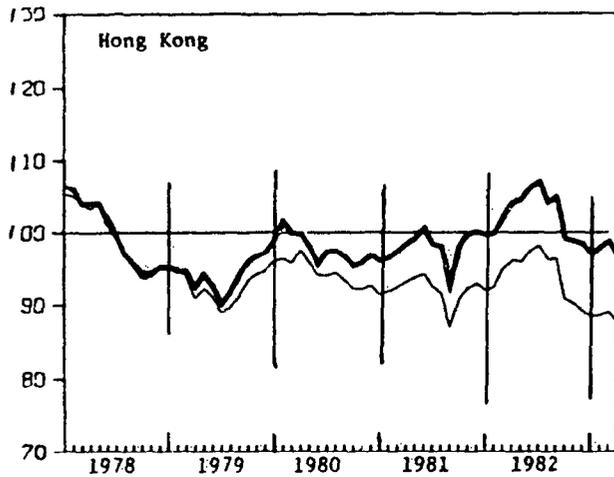
— Real effective exchange rate based on consumer price indices



DEVELOPING COUNTRIES--ASIA
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES,
1978 - APRIL 1983
(Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



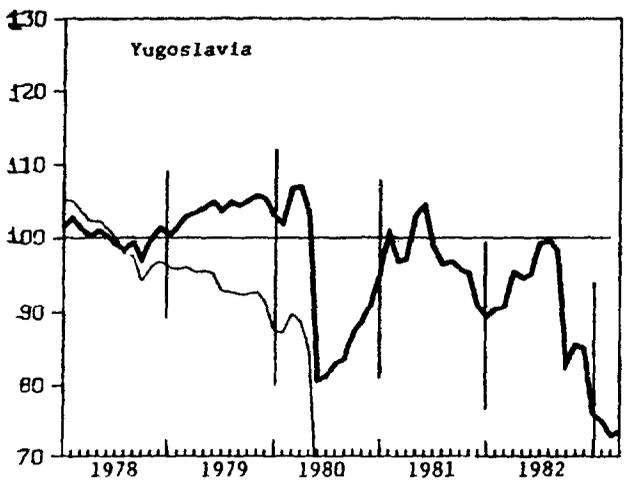
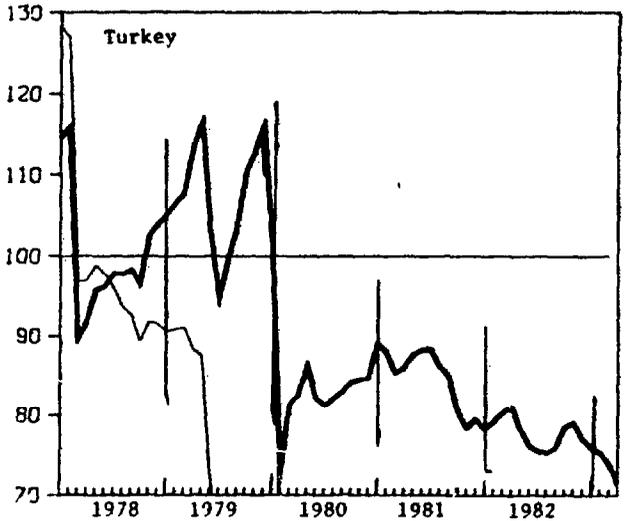
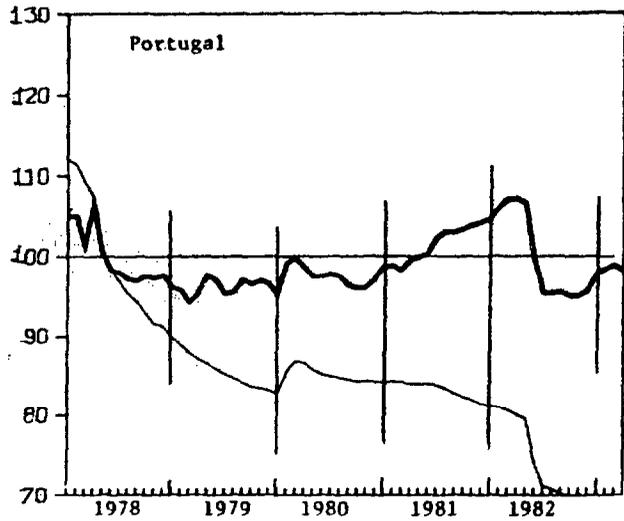
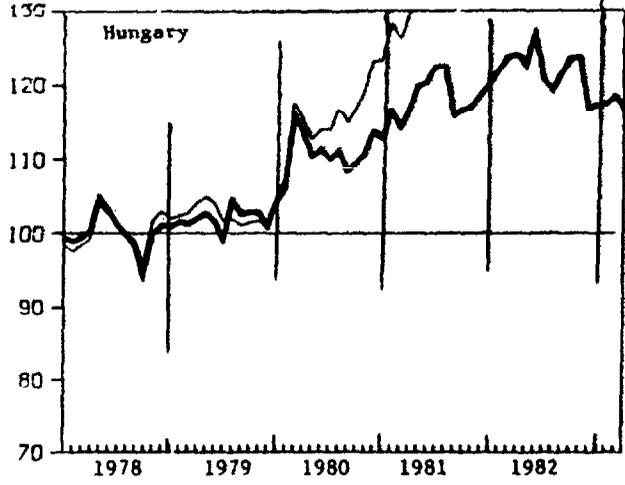
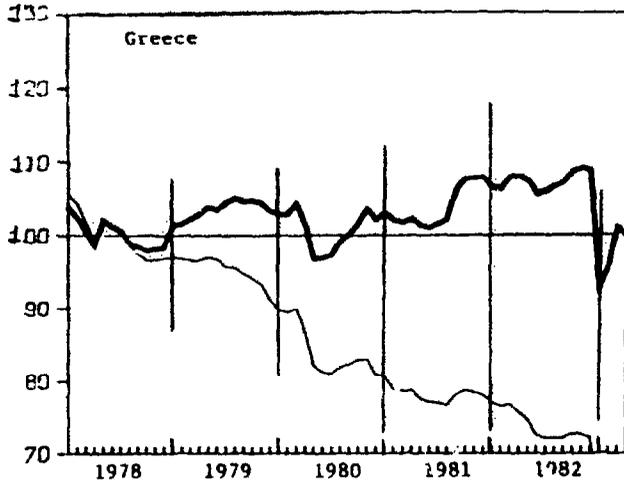
DEVELOPING COUNTRIES--EUROPE

NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - APRIL 1983

(Index 1978 = 100)

— Nominal effective exchange rate

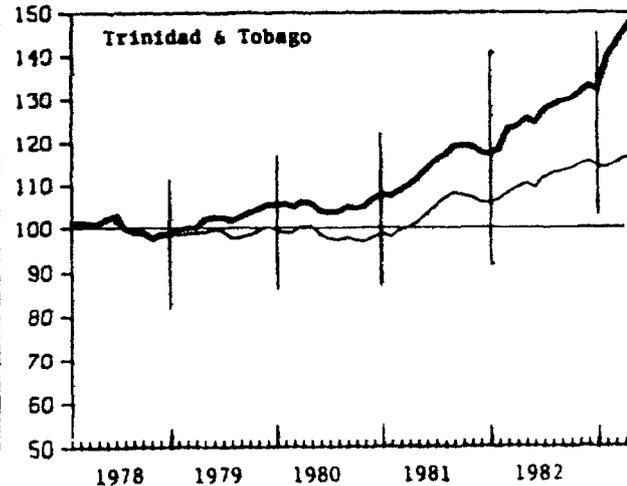
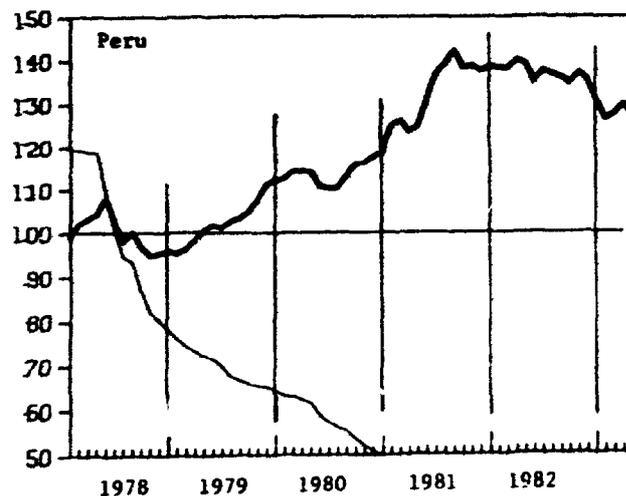
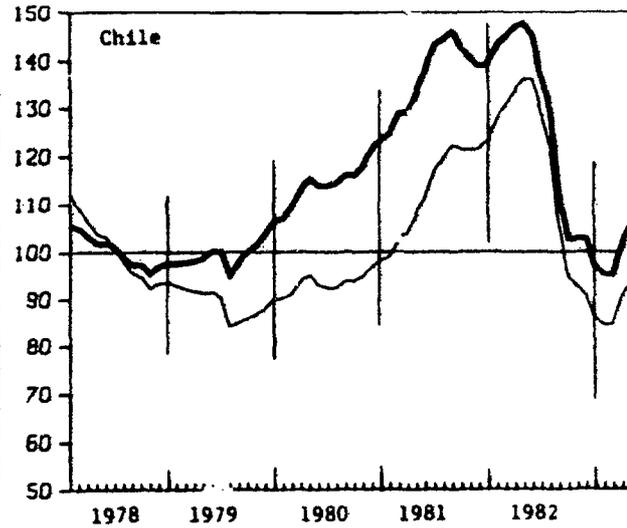
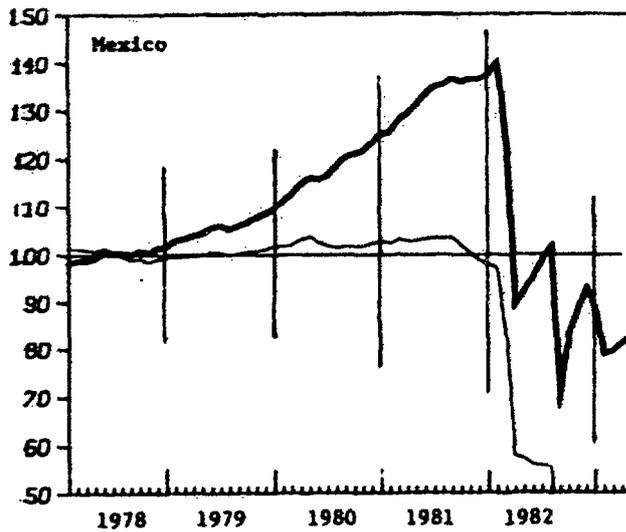
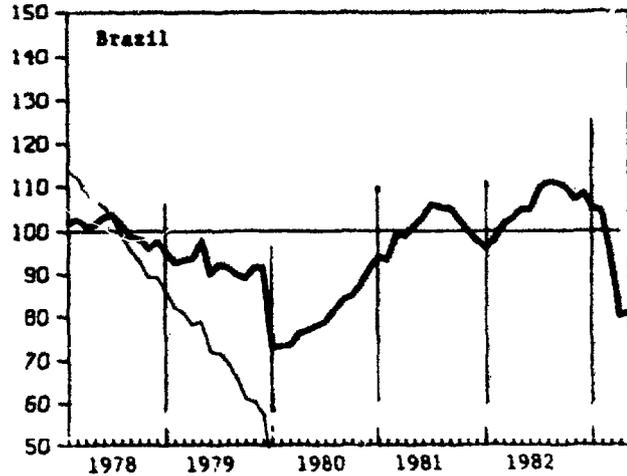
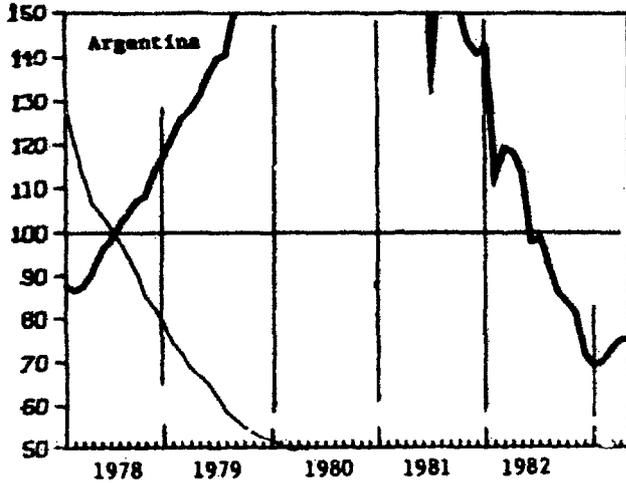
— Real effective exchange rate based on
consumer price indices



DEVELOPING COUNTRIES--WESTERN HEMISPHERE NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - APRIL 1983 (Index 1978 = 100)

— Nominal effective exchange rate

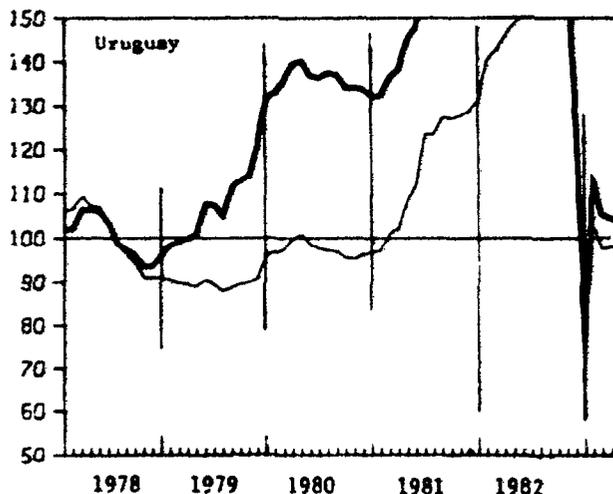
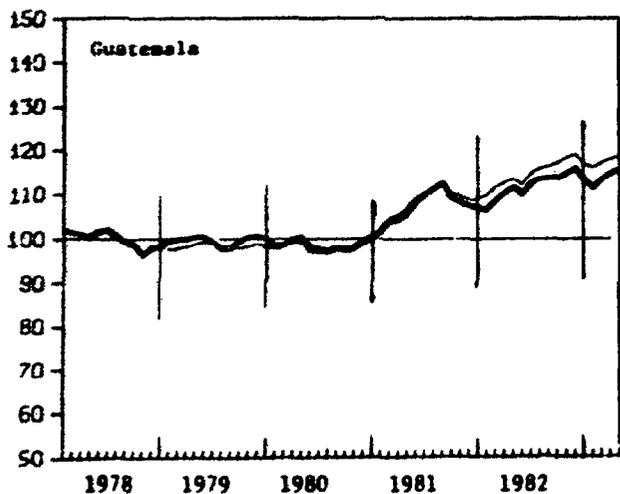
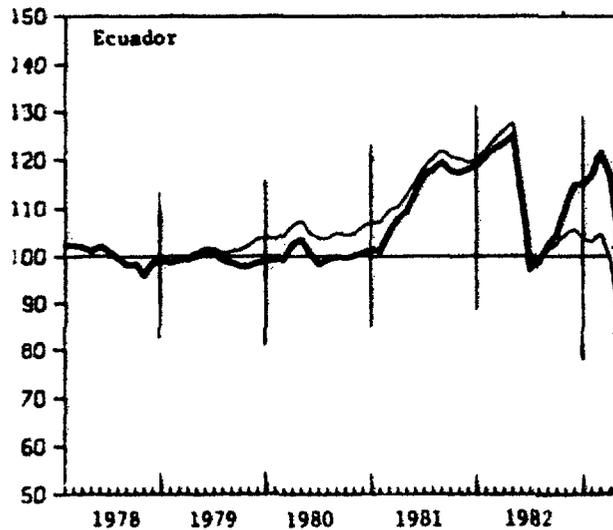
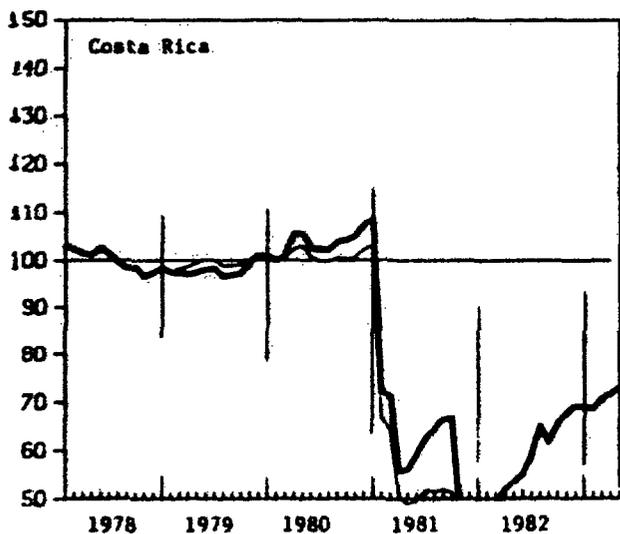
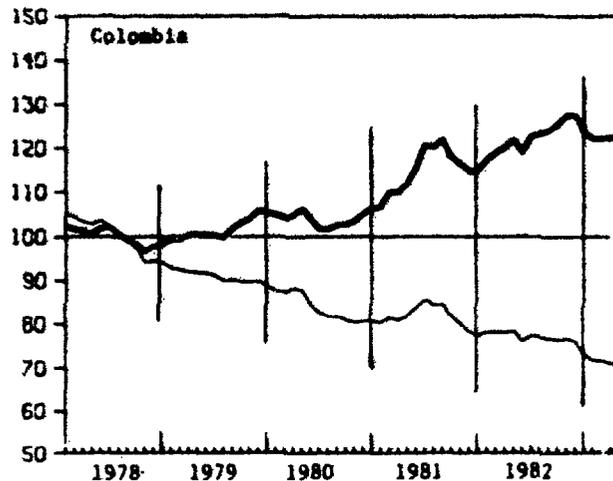
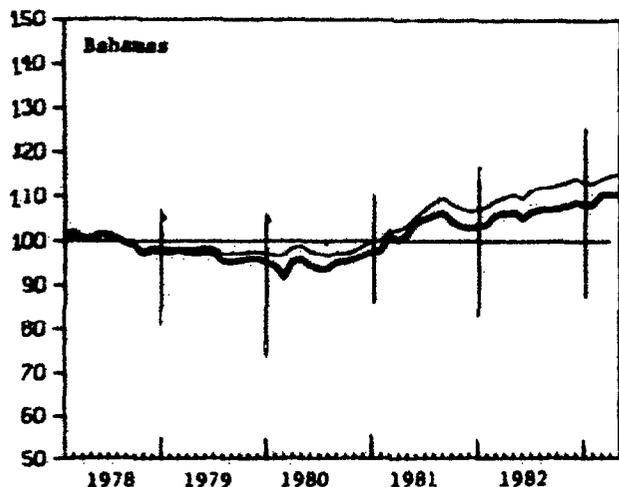
— Real effective exchange rate based on consumer price indices



DEVELOPING COUNTRIES--WESTERN HEMISPHERE NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1978 - APRIL 1983 (Index 1978 = 100)

— Nominal effective exchange rate

— Real effective exchange rate based on consumer price indices



Nominal and Real Effective Exchange Rates 1/

African Department

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Algeria	III.N	100.0	98.8	101.0	111.0	122.1	127.0	130.2
Benin	III.N	100.0	100.5	100.9	96.9	91.9	90.6	88.0
Botswana	III.R	100.0	98.0	97.0	100.5	96.9	93.6	93.0
	III.N	100.0	98.9	98.2	100.3	98.0	94.5	94.5
Burundi	III.N	100.0	96.1	95.9	111.0	124.2	127.2	129.8
Cameroon (b)	III.R	100.0	98.7	97.6	90.7	87.8	89.3	87.7
	III.N	100.0	101.2	102.1	95.5	89.2	87.4	85.0
Cape Verde	III.N	100.0	96.0	90.4	93.8	97.1	96.1	97.5
Central African Republic	III.N	100.0	102.5	107.2	107.6	109.4	112.1	110.9
Chad	III.N	100.0	103.2	104.9	99.5	96.9	97.8	95.7
Comoros	III.N	100.0	100.0	99.5	95.9	93.2	93.1	91.6
Congo (a, b)	III.R	100.0	99.6	95.9	95.8	95.6	98.8	94.3
	III.N	100.0	104.5	110.0	109.9	112.7	117.9	117.7
Djibouti	III.N	100.0	96.8	97.1	114.8	132.2	136.9	141.1
Equatorial Guinea	III.N	100.0	101.9	75.1	49.7	48.9	46.5	46.4
✓ Ethiopia (b)	III.R	100.0	102.6	95.7	105.8	114.6	122.1	125.9
	III.N	100.0	97.6	100.3	117.5	133.4	139.4	142.8

1/ All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates ^{1/}

African Department (cont'd)

Countries	Type of index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
Gabon (b)	III.R	100.0	99.1	98.6	91.9	91.6	93.1	92.1
	III.N	100.0	101.6	102.8	98.7	96.2	96.0	94.9
Gambia, The	III.R	100.0	103.0	105.4	100.2	100.3	91.9	93.1
	III.N	100.0	106.5	116.2	116.0	114.2	105.1	107.7
✓✓ Ghana (d)	III.R	100.0	78.4	102.5	230.3	287.1	359.3	(382.7) ^{3/}
	III.N	100.0	52.1	51.4	58.6	64.8	67.9	(68.8)
Guinea	III.N	100.0	97.7	98.3	104.9	110.5	116.2	118.0
Guinea-Bissau	III.N	100.0	103.1	105.0	116.8	131.8	144.0	149.7
Ivory Coast	III.R	100.0	106.9	109.3	102.0	94.8	91.8	89.7
	III.N	100.0	101.2	102.7	98.6	94.5	94.1	92.1
Kenya (b)	III.R	100.0	97.4	97.1	93.7	96.0	88.1	89.1
	III.N	100.0	98.6	98.0	94.0	86.7	77.1	77.4
Lesotho(b,c,d)	III.R	100.0	102.5	105.0	105.1	100.3	103.5	98.7
	III.N	100.0	99.9	100.2	100.4	99.9	100.0	100.1
✓ Liberia	III.R	100.0	98.1	100.2	114.3	123.4	124.2	124.9
	III.N	100.0	95.7	95.9	115.5	122.5	125.8	128.2
✓✓ Madagascar (a, b)	III.R	100.0	105.5	111.8	122.7	131.5	135.4	136.5
	III.N	100.0	101.0	101.9	94.9	84.8	78.4	77.6

^{1/} All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

^{3/} This figure does not reflect the large devaluation that resulted from the change in Ghana's exchange system of April 22, 1983.

Nominal and Real Effective Exchange Rates 1/
African Department (cont'd)

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Malawi (b, c)	III.R	100.0	98.6	99.6	100.9	99.0	102.2	103.7
	III.N	100.0	98.4	94.9	98.0	95.9	94.4	94.5
Mali	III.N	100.0	100.0	99.6	95.9	93.0	93.0	90.8
Mauritania	III.N	100.0	95.0	95.3	112.2	121.7	125.5	128.3
Mauritius	III.R	100.0	108.9	96.8	100.4	96.3	99.4	100.2
	III.N	100.0	92.3	74.3	74.4	70.7	72.6	72.7
Morocco	III.R	100.0	99.4	95.9	89.4	88.7	86.8	87.7
	III.N	100.0	102.1	103.4	97.9	98.6	99.9	100.9
Niger	III.R	100.0	98.6	97.4	102.2	100.6	90.6	86.0
	III.N	100.0	101.0	102.3	97.9	95.1	94.1	92.5
// Nigeria	III.R	100.0	102.4	111.0	124.9	126.5	135.8	139.5
	III.N	100.0	101.2	112.0	117.0	121.9	126.3	125.5
Rwanda	III.N	100.0	96.5	96.8	111.5	125.1	127.7	130.2
Sao Tomé & Príncipe	III.N	100.0	101.4	101.8	112.3	122.7	129.4	133.3
Senegal	III.R	100.0	99.9	95.0	85.0	87.4	87.5	84.4
	III.N	100.0	101.8	102.6	98.3	96.5	98.2	96.2
Seychelles (b)	III.R	100.0	106.0	100.7	117.1	116.8	118.7	118.5
	III.N	100.0	104.1	99.7	116.7	127.8	132.8	133.5

1/ All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates ^{1/}

African Department (concluded)

Countries	Type or index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
✓✓ Sierra Leone	III.R	100.0	102.8	98.5	114.6	146.1	189.3	181.4
	III.N	100.0	93.4	91.2	95.3	100.1	105.5	105.8
Somalia	III.N	100.0	96.8	97.6	119.5	95.2	58.7	60.3
Swaziland	III.R	100.0	103.4	110.3	115.5	109.6	113.2	113.9
	III.N	100.0	99.7	101.9	100.9	96.3	97.9	97.8
✓✓ Tanzania (d)	III.R	100.0	92.9	106.8	139.7	165.9	194.2	211.7
	III.N	100.0	89.9	90.6	105.5	106.6	108.1	110.9
Togo (b, c)	III.R	100.0	99.0	100.6	104.1	99.4	100.2	98.7
	III.N	100.0	100.1	101.0	96.7	91.5	91.0	88.6
Tunisia	III.R	100.0	94.9	92.8	92.3	91.2	90.2	89.0
	III.N	100.0	97.9	99.2	102.2	99.3	98.2	97.6
Uganda (b, c)	III.R	100.0	154.5	263.6	234.4	91.9	94.4	86.3
	III.N	100.0	98.2	98.1	48.2	10.0	8.7	8.2
Upper Volta	III.N	100.0	101.1	101.6	95.5	91.2	89.7	87.7
Zaire (b)	III.R	100.0	87.2	71.2	65.9	68.7	88.9	97.0
	III.N	100.0	48.3	31.1	25.0	20.9	22.2	22.9
Zambia	III.R	100.0	98.8	96.9	102.1	113.5	100.4	102.9
	III.N	100.0	98.9	98.8	102.7	109.4	90.3	91.5
Zimbabwe (d)	III.R	100.0	102.7	100.0	107.4	113.0	95.4	96.8
	III.N	100.0	95.2	98.6	102.4	104.2	84.0	83.9

^{1/} All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of

Nominal and Real Effective Exchange Rates ^{1/}Asian Department

Countries	Type of index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
Bangladesh	III.R	100.0	100.0	102.4	99.2	92.4	88.8	90.4
	III.N	100.0	94.9	96.0	88.3	78.4	72.4	73.2
Burma (a, b)	III.R	100.0	101.4	94.0	83.1	84.6	81.4	81.8
	III.N	100.0	102.8	105.7	102.8	107.0	107.0	108.7
China, People's Rep.	III.N	100.0	109.7	115.4	108.6	108.7	107.8	108.3
Fiji	III.R	100.0	99.1	102.2	103.2	102.8	102.9	102.6
	III.N	100.0	100.7	102.3	102.8	104.4	104.9	104.2
India	II.R	100.0	99.9	109.9	112.3	106.9	106.2	108.3
	II.N	100.0	98.9	103.3	104.9	106.7	106.6	107.8
✓ Indonesia	III.R	100.0	78.5	85.0	90.4	97.0	95.5	72.1
	III.N	100.0	69.4	70.9	73.7	76.9	72.6	53.9
Japan	I.R	100.0	86.9	77.3	84.7	77.3	81.9	82.1
	I.N	100.0	91.6	87.6	102.7	99.0	107.5	108.1
Korea	II.R	100.0	109.1	101.0	105.4	107.1	104.9	104.5
	II.N	100.0	100.2	81.0	76.3	77.6	76.1	76.1
Laos, P.-D. Rep.	III.N	100.0	99.3	39.9	42.9	13.3	13.3	13.4
Malaysia	II.R	100.0	99.3	95.6	97.6	104.4	108.1	108.7
	II.N	100.0	104.7	106.7	110.2	120.5	126.5	127.9
Maldives	III.N	100.0	116.7	114.1	125.1	149.1	152.3	154.1

^{1/} All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (d) price index believed to underestimate the actual rate of inflation.

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Nominal and Real Effective Exchange Rates ^{1/}

Asian Department (concluded)

Countries	Type of index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
Nepal	III.R	100.0	94.8	94.4	99.8	109.2	108.7	111.8
	III.N	100.0	100.0	100.2	105.6	108.3	102.5	103.7
Papua New Guinea	III.R	100.0	98.1	106.6	111.1	110.6	107.7	102.3
	III.N	100.0	99.1	105.6	110.2	111.2	107.8	102.2
Philippines	II.R	100.0	109.1	114.6	117.3	123.7	115.0	111.6
	II.N	100.0	100.2	100.5	101.9	102.0	94.0	91.6
Singapore	II.R	100.0	98.8	97.9	105.4	109.9	112.8	112.5
	II.N	100.0	103.7	106.8	117.8	127.8	134.8	135.7
Solomon Islands	III.R	100.0	100.5	106.4	113.1	117.9	108.9	109.1
	III.N	100.0	100.2	103.9	103.0	101.5	92.2	91.0
// Sri Lanka (b)	III.R	100.0	106.6	122.0	128.8	137.2	131.6	137.8
	III.N	100.0	98.8	93.9	89.8	93.9	91.7	91.5
Thailand	II.R	100.0	100.3	108.7	113.5	115.7	115.0	116.4
	II.N	100.0	98.8	100.0	102.0	106.1	107.5	109.4
Vanuatu	III.R	100.0	100.9	101.0	99.4	103.9	103.1	106.3
	III.N	100.0	104.6	104.4	88.5	94.4	96.9	101.2
Viet Nam	III.N	100.0	93.5	94.6	53.8	26.1	26.4	27.1
Western Samoa	III.R	100.0	90.3	96.1	99.8	104.7	93.4	86.2
	III.N	100.0	89.3	80.3	76.5	73.1	66.7	61.5

^{1/} All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (d) price index believed to underestimate the actual rate of inflation.

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Nominal and Real Effective Exchange Rates ^{1/}

European Department

Countries	Type of index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
Australia	II.R	100.0	96.7	97.3	105.2	105.5	104.4	98.8
	II.N	100.0	97.1	100.4	110.0	107.5	102.4	95.6
Austria	I.R	100.0	97.2	93.6	86.9	88.1	88.1	87.4
	I.N	100.0	103.1	105.8	101.5	105.8	109.5	109.9
✓ Belgium	I.R	100.0	97.0	94.9	89.2	78.8	77.9	78.0
	I.N	100.0	100.9	100.1	95.8	87.4	86.3	86.1
Cyprus	III.R	100.0	99.0	97.4	95.9	93.7	94.3	93.6
	III.N	100.0	102.1	104.6	106.1	110.4	113.9	113.6
Denmark	I.R	100.0	99.5	90.1	81.3	78.3	80.0	80.0
	I.N	100.0	99.5	91.6	84.6	81.2	82.8	82.8
Finland	II.R	100.0	99.3	102.4	105.7	108.8	104.4	105.5
	II.N	100.0	100.9	105.3	108.6	112.1	107.6	108.6
France	I.R	100.0	103.6	105.7	98.7	94.4	91.9	87.8
	I.N	100.0	101.1	101.1	91.5	83.4	80.9	77.1
Germany, Fed. Rep. of	I.R	100.0	100.8	96.6	86.0	85.9	88.4	88.8
	I.N	100.0	105.4	105.6	99.1	104.7	109.3	110.4
Greece	II.R	100.0	103.4	100.7	103.6	107.2	96.3	99.3
	II.N	100.0	95.4	84.3	78.2	74.0	61.9	63.1
Hungary	II.R	100.0	101.8	110.3	117.7	121.8	117.7	116.4
	II.N	100.0	102.4	114.7	132.2	141.8	138.0	137.0

^{1/} All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates 1/

European Department (cont'd)

Countries	Type of Index	1978	1979	1980	1981	1982	1983	
							I	April
Hong Kong	II-R	100.0	94.1	97.7	97.9	102.3	97.9	96.5
	II-N	100.0	92.5	94.5	92.0	94.1	88.7	87.5
Iceland	II-R	100.0	96.3	99.6	106.8	96.8	85.8	86.0
	II-N	100.0	73.3	54.4	41.7	28.2	18.4	17.0
Ireland	II-R	100.0	102.1	102.1	101.1	108.8	116.5	112.0
	II-N	100.0	100.0	96.9	88.7	88.9	92.7	88.6
// Israel	II-R	100.0	107.7	110.1	111.0	116.1	125.4	132.8
	II-N	100.0	68.6	34.5	17.6	9.2	6.1	5.5
Italy	I-R	100.0	104.6	107.8	103.8	106.5	112.3	111.7
	I-N	100.0	96.8	93.1	81.3	75.1	73.7	72.1
Luxembourg	III-R	100.0	98.4	96.2	93.7	88.1	88.6	88.4
	III-N	100.0	100.0	99.6	97.5	90.5	89.3	89.1
Malta	III-R	100.0	98.6	103.0	111.5	114.8	112.0	111.6
	III-N	100.0	101.6	104.6	113.7	122.0	126.1	127.7
Netherlands	I-R	100.0	98.7	91.8	81.3	85.2	87.6	86.8
	I-N	100.0	101.9	101.9	96.3	100.8	103.6	102.3
New Zealand	II-R	100.0	101.2	100.0	100.2	102.9	104.4	100.6
	II-N	100.0	97.5	92.6	89.0	85.4	83.4	79.6
Norway	I-R	100.0	96.2	97.8	102.7	106.1	102.9	105.3
	I-N	100.0	99.1	100.9	100.0	100.6	94.6	95.6
Portugal	II-R	100.0	96.1	97.3	101.2	100.2	98.4	98.0
	II-N	100.0	85.8	84.9	83.3	74.7	68.3	66.2

1/ All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates 1/

European Department (concluded)

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Romania	III.N	100.0	98.4	100.4	144.0	162.7	156.9	161.3
✓ South Africa	II.R	100.0	103.7	113.8	119.4	112.8	122.5	125.7
	II.N	100.0	100.7	110.0	111.9	100.8	105.4	106.8
Spain	II.R	100.0	115.2	110.5	104.1	103.8	94.5	93.4
	II.N	100.0	111.0	105.5	98.5	96.0	86.2	85.1
✓ Sweden	I.R	100.0	99.8	101.1	100.8	90.5	76.9	76.9
	I.N	100.0	100.7	101.2	97.9	87.5	75.3	75.6
Switzerland	I.R	100.0	97.0	90.8	87.6	93.4	95.3	94.9
	I.N	100.0	101.6	99.9	100.5	108.1	111.3	111.0
✓ Turkey	III.R	100.0	107.5	83.9	85.1	77.9	75.1	73.6
	III.N	100.0	75.3	31.2	25.3	19.4	16.8	16.2
✓✓ United Kingdom	I.R	100.0	115.5	142.9	154.4	149.6	134.0	137.3
	I.N	100.0	106.5	117.1	117.2	111.7	99.1	101.6
✓ Yugoslavia	II.R	100.0	103.7	93.1	97.5	92.1	74.6	73.6
	II.N	100.0	94.0	73.9	61.3	48.0	34.8	31.9

1/ All the data refer to period averages. Countries with changes in real effective exchange rates that exceed 20 per cent between 1978 and April 1983 are flagged by one check mark. Countries with changes that exceed 30 per cent 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 strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates 1/

Middle Eastern Department

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
✓ Bahrain	III.R	100.0	92.2	87.3	102.1	116.8	119.6	122.6
	(a, b, c) <u>3/</u> III.N	100.0	99.1	102.7	121.5	141.5	150.4	155.3
Egypt	III.R	100.0	68.7	73.3	80.3	89.2	91.9	93.4
	III.N	100.0	69.5	70.7	79.2	85.1	89.4	91.8
✓/ Iran, I.R. of (b)	III.R	100.0	96.9	103.8	121.7	140.0	161.5	167.8
	III.N	100.0	96.4	97.6	103.2	109.5	113.7	115.2
Iraq	III.N	100.0	97.8	100.5	117.5	133.9	134.9	139.2
Jordan (b)	III.R	100.0	105.2	105.9	108.1	110.1	113.1	115.6
	III.N	100.0	100.3	102.7	103.7	106.6	107.6	109.1
Kuwait (b)	III.R	100.0	96.8	93.2	94.7	101.8	105.3	107.5
	III.N	100.0	97.8	99.9	104.2	111.2	113.4	115.1
Lebanon	III.N	100.0	87.8	83.6	79.6	82.9	101.8	100.6
Libya	III.N	100.0	96.0	97.1	118.4	135.5	141.5	145.3
Oman	III.N	100.0	97.2	96.7	106.6	119.0	122.5	124.3
Pakistan (a,c)	II.R	100.0	98.2	98.0	112.5	103.9	97.9	99.4
	II.N	100.0	98.6	100.3	113.1	106.2	101.4	103.5

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

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3/ Bahrain's real effective exchange rate index is believed to overstate the real appreciation that may have occurred because of a problem in the way rents are treated in its price index. This price index is in process of revision.

Nominal and Real Effective Exchange Rates 1/
Middle Eastern Department (concluded)

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Qatar	III.N	100.0	100.6	104.5	118.1	133.5	140.0	142.8
Saudi Arabia	III.R	100.0	92.4	86.5	88.3	89.3	88.9	89.7
	III.N	100.0	99.1	101.4	111.1	121.2	123.8	125.5
Sudan	III.N	100.0	86.7	76.9	86.3	57.5	45.1	46.9
Syrian Arab Rep.	III.N	100.0	95.8	97.3	118.3	135.2	142.3	146.3
United Arab Emirates	III.N	100.0	98.9	101.7	113.7	126.4	130.3	132.3
Yemen Arab Rep.	III.N	100.0	97.6	99.3	113.2	127.4	131.3	134.5
Yemen, P.D. Rep.	III.N	100.0	97.6	97.9	111.9	126.5	130.6	133.4

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Letters in parentheses next to country names refer to qualifications of the data used as follows: (a) price index strongly affected by price controls or subsidies; (b) price index has limited coverage in terms of commodities or geographical area; (c) price index weights are based on out of date consumer basket; (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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates 1/

Western Hemisphere Department

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Antigua & Barbuda	III.R	100.0	102.2	104.3	112.2	115.7	118.9	118.6
	III.N	100.0	97.3	95.0	100.7	107.0	110.6	110.7
✓ Argentina	II.R	100.0	141.0	184.9	170.7	95.3	73.0	75.1
	II.N	100.0	61.2	46.7	27.0	7.0	2.3	1.9
Bahamas	III.R	100.0	96.4	94.9	103.0	106.7	109.7	110.3
	III.N	100.0	97.8	97.7	105.7	111.3	114.1	115.2
✓ Barbados	III.R	100.0	103.6	103.0	112.0	121.1	124.2	125.7
	III.N	100.0	98.9	98.6	105.0	112.0	116.3	117.6
Belize	III.N	100.0	97.2	95.0	100.7	106.4	110.6	110.8
Bolivia	III.R	100.0	102.1	110.0	145.0	157.1	89.0	112.3
	III.N	100.0	102.9	91.6	110.2	73.3	20.2	21.2
Brazil	II.R	100.0	90.5	81.7	100.6	106.2	92.8	81.1
	II.N	100.0	68.2	35.5	23.8	14.5	8.6	6.5
Canada	I.R	100.0	96.9	95.0	98.1	102.1	104.9	105.2
	I.N	100.0	96.2	96.0	97.3	97.6	99.0	99.0
Chile	III.R	100.0	99.8	115.2	137.4	125.8	97.4	105.9
	III.N	100.0	89.1	93.7	114.3	115.2	86.6	93.3
✓ Colombia	III.R	100.0	101.7	103.9	115.1	122.5	122.1	123.0
	III.N	100.0	90.7	83.6	81.6	76.7	71.4	70.4

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Nominal and Real Effective Exchange Rates ^{1/}

Western Hemisphere Department (cont'd)

Countries	Type of index ^{2/}	1978	1979	1980	1981	1982	1983	
							I	April
✓ Costa Rica	III.R	100.0	98.1	103.9	58.2	59.5	70.4	73.1
	III.N	100.0	99.2	101.0	47.4	27.0	25.8	26.2
✓✓ Dominica	III.R	100.0	102.5	112.0	124.6	131.1	140.9	140.2
	III.N	100.0	95.5	91.7	99.4	107.5	113.9	113.9
✓ Dominican Rep.	III.R	100.0	95.4	98.2	106.3	114.9	119.1	121.4
	III.N	100.0	98.2	100.2	114.4	127.1	134.2	136.5
Ecuador (a)	III.R	100.0	99.2	100.4	113.6	112.4	118.4	101.7
	III.N	100.0	101.2	105.0	116.4	110.9	102.3	83.5
✓✓ El Salvador	III.R	100.0	104.1	109.6	122.9	134.7	142.5	143.9
	III.N	100.0	98.2	98.6	105.6	110.7	111.4	112.4
✓✓ Grenada	III.R	100.0	93.8	89.6	105.9	123.7	137.5	138.9
	III.N	100.0	95.2	92.1	102.5	112.3	117.8	123.3
Guatemala	III.R	100.0	99.7	98.4	107.6	112.0	113.1	115.5
	III.N	100.0	98.3	99.0	107.6	114.7	117.0	118.4
✓✓ Guyana (d)	III.R	100.0	102.5	100.3	108.4	123.1	139.0	142.5
	III.N	100.0	97.3	96.1	95.8	97.9	103.9	104.9
Haiti	III.R	100.0	101.2	105.9	115.8	111.8	114.6	116.2
	III.N	100.0	99.5	100.5	106.3	111.3	113.0	114.3
✓ Honduras	III.R	100.0	101.4	105.1	111.2	120.1	125.0	127.7
	III.N	100.0	99.2	100.4	106.9	113.1	115.1	116.5
✓ Jamaica	III.R	100.0	90.6	98.8	107.0	112.3	119.8	121.8
	III.N	100.0	75.8	74.0	79.1	84.0	87.8	88.2

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^{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 results are obtained from the first, second, or third set of calculations.

Nominal and Real Effective Exchange Rates 1/
Western Hemisphere Department (concluded)

Countries	Type of index <u>2/</u>	1978	1979	1980	1981	1982	1983	
							I	April
Mexico	III.R	100.0	105.8	118.1	133.4	97.0	79.8	82.7
	III.N	100.0	100.3	102.2	101.9	54.0	27.0	25.4
Nicaragua	III.N	100.0	77.4	71.1	77.0	82.4	84.8	86.2
Panama	III.R	100.0	97.3	98.8	100.2	102.1	102.7	104.0
	III.N	100.0	100.1	101.7	107.1	113.0	115.2	116.5
// Paraguay	III.R	100.0	107.0	113.4	127.6	137.1	148.7	155.9
	III.N	100.0	123.5	159.2	241.9	386.0	556.2	639.9
/ Peru (b)	III.R	100.0	102.9	113.9	133.4	136.5	127.9	127.0
	III.N	100.0	69.3	56.7	43.6	31.0	20.7	18.0
St. Lucia	III.R	100.0	95.6	97.6	108.8	113.0	115.4	115.4
	III.N	100.0	96.7	94.0	100.5	107.0	111.2	111.3
St. Vincent	III.N	100.0	95.8	92.0	99.6	107.2	113.4	113.4
// Suriname	III.R	100.0	102.5	104.8	116.4	124.9	127.5	130.7
	III.N	100.0	97.7	99.3	113.3	123.9	129.0	131.8
// Trinidad & Tobago	III.R	100.0	102.5	105.2	114.8	127.3	142.9	148.9
	III.N	100.0	98.8	98.3	104.1	111.6	115.1	116.1
// United States	I.R	100.0	97.8	99.1	114.6	128.3	129.5	131.3
	I.N	100.0	96.5	96.0	110.4	123.4	125.7	127.9
Uruguay	III.R	100.0	109.1	135.9	153.1	159.7	107.2	103.4
	III.N	100.0	90.1	97.3	117.5	148.3	99.4	97.6
// Venezuela	III.R	100.0	100.5	108.9	122.5	133.2	135.7	137.1
	III.N	100.0	99.6	101.5	110.2	119.1	122.9	125.0

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Statistical Appendix

First set

Countries included in the set:

United States	Austria	Germany	Sweden
Canada	Belgium	Italy	Switzerland
Japan	Denmark	Netherlands	United Kingdom
	France	Norway	

The calculation of the real effective exchange rate is based on the use of data on normalized unit labor costs in manufacturing. These data are intended to abstract from the cyclical swings in conventionally-measured productivity that 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 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 set

Countries included in the set: the previous 14 countries plus

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

The calculation of the real effective exchange rate is based on the use of monthly data on consumer prices, except for Brazil and India for which the staff considers that the data on wholesale prices are better suited to the present exercise. The data are normally obtained from International Financial Statistics (IFS). Where data were not available for recent months, but were available with not more than a six month lag, estimates for the recent months were 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 of the 36 countries in this second set, an index of the real effective exchange rate is calculated by taking into account the relative importance of the other 35 countries 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 are considered. The weighting scheme is based on the following formula:

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

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

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,

• = indicates summation over the relevant index.

The subscript i ranges over all 36 members of the group considered here, with $X_{ij} = X_{ik} = 0$ for $i = j = k$. The subscript j ranges over all 36 members of the group. The subscript k ranges over 38 geographical markets (the 36 countries plus 2 other markets constituted by 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

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 the next issue of this paper.

For those countries, which produce mainly primary commodities, the index of the real effective exchange rate is based on a weighting scheme that takes into account only the bilateral trade flows with the group of 36 countries considered in the second set. Therefore, direct competition among primary producing countries is ignored.

In mathematical terms, the weights are defined as

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

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

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 set to enhance the relevance of the results. Exports of oil have been excluded from the exports of the countries that are major oil exporters, or even only net oil exporters. Similarly, exports of diamonds have been excluded from the exports of Sierra Leone. In a number of cases, trade statistics have been adjusted to take into reflect 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).