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Currency Pegs for Developing Countries and Experiences with
the SDR as a Standard Basket: A Review and Appraisal

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Abstract

A large body of literature has been developed on exchange rate regimes for developing countries and the "optimal peg" problem in which a clear preference is given to a single currency peg for countries with one dominant trading partner whereas for countries with a diversified trade pattern pegging to a currency basket is considered to be more appropriate. This paper discusses some of the issues involved in the choice of peg baskets for developing countries and analyzes the experience with the SDR as a standard peg basket.

A number of "optimal" basket pegs have been derived in the literature. Most of these do not lend themselves to practical application because of the lack of data needed to establish weights for the currency components. A country with diversified trade has the choice, therefore, to adopt a standard peg basket, such as the SDR, or a country-specific basket. Using a number of proxy variables, the composition and weighting structure of effective exchange rate baskets were established for the countries considered in this paper. Trade flows and, where available, tourism receipts were employed as proxy for total current account flows and imports. Data on the geographical distribution of bilateral trade flows were used to substitute for the distribution of invoicing and payments media. Consumer prices were used to approximate cost or price indices for traded goods. The weights derived do not take into account estimates of price elasticities in the world markets for a country's exports and imports, because of data problems.

While these trade baskets are too complex to be functional as individually tailored peg standards, the construction of such peg baskets goes beyond the intention of this paper. The focus here lies on the issues involved in the composition of such baskets and on the performance of the SDR basket in terms of the effective exchange rate baskets for 13 countries which pegged their currencies to the SDR.

Despite the distinct weighting structure embodied in the SDR and, to a minor extent, the higher value of the "standard-basket" SDR implicit in the harmonic averaging compared with a geometrically averaged individual basket, the empirical evidence shows that the SDR approximated the country-specific basket reasonably well for most countries and markedly better than the U.S. dollar as an alternative peg standard. The analysis suggests, furthermore, that the reasons for the significant real appreciation of the currencies and subsequent abandonment of the SDR peg by eight of the countries considered can in most cases be found in the divergence between the domestic policies followed by these countries and by their trading partners and in a lack of strong measures by the countries themselves to make appropriate policy adjustments.

After discussing some general issues regarding the appropriateness and management of an SDR peg system, the paper concludes that, while this analysis is without prejudice on the potential performance of other possible (basket) pegs these countries might have adopted, the SDR could be considered as a potential peg standard in particular for developing countries in Africa and Asia.

I. Introduction

In an effort to mitigate the effects of exchange rate shocks on their domestic economies, many developing countries have chosen to fix their exchange rates either to a single currency or to a basket of currencies, or to adjust their rates periodically according to a set of indicators. A large body of literature has been developed on the "optimal peg" problem in which, for countries with one dominant trading partner, a clear preference is given to a single currency peg whereas for countries with a diversified trade pattern the suggestion is made that pegging to a currency basket might be more appropriate. A number of different "optimal" basket pegs have been derived in the literature, many of which do not lend themselves to practical application owing to the lack of data needed to establish weights for the currency components. A country has a choice, therefore, to adopt an already existing standardized peg basket or to peg to a country-specific basket that is constructed using the information available. This paper discusses issues related to the choice of peg baskets for developing countries with particular reference to the role of the SDR.

Since the inception of floating exchange rates in the early 1970s, 24 countries have adopted a peg to the SDR over some period of time (Table 1). This includes five major oil-exporting countries--Iran, Qatar, Saudi Arabia, United Arab Emirates, Bahrain--which initially maintained their exchange rates within margins of 2 1/4 percent around the peg rate, but widened the margins observed to 7 1/4 percent mostly within the first year of the SDR peg; subsequently, they have in effect maintained their exchange rate in terms of the U.S. dollar, the currency dominating their petroleum exports. Nine other countries that adopted an SDR peg have later--on average after six years--switched to a different exchange rate regime, mainly other currency basket pegs or managed floating. Presently, 11 countries maintain an SDR peg regime, six of them for eight years or longer. Sierra Leone has recently readopted an SDR peg after an intermittent peg to the U.S. dollar. In this paper the experience of 13 countries, which linked their currency to the SDR, is analyzed. 1/

Section II discusses the issues involved in the different methods of calculation and weighting of the SDR and individually tailored baskets. Section III presents a comparative analysis of the effective exchange rates of the domestic currencies, the SDR, and the U.S. dollar for the above-mentioned 13 countries which have followed an SDR peg. Section IV considers some general issues regarding the appropriateness and management of an SDR peg system, and Section V presents some concluding remarks. Finally, Appendices I and II discuss some details on harmonic and geometric baskets, and Appendix III contains country-specific background material summarized in Section III.

1/ Burma, Malawi, Kenya, Tanzania, Uganda, Mauritius, Zaire, Zambia, Sierra Leone, Seychelles, Somalia, Rwanda, and Burundi.

Table 1. Countries with SDR-Peg Exchange Arrangements
(as of Sept 30, 1985)

Country	Previous Exchange Arrangement	Date pegged to SDR	Date unpegged from SDR	Subsequent Exchange Arrangement
Burma	US\$ peg	01-25-75		
Iran	US\$ peg	02-12-75	04-01-78 <u>1/</u>	SDR peg with wider margins <u>2/</u>
Jordan	US\$ peg	02-22-75		
Saudi Arabia	US\$ peg	03-15-75	09-09-75 <u>1/</u>	US\$ peg
Qatar	US\$ peg	03-19-75	01-15-76 <u>1/</u>	US\$ peg
Malawi	US\$ and LSTG basket peg	06-09-75	01-17-84	composite currency basket peg
Guinea	US\$ peg	06-11-75		
Kenya	US\$ peg	10-27-75		
Tanzania	US\$ peg	10-27-75	01-20-79	trade basket peg
Uganda	US\$ peg	10-27-75	06-08-81	adjusted according to a set of indicators
			08-23-81	managed float
			06-15-84	independent float
Mauritius	LSTG peg	01-15-76	02-28-83	composite currency basket peg
Viet Nam	US\$ peg	09-22-75		
Zaire	US\$ peg	03-12-76	09-12-83	managed float
Zambia	US\$ peg	07-09-76	07-06-83	composite currency basket peg
Sao Tome & Principe	Port. Esc. peg	09-08-77		
Guinea Bissau	Port. Esc. peg	03-01-78	12-23-83	managed float
United Arab Emirates	US\$ peg	01-23-78	04-15-78 <u>1/</u>	US\$ peg
Bahrain	US\$ peg	01-26-78	08-15-78 <u>1/</u>	US\$ peg
Sierra Leone	LSTG peg	11-02-78	06-30-83	US\$ peg
	US\$ peg	02-31-85		
Seychelles	LSTG peg	11-05-79		
Vanuatu	FF peg	09-11-81		
Somalia	US\$ peg	07-01-82	07-01-83	adjusted according to a set of indicators
Rwanda	US\$ peg	09-06-83		
Burundi	US\$ peg	11-22-83		

Source: IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, and IFS, various issues.

1/ The initial margins of 2 1/4 percent around the peg rate were widened to 7 1/4 percent.

2/ On July 22, 1978 the margins of 7 1/4 percent around the peg rate were replaced by a target zone based on the development of the purchasing power of the rial relative to that of the currencies of Iran's major trading partners and other basic underlying economic conditions.

II. Issues in Constructing Tailored Exchange Rate Baskets

The choice of exchange rate regimes for developing countries has been widely discussed in the literature. ^{1/} The prevailing view is that the countries in a position to adopt a floating exchange rate are those which have a large number of participants and a sizable number and volume of transactions to operate a market for foreign exchange, and which could be well integrated into the international financial network. However, for many developing countries, floating exchange arrangements are not feasible given their institutional structure, e.g., the rudimentary state of their financial markets and the often important role of the government as a participant in and regulator of international transactions. Moreover, floating may not be desirable because of the repercussions of increased exchange rate volatility on domestic economic activity.

Exchange rate fluctuations tend to discourage trade and other foreign transactions because: they affect the competitive position of domestic exports on world markets and the home country's ability to import; they can cause frictions in the structure of production, employment and income; and they feed into domestic inflation through price changes of tradable goods. The common objective pursued in the literature on optimal pegs is to develop alternative exchange rate regimes for developing countries, and to choose peg standards which mitigate the negative impact on the domestic economy of exchange rate fluctuations between third currencies. The effects of such fluctuations and other exogenous shocks on various macroeconomic variables have been analyzed in the framework of different models in the literature and a variety of specific peg baskets have been derived. These are "optimal" in the sense that pegging to a basket stabilizes one or more target variables.

The baskets recommended are formulated as pegs to various effective exchange rates (EER), i.e., weighted averages of the exchange rates of a country's trading partners. While the strict maintenance of a fixed exchange rate against the peg standard--a "clean" peg system--constitutes an ideal case, an adjustment of the peg rate to a different "fixed" level--a "dirty" peg system--is often necessary to support a balance of payments adjustment process or to counteract undesired changes in the competitive position of the economy. For example, for a country with a higher domestic inflation rate than its competitors and trading partners, a "clean" peg would leave domestic exporters at a disadvantage compared with their competitors by pushing up the foreign currency price of domestic exports, lowering the domestic currency receipts of exporters, and, depending on the nature of the goods, distorting the market structure and price-setting mechanism, etc. The domestic currency prices of imports would fall relative to those of domestic goods and discourage domestic production. It is often recommended that these negative effects on the competitive position of an economy should be corrected through adjustment of the nominal exchange rate by the inflation differential, thereby stabilizing the inflation-adjusted or real effective exchange rate (REER).

^{1/} See Wickham (1984) and Williamson (1982) for an overview. See also Takagi (1985) for a more recent review of the conceptual and operational issues in pegging to a basket of foreign currencies by both developed and developing countries.

The major differences in the proposed "optimal" peg systems lie in the choice of the currencies and weights composing the peg baskets and the adjustments suggested in the "fixed" exchange rate against the peg standard.

A country's decision on a basket peg should in principle follow these considerations on "optimal" peg systems presented in the literature. However, the various recommendations often cannot be put into practice because the data needed are not available for most developing countries or only with long time lags--such as price and income elasticities of demand for and supply of import and export goods for the home country, its trading partners and competitors on the world market, or covariances between domestic relative prices and exchange rates of the home country and its trading partners. The authorities therefore need to evaluate the alternatives available to them: a peg to a basket tailored to their economy or a peg to an already existing standardized basket, e.g., the SDR, the value of which is readily available. Developing individual baskets or assessing the appropriateness of a standard basket as a peg requires answers to some basic questions about the type of external flows to be used to tailor individual currency weights, the nature of the "trade" weights employed, the mathematical formulation of the basket applied, and the price index to be used as a deflator in monitoring the competitive position of the economy. These are addressed below. If the SDR is used as a peg basket, only the last question is left open.

1. Bilateral trade or current account flows
versus elasticity weights

In the choice of their exchange rate policy, a country's authorities seek to mitigate the effects of third currency exchange rate changes on domestic economic activity. These effects are transmitted primarily through merchandise trade flows, but also via service transactions and transfers, e.g., tourist receipts, debt service payments, and official aid flows. The EER weights would therefore ideally be derived from the distribution of all current account flows.

For most countries, data on the geographical breakdown of merchandise trade flows is available from the IMF's Direction of Trade Statistics. ^{1/} Statistics on the nationality of visitors can be used

^{1/} The shortcomings of this data source should be kept in mind, however. The data show direct trade flows only, i.e., bilateral flows which exclude feedback effects from third markets. Also, these statistics include entrepot trade and trade of goods on consignment in merchandise exports and import flows, although the respective goods in the first case are only processed by the domestic economy and then re-exported, i.e., only the processing itself should be considered a current account transactions instead of the gross value of the goods imported and re-exported. Goods on consignment should similarly only enter into merchandise flows when sale and change of ownership actually occur.

as an approximation of the distribution of tourism receipts. Data on the currency distribution of debt service payments is partly available from World Bank sources or could be estimated from information available on outstanding external debt by creditor countries. However, since the latter information is only partially available and from a number of conflicting sources, the distribution of current account flows is approximated here through the distribution of merchandise trade flows and--where tourism receipts contribute significantly to current account credits--estimated data on tourism receipts.

This procedure has a major disadvantage, however, because it does not take into account that a country's trade flows are a function of supply and demand conditions in the world market, particularly for exporters of homogeneous primary products. Exchange rate movements of other suppliers of a country's export products and those of other importers of these goods than a country's direct partners have an influence on a country's competitive position. As has often been pointed out in the literature, the supply and demand elasticities of all market participants to exchange rate-induced price changes for a country's imports and exports would ideally be used in the analysis. The EER weights based on the IMF Multilateral Exchange Rate Model (MERM) 1/ are an example of an application for industrial countries. Belanger (1976) considered the case of major primary producing countries and his approach was later extended by Feltenstein, Goldstein, and Schadler (1979). The development of elasticity weights for developing countries on a larger scale, however, has been hampered by major problems of data availability. In this paper, bilateral trade weights have been used instead and the limitations have to be kept in mind in evaluating the results.

The use of total trade weights is generally favored in the literature over the use of import or export weights only since the authorities' objective is to stabilize the effect of exchange rate fluctuations on both import costs and export receipts. An exception is the case of countries exporting homogeneous primary products, where the export prices (in foreign currency) are determined on world markets. 2/ A combination of domestic import weights and world absorption shares for the respective primary goods better reflects the forces dominating export prices and receipts than a country's export shares and is preferable to the use of total trade shares. Although this approach is less ambitious than the elasticity weights discussed above, it requires the analysis of global absorption patterns for each export good separately. If lack of information leads to the use of domestic import weights only, as for two of the countries in this paper, the resulting EER needs to be analyzed with caution and developments on the export markets should receive special attention when the need for exchange rate adjustment is considered.

If the SDR is chosen as a peg basket, weights are adopted which represent approximately the role of the five major currencies in world

1/ See Artus and Rhomberg (1973).

2/ See Williamson (1982), pp. 55-56.

exports of goods and services and as media of payments as reflected in the share of these currencies in international reserves held by others. While the SDR basket may serve as a proxy for the global absorption pattern of raw materials, it depends on the individual country's trade structure how well the SDR composition approximates the country's individual effective exchange rate basket.

2. Direction or currency denomination of trade

A second issue arises when trade weights are used, namely, whether the currency weights should be based on the geographical distribution or alternatively the currency denomination of trade flows. Domestic economic agents are affected by changes in the exchange rates of the currencies used as invoicing and payments media in their export and import contracts especially since forward markets for foreign exchange that would allow hedging against short-run exchange fluctuations exist only in few developing countries. Because invoicing media are not necessarily the home currencies of their direct trading partners, the authorities' effort to mitigate exchange rate effects should focus on the distribution of vehicle currencies used.

Two procedures to derive the weights of individual currencies can be distinguished: (i) a "denomination-currency scheme," i.e., weighting according to the currencies used in payment for trade flows, which focuses on short-term rate fluctuations only and (ii) a "price-currency scheme," i.e., weighting according to the invoicing currency in which the price of the traded goods is fixed. ^{1/} The second system appears preferable for competitiveness considerations because it reflects the market conditions directly. However, even in a case where the price of a commodity is fixed, say, in terms of the U.S. dollar on the world market, the dollar exchange rate of a dominant (industrialized) consumer country will influence the dollar price of the commodity. Accordingly, commodity price changes will reflect changes in the value of a currency composite accounting for the price elasticities of supply and demand on the world market, although the market price is fixed in U.S. dollars. Lipschitz (1979), therefore, suggested to use MERM weights as proxies in the case of developed countries but pointed out the need for less sophisticated proxies for developing countries.

Branson and Katseli (1978, pp. 13-16) argued that if some countries' traded goods prices were denominated in some dominant currency, then this would be reflected in their exchange rates in terms of that currency. The EER index therefore implicitly accounted for this relationship by aggregating over countries in a currency area. This argument needs modification, however, if a country's trade is only in part denominated in some dominant currency. In such a case, trade flows should be disaggregated to the commodity level and their pricing analyzed with respect to the currencies used.

^{1/} Lipschitz (1979), pp. 431-432.

Information on the currency denomination of trade flows or the currency in which they are priced, however, is rarely available. The geographical distribution of trade flows has been substituted as a rough approximation, i.e., the countries of direct origin and destination and their currencies. It should be kept in mind, however, that data from the Direction of Trade Statistics may differ substantially from the actual distribution of invoicing and payments media.

For the determination of the SDR weights, the Fund has adopted the geographical distribution of world exports as a basis, supplemented by available information on the currency composition of international reserves of major countries.

3. Mathematical formulation

In defining a basket peg, the effective exchange rate index can be expressed as an arithmetic (EERA), harmonic (EERH), or geometric average (EERG) depending on the formulation of the exchange rates used and the method of combination: 1/

$$\text{EERA : } R_N^{-1} \sum_{i=0}^{N-1} w_i R_i$$

$$\text{EERH : } S_N / \sum_{i=0}^{N-1} w_i S_i$$

$$\text{EERG : } R_N^{-1} \prod_{i=0}^{N-1} R_i^{w_i} \quad \text{or} \quad S_N / \prod_{i=0}^{N-1} S_i^{w_i}$$

with w_j : (given) set of weights

R_j : exchange rate (index) of currency j as units of currency j per numeraire

S_j : exchange rate (index) of currency j as units of the numeraire per currency j

Pegging to a basket consisting of fixed currency units is equivalent to a basket peg using fixed weights and the harmonic averaging method, as shown in Appendix I. This method is easy to understand intuitively as a "shopping basket" of currencies, while the concept of the geometrical formulation is more difficult: it represents a basket

1/ See Brodsky (1984), p. 548.

of changes in the value of currencies, and the implied currency amounts composing the basket change with exchange rate movements.

The geometrical basket has, however, several advantages over the harmonic and arithmetic EER formulations: (i) the index value does not depend on the definition of the exchange rates used since $S_j = 1/R_j$ at any point in time; (ii) it can readily be combined with price indices for real effective exchange rate considerations without raising conceptual problems since price indices are usually calculated as geometric averages; and (iii) it gives constant weights to all currencies' exchange rate changes and therefore does not bias toward depreciating or appreciating currencies over time. The last point becomes apparent when the logarithmic formulations of these indices are considered:

$$\lg \text{EERA} = -\lg R_N + \lg \left(\sum_{i=0}^{N-1} w_i R_i \right)$$

$$\lg \text{EERH} = \lg S_N - \lg \left(\sum_{i=0}^{N-1} w_i S_i \right)$$

$$\lg \text{EERG} = -\lg R_N + \sum_{i=0}^{N-1} w_i \lg(R_i)$$

Due to the strict concavity of the $\lg(x)$ function, the value of the geometric EER basket--for a given set of S_N and S_i --is always smaller than (or equal to) the arithmetic and larger than (or equal to) the harmonic EER basket (see Appendix II):

$$\text{EERH} \leq \text{EERG} \leq \text{EERA}.$$

If a currency is pegged, the exchange rate against the numeraire (S_N) is adjusted to maintain the value of the currency against the peg standard, and therefore to keep the EER index constant. The above relationship implies different exchange rate adjustments for countries pegging to the same initial currency compound (set of S_i and w_i) but using different averaging techniques, as shown in Appendix II. A currency pegged to a harmonic basket consisting of fixed currency units will appreciate against a currency pegged to the same initial basket but formulated as a geometric average with fixed weights because the value of the harmonic basket increases relative to the geometric basket. While the geometric basket takes account of exchange market developments directly through the combination of the diverse exchange rate movements,

the harmonic basket is in addition subject to the changes induced in its currency weights. As a result, currencies increase their share of the value of a harmonic basket as they appreciate (i.e., they receive larger weights in the basket) whereas the share of depreciating currencies decreases. In contrast, the weights of all currency movements in the geometric basket remain constant, independent of the direction of the exchange rate changes.

This relative appreciation results only from the mathematical characteristics of the averaging method used to combine the diverse movements in the exchange rates of the basket currencies; it does not necessarily reflect changes in the importance of these currencies in the home country's trade. Since the weights applied are to represent the country's trade structure, geometric averaging with fixed weights is more appropriate. Changes in the trade structure itself should be reviewed periodically--even in the absence of large exchange rate fluctuations--and the basket composition and currency weights adjusted accordingly.

A decision to peg to the SDR implies the adoption of the harmonic averaging procedure used for the determination of the SDR value according to the "standard-basket technique." This method was adopted by the Executive Board on June 13, 1974 for the valuation of the SDR in its role as a reserve asset. The view was held that this was the only method among the different approaches suggested by the Committee of Twenty (1974) which could be applied under the circumstances of generalized floating. 1/

The adopted "standard-basket" SDR could easily be simulated through a combination of currency contracts in the foreign exchange markets--allowing the creation of private SDRs. While here fixed currency amounts are combined with daily exchange rates in absolute levels to determine the daily SDR value in absolute terms, an alternative method that combines the changes in the daily exchange rates with fixed weights would yield the change in the daily value of a geometric SDR basket. The latter method gives constant weights to all daily exchange rate changes while in the "standard-basket" appreciating currencies receive increasingly larger weights. If the SDR is used as a peg standard, the currency weights are to approximate the pegging country's trade structure as discussed above. These weights have to be adjusted when changes in the underlying trade pattern occur but they should not be subject to pure exchange rate fluctuations. A geometrically averaged SDR would therefore be preferable as a peg standard.

A recalculation of the SDR using the same initial basket but the geometric averaging method shows that the appreciation implicit in the standard basket remained below 3 percent until May 1982 but exceeded 7 percent in early 1985 (see Appendix II). This shows the extent to

1/ See Polak (1974), p. 17.

which a currency pegged to the standard SDR basket appreciated against a hypothetical peg to a geometrically averaged SDR, and the implicit disadvantage for its external competitiveness. It is a purely technical bias which easily could be corrected through an adjustment in the peg rate. While this factor has not received much attention from policy-makers probably because the implicit appreciation is small in the case of the SDR compared to the overall movements in effective exchange rates (see Appendix III), it could potentially become quite significant in the case of large and diverging exchange rate changes.

4. Choice of deflators

Over the medium and long term, exchange rate policy has to be concerned with the competitiveness of the economy in world markets and the achievement of a sustainable balance of payments position. In pursuing those goals, adjustments in the exchange rate against the peg standard might be necessary as pointed out previously. While important factors such as productivity developments, changes in the consumption preferences and in the structure of production in the rest of the world have to be considered since they influence demand for domestic exports, they can only be observed over the long term. Over the shorter term, developments in the REER--i.e., the nominal rate corrected for differential price developments, or more precisely, an index of domestic relative to foreign prices adjusted for exchange rate movements--^{1/} can be used as an indicator of changes in the competitiveness of the export- and import-competing sectors of the economy.

While price or cost indices for traded goods would be most appropriate as deflators, these are rarely available. Often consumer price indices have to be used as proxies, although they contain a large portion on nontraded items--especially foodstuffs--and reflect very diverse consumption patterns among various countries. The results of such REER calculations have to be interpreted very carefully and should only be taken as trend indicators. ^{2/}

To summarize, problems of data availability often prohibit the calculation of elasticity-weighted peg baskets as suggested in the literature. The lack of information also hinders the formulation of individually tailored baskets as geometric averages of the exchange rates of the currencies in which a country's current account flows are priced, so that in many cases, an average of the currencies of the countries of origin and destination of trade flows has to be substituted. Rather than the currency distribution of total current account flows, the regional distribution of the trade flows normally serves as the basis for a weighting scheme. Although indicators of export prices and production costs are best suited for the analysis of the competitive

^{1/} See Maciejewski (1983), p. 498.

^{2/} For an in-depth discussion on the use of various price indices as deflators, see Maciejewski (1983).

position of a country's external sector on the world market, for many developing countries these are available at best for very few export goods and mostly consumer price indices have to be used as proxies.

III. Empirical Evidence on the Performance of the SDR as a Peg

For this paper, exchange rate developments of 13 countries which pegged to the SDR have been analyzed more closely. The oil-exporting countries and others for which the available data are deficient have been excluded. Individual effective exchange rate baskets were constructed along the lines discussed above and their evolution compared with the SDR and the U.S. dollar. Since these baskets are tailored to the specific characteristics of each country, they differ from the global approach applied in the composition of the SDR basket. The relationship between the developments of both baskets and the U.S. dollar shows whether in the past the SDR could serve as a proxy for these country-specific baskets and how the country would have fared with an alternative peg to the U.S. dollar. The historical developments do not suffice, however, to draw policy conclusions for the future since future exchange rate changes cannot be predicted. But since trade patterns change only slowly over time, past experience can indicate the ability of a peg standard to dampen the effects of exchange rate fluctuations on the domestic economy.

It should be noted that the individual baskets constructed here are not suggested as alternative peg standards. They contain too many currencies and would probably prove too complicated in day-to-day operations. It is beyond the scope of this paper to test the SDR against practicable country-specific peg baskets, but the intention is to determine whether the problems SDR peggers encountered were inherent in the nature of the SDR, the standard peg basket they had chosen, or were attributable to other factors.

In an effort to keep the effective exchange rate baskets as simple as possible but also remain reasonably close to the actual structure of the countries' current account flows, the following assumptions have been used:

(i) Information on trade shares available at the time of the adoption of the SDR peg was used in the absence of data on invoicing and payments media. The baskets were revised to coincide with the revision of the SDR basket, effective January 1, 1981. ^{1/}

^{1/} The average trade shares for 1970-73 and 1975-78 were used for eight countries. For Sierra Leone and Seychelles, which pegged to the SDR only in 1978 and 1979, respectively, the period 1973-76 and 1974-77, respectively, were used without subsequent revision. For Somalia, Rwanda, and Burundi, which pegged to the SDR in 1982 and 1983, the period 1976-79 was used.

(ii) Only countries with average trade shares of 1 percent and above were included in the basket. ^{1/} The number of currencies contained in the resulting EER baskets is in most cases lower than the 16 currencies included in the first SDR basket. The threshold of a 1 percent trade share has been applied here to achieve a reasonably close approximation of the actual trade structure without boosting the information requirements. A higher threshold of 2 percent would have reduced the number of currencies in the individual baskets to 6-13, and a 5 percent threshold to 4-7 currencies. A reduction in the number of currencies through consolidation of currencies pegged to common standards--or to another currency in the basket--into currency areas is not of advantage here because the information requirement is limited to the knowledge of the peg standard and adjustments of the peg rate instead of continuous exchange rate information, and because the use of such "currency area weights" would fail to account for adjustments in the peg rates within the currency area.

(iii) Trade shares were used for all countries except for the primary commodity exporters, Zaire and Zambia, where import weights were applied (however, the quantitative effects were small). The weights were modified where possible to include trade with (mostly imports from) the oil-exporting countries in the Middle East in the trade share of the U.S. dollar, which increased as a result.

(iv) As a base period, the month of adoption of the SDR peg has been used in all calculations. Since the equilibrium conditions can rarely, if ever be observed in practice, this base period choice rests on the assumption that the exchange rate chosen at the beginning of the new exchange rate system reflected a level sustainable over the medium term. However, over longer periods of time technological progress, the discovery of natural resources, etc. lead to changes in production methods, the structure of production as well as demand patterns. These impacts on the conditions of the underlying equilibrium have been abstracted from here.

(v) The geometric averaging method has been applied for the reasons explained above. Once the value of the peg basket in terms of the numeraire has been established, its daily changes can be easily calculated as the weighted (arithmetic) average of the daily exchange rate changes of the basket currencies.

(vi) For the analysis of real exchange rates (exchange rate-adjusted relative price indices) as medium-term indicators of a country's competitive position, official consumer price series were used as deflators since for most countries considered other price indicators, as discussed above, are not available. It should be remembered, however, that in some cases official price data may significantly understate domestic price increases

^{1/} Only where data on exchange rates and prices are available, i.e., some Eastern block countries could not be considered. This, however, only had minor impacts on the basket composition.

and therefore understate the real appreciation of a currency limiting the usefulness of the real effective exchange rate as an indicator of a country's external competitiveness.

For comparison with the individually tailored baskets, the SDR as actually calculated by the IMF was used. Its appreciation against a geometrically averaged SDR basket has exceeded 3 percent only since June 1982 (Table 3, Appendix II) and is minor compared to the divergences between the values of the SDR, the trade baskets, and the actual exchange rates. The appreciation implicit in the standard SDR basket against a geometrically averaged SDR is somewhat lower in real than in nominal terms (see Chart 40, Appendix II).

In Appendix III details on the effective exchange rates of the domestic currencies are set out on a country-by-country basis and compared to the development of the SDR, the chosen peg standard, and the U.S. dollar as a feasible alternative peg.

Changes in the competitive position of a country as indicated in the real effective appreciation or depreciation of a currency, result from (i) external factors related to the peg standard adopted as represented by the appreciation/depreciation of the inflation-adjusted value of the SDR in terms of that of the trade basket, i.e., SDR's REER, which the domestic currency would have duplicated if a "clean" peg had been strictly adhered to, including the pursuit of monetary and demand management policies consistent with the policies followed by the countries represented in the SDR basket and (ii) other factors which the authorities can influence or act upon directly, including domestic responses to changing external conditions, as represented in the deviations of the domestic currency's REER from that of the SDR. A comparison of a country's REER with that of the SDR can therefore give an indication whether the instability and real appreciation or depreciation of the domestic exchange rate against its trading partners' was mainly influenced by external factors through the specific peg standard adopted, or was the result of other, mainly internal, factors.

In summary, the empirical evidence presented in Appendix III suggests that the distinct weighting structure embodied in the SDR and, to a minor extent, the different averaging method used (see Appendix II) resulted in diverging value indices of the SDR and the constructed individual baskets in both nominal and real terms. However, for all countries analyzed, with the exception of Kenya, the SDR deviated less in real terms from the individual trade baskets than the domestic currencies, and for all countries the SDR fared significantly better as a peg standard than the U.S. dollar (Table 2). The nature of the "standard-basket" SDR therefore seems to have had much less impact on actual real effective exchange rates and on the country's competitiveness in world markets than inflation differentials between the countries considered and their trade partners.

Table 2. Average Deviation from EER Baskets
Since the Adoption of the SDR Peg 1/

Country	Domestic currency	SDR	U.S. Dollar
Burma	14.8	8.7	13.7
Malawi	11.1	4.1	10.9
Kenya	7.7	13.6	14.0
Tanzania	35.5	2.4	10.0
Uganda	183.9	3.4	8.9
Mauritius	4.5	4.2	10.2
Zaire	69.6	6.5	14.5
Zambia	6.4	4.4	10.7
Sierra Leone <u>2/</u>	44.8	5.0	16.4
Seychelles	16.1	6.2	23.1
Somalia	54.3	1.7	5.2
Rwanda	3.7	1.5	4.2
Burundi	12.7	1.0	3.9

1/ Average absolute monthly deviation of dollar value indices in real terms.

2/ Quarterly.

The abandonment of the SDR peg by Tanzania, Uganda, Mauritius, Sierra Leone, Somalia, Zambia, Zaire, and Malawi followed periodic appreciations of their currencies in real terms against their trading partners connected with competitive disadvantages for their exporters and undesired import incentives often accompanied by the emergence of unofficial foreign exchange markets dealing at substantially depreciated rates. The necessary adjustments of the nominal exchange rates were, often for political reasons, taken with considerable time lags and then in large steps causing major disruptions of economic activity and themselves exerting additional pressure on the domestic price level. In the majority of cases, however, similar measures would have been necessary even if the authorities had linked their currencies to an individually tailored peg basket. Therefore, the political and socio-economic problems related to devaluations, as opposed to the nature of the SDR as a peg standard, appear to have been a dominant factor in the decision of these countries to either manage their exchange rate in accordance with a different--and mostly undisclosed--currency basket, or peg it to a single currency, or adopt a floating regime.

IV. Appropriateness and Management of an SDR Peg

The preceding discussion was centered around criteria for the choice of peg standards for developing countries and the role of the

SDR as a standardized currency basket. Some other aspects of the SDR as an appropriate peg standard for developing countries have been discussed at various occasions in the literature. ^{1/} The main arguments brought forward are the following: (i) the adoption of the SDR as a common peg standard would lead to stable cross-rates among the participating countries with beneficial effects on intra-regional trade; (ii) market confidence in a peg to a well-established basket as against an individually constructed basket would be stronger and facilitate the inflow of investment capital; (iii) the SDR is a convenient standard due to the daily and easily accessible publication of its value; and (iv) the SDR roughly represents the role of the principal currencies in world trade and approximates the absorption pattern for homogeneous primary commodities which renders it particularly apt for countries exporting primary commodities. However, (v) the SDR--as any other composite peg standard--cannot directly be used as intervention medium unless it were used more widely in active financial markets.

The first argument does not seem to have been a strong factor in the adoption of the SDR peg for the countries considered here. Trade within the group of countries which pegged to the SDR is small compared to trade with the industrialized countries. While the simultaneous peg of the countries which formed the East African Community--Kenya, Uganda, and Tanzania--posed an exception, trade within this region declined subsequently and Tanzania and Uganda delinked their currencies from the SDR in 1979 and 1981, respectively. However, this would be a potential advantage of the SDR if it were used as a peg standard by a larger number of countries or if it served as a denominator for trade contracts of major commodities.

The practical convenience of the SDR seems to be undisputed, although it does not appear to be a very strong advantage of the SDR over an individually tailored peg standard, the daily value of which is determined by the authorities themselves. In either case, a daily telex from a major banking source providing the SDR exchange rate or the exchange rates of major currencies against a numeraire is all the basic information necessary to operate the peg. However, as the bias toward appreciating currencies--which is inherent in the SDR basket's harmonic averaging method--would need to be monitored and adjusted for, the practical convenience of the SDR in day-to-day operations loses its attractiveness.

The fourth argument concerns specifically primary commodity exporters. Although it is valid as a generality, it has to be tested in the specific context of the country considered to see whether the SDR in the past has been a suitable approximation of the individually tailored peg basket.

^{1/} Among others by Crockett and Nsouli (1977), Helleiner (1981), Williamson (1982), and Brodsky and Sampson (1984).

The power of the confidence argument depends largely on the credibility of the commitment of a country to a particular peg and more generally to a realistic exchange rate policy. The maintenance of a fixed relationship to a peg standard requires that a set of fiscal, monetary, and income policies is followed which is consistent with that of the countries represented in the peg standard. Otherwise, there will be growing pressure on the domestic price level and the exchange rate. Widespread efforts to counteract these with a tightening of exchange and trade restrictions have often proven not to be viable solutions but resulted in the misallocation of resources and flourishing unofficial foreign exchange markets. It is therefore essential that the authorities manage their peg and promptly adjust their exchange rate against the peg standard for inflation differentials, thus mitigating fluctuations in their REER and avoid damaging exchange rate effects on the competitiveness of their economy over the medium term. The time lag involved in the collection of price data allows the authorities to determine whether the internal or external shocks observed are of a temporary nature or whether corrective action through the exchange rate might be advised. This would help to avoid the impacts of sudden large step devaluations on the domestic economy and their adverse political consequences. Adjustment measures then could be taken in the form of a crawling peg system, or the authorities might prefer to reserve some element of discretion to counter adverse currency speculation.

Over the medium term, adjustment decisions should also account for differences in the development of labor productivity or the underlying competitive position of an economy, which have not been considered in the foregoing analysis.

Since trade patterns and the media of invoicing and payments used in international transactions change, periodic reviews of the second best baskets are necessary. The degree of approximation reached through the SDR, which itself has been revised on three occasions since its initial adoption and is scheduled for periodic reviews in the future, has to be re-evaluated periodically to determine its continued suitability as a peg standard.

V. Concluding Remarks

This paper has reviewed some issues in the choice of peg baskets for developing countries and the construction of country-specific baskets as compared to the SDR as a standard basket. Individual currency baskets have been developed that were designed to mitigate the effects of changes in third currencies' exchange rates on the domestic economy which are transmitted through a country's external transactions. A peg to the SDR can be appropriate if it mitigates these effects, i.e., if the SDR is a reasonably good proxy for a country-specific EER basket and if inflation differentials are taken into account in exchange rate management.

The empirical results indicated that for most of the 13 countries analyzed the SDR approximated the individual effective exchange rate baskets reasonably well. This suggests that the reasons for the significant real appreciation of their currencies and subsequent abandoning of the SDR peg by eight of the countries considered can in most cases be found not in the inherent characteristics of the SDR, but in divergent domestic policies followed by these countries and by their trading partners as well as a lack of strong measures to make appropriate policy adjustments. The experience of these countries therefore does not diminish the qualities of the SDR as a peg standard, but highlights the importance of continuous monitoring and timely adjustment of domestic policies for the management of a peg system.

The analysis is, however, without prejudice on the performance of other possible basket pegs these countries might have adopted. Such baskets could be constructed analogously to the effective exchange rate baskets employed and they may have to be limited to a smaller number of currencies to be useful in day-to-day operations. The question of the relative performance of such a basket, in comparison with the SDR is an empirical issue that could be assessed on the basis of historical simulations in the context of each specific country.

The SDR may be considered as a usable peg standard for developing countries with diversified trade patterns in which both the U.S. dollar and the major European currencies play important parts. The SDR would appear to have little relevance for Latin American countries where trade patterns tend to be heavily oriented toward the U.S. dollar. But many countries in Africa and Asia have the characteristics of potential SDR-peggers. Thus, countries in these regions might give serious consideration to an SDR peg, as some have done in the past.

A Basket with Fixed Currency Components as a Harmonic Average

The value of a basket consisting of fixed currency amounts, at time t in terms of the numeraire, S_B^t , can be expressed as:

$$S_B^t = \sum_{i=0}^{N-1} u_i S_i^t$$

with S_j^t : exchange rate of currency j in terms of the numeraire at time t ,
 u_j : number of units of currency j included in the basket.

The initial weight of currency i in the base period is

$$w_i^0 = \frac{u_i S_i^0}{S_B^0} .$$

Therefore, the basket value at time t can be rewritten as

$$S_B^t = S_B^0 \sum_{i=0}^{N-1} w_i^0 \frac{S_i^t}{S_i^0} ,$$

or in index form

$$S_B = \sum_{i=0}^{N-1} w_i^0 S_i .$$

The EER index of the domestic currency 1/ pegged to the basket (EERB) then consists of the index of the basket value per unit of the numeraire ($1/S_B$) multiplied by the index of the home country's exchange rate in terms of the numeraire (S_N):

$$EERB = S_N / \sum_{i=0}^{N-1} w_i^0 S_i ,$$

which is the formulation of an harmonically weighted basket.

1/ Defined analogously to the general formulas for EERA, EERH, and EERG to show an increase in the index if the home currency appreciates.

Appreciation of a Harmonic Against a Geometric Basket

Consider two currencies NH and NG which are pegged to a basket with fixed currency components and one with fixed geometric weights, respectively. Their effective exchange rates are to be stabilized at their initial level, i.e., $EERH = EERG = 1$, with

$$\lg EERH = \lg S_N - \lg \left(\sum_{i=0}^{N-1} w_i S_i \right)$$

$$\lg EERG = \lg S_N - \sum_{i=0}^{N-1} w_i \lg(S_i).$$

Then the exchange rates of the two currencies in terms of the numeraire, S_{NH} and S_{NG} , have to move with changes in the basket values in terms of the numeraire caused by the same set of movements in the exchange rates of third currencies, S_i . S_{NH} and S_{NG} can therefore be written in logarithmic form as:

$$\lg S_{NH} = \lg \left(\sum_{i=0}^{N-1} w_i S_i \right)$$

$$\lg S_{NG} = \sum_{i=0}^{N-1} w_i \lg(S_i)$$

Since the $\lg(x)$ function is strictly concave, i.e., its slope is always positive but decreases with an increase in x ($\lg'(x) > 0$ and $\lg''(x) < 0$), the following relationship holds:

$$\sum_j a_j \lg(b_j) \leq \lg \left(\sum_j a_j b_j \right), \quad \text{with } \sum_j a_j \leq 1$$

Accordingly, the value (in terms of the numeraire) of a basket using fixed currency amounts is higher than (or equal to) that of a basket using fixed geometric weights:

$$\lg \left(\sum_{i=0}^{N-1} w_i S_i \right) \geq \sum_{i=0}^{N-1} w_i \lg(S_i).$$

Since the domestic exchange rate (in terms of the numeraire), S_N , has to change with the value of the peg basket to maintain a constant effective exchange rate, a peg to a harmonic basket implies an upward bias of the exchange rate, NH, it tends to appreciate compared with a currency NG pegged to a geometrically weighted basket.

As an example, the SDR basket has been recalculated using the geometric averaging method. Starting from the same initial value on June 28, 1974, the initial percentage weights of the currencies in the "standard-basket" SDR were employed as exponential weights in the "geometric SDR." These weights were changed simultaneously with the revision of the "standard-basket" SDR. The adjustment was done in the same way as for the "standard-basket" SDR, i.e., the values of the geometric and "standard-basket" SDRs on the business day preceding July 1, 1978 and January 1, 1981, were identical under the geometric and "standard-basket" valuation procedures applied before and after the respective dates.

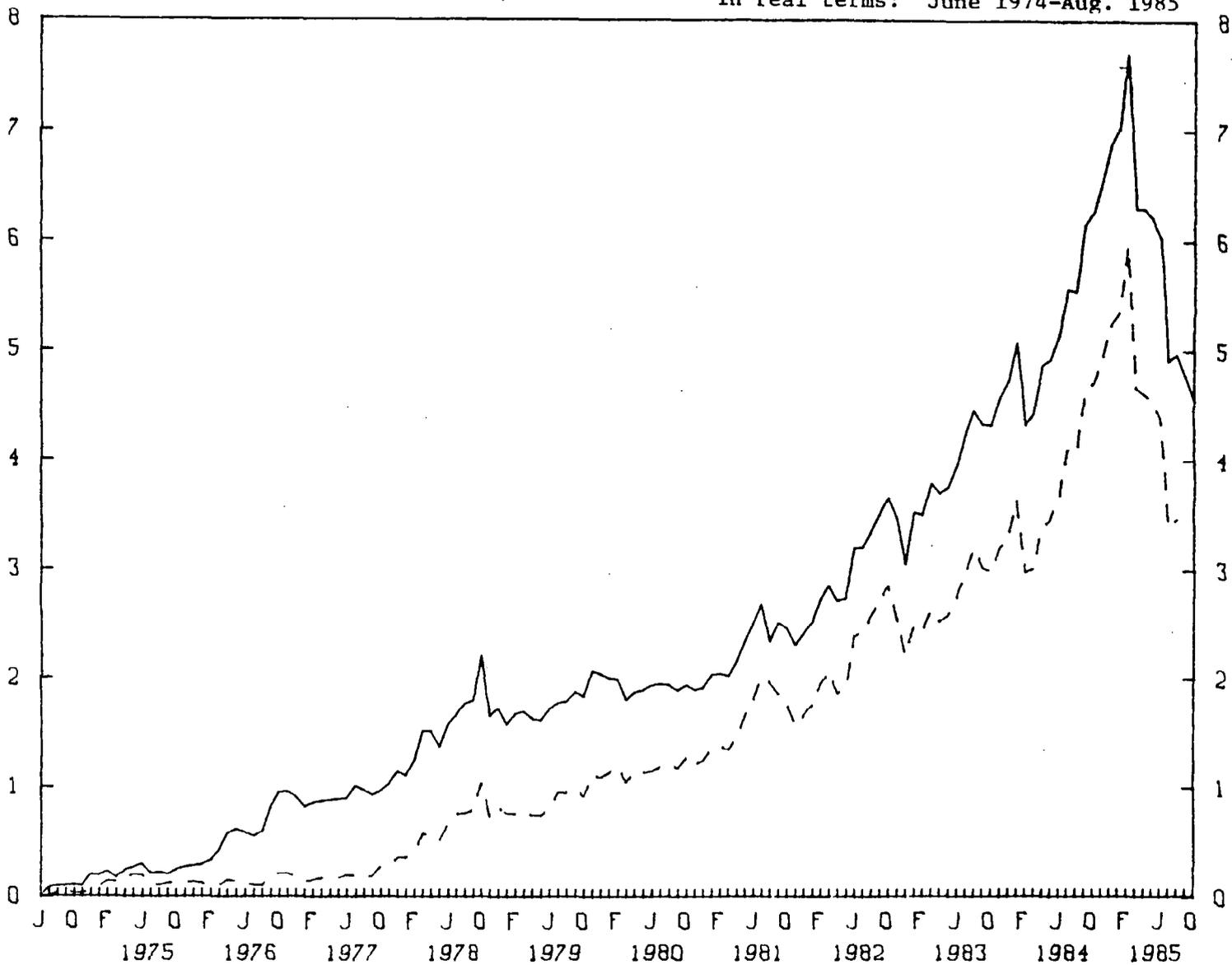
The results show that the implied bias has become significant over time (see Chart 1 and Table 3). While the actual value of the SDR in terms of the U.S. dollar exceeded the geometrically weighted SDR value by less than 1 percent from its adoption in June 1974 until late 1977, and by less than 3 percent until May 1982, the strong appreciation of the U.S. dollar against other major currencies in the last two years has caused the actual value of the SDR to appreciate against the "geometric SDR" by over 7 percent in January/February 1985. Since the currencies in the SDR basket experienced somewhat lower inflation rates than the United States over the whole period since the adoption of the SDR basket, they depreciated less in real terms against the U.S. dollar. Therefore, the divergence in the real exchange rates movements (after inflation adjustment) was smaller than that of the nominal exchange rates, and the appreciation of the "standard-basket" SDR against the geometrically weighted SDR was somewhat lower in real terms.

Chart 1. Appreciation of the Standard SDR Basket
Against a Geometrically Weighted SDR 1/

(In percent)

In nominal terms: June 1974-Oct. 1985

In real terms: June 1974-Aug. 1985



1/ End-of-period data.



Table 3. Actual and Geometric SDR

	End of period values		Premium of actual over geometric SDR (In percent)
	Actual SDR (Exchange rate in terms of U.S. dollar)	Geometric SDR	
June 1974	1.20635	1.20635	0.00
June 1975	1.23641	1.23259	0.31
June 1976	1.14610	1.13941	0.59
June 1977	1.16587	1.15546	0.90
June 1978	1.23953	1.22030	1.58
June 1979	1.29110	1.26917	1.73
June 1980	1.32438	1.29913	1.94
June 1981	1.15060	1.12252	2.50
Dec. 1981	1.16396	1.13648	2.42
June 1982	1.09224	1.05834	3.20
Dec. 1982	1.10311	1.07041	3.05
June 1983	1.06835	1.02760	3.97
Dec. 1983	1.04695	0.99968	4.73
June 1984	1.03121	0.98086	5.13
Sept. 1984	0.99901	0.94113	6.15
Dec. 1984	0.98021	0.91723	6.87
Jan. 1985	0.97499	0.91099	7.03
Feb. 1985	0.95942	0.89080	7.70
Mar. 1985	0.99127	0.93250	6.30
Apr. 1985	0.99117	0.93238	6.31
May 1985	0.99295	0.93494	6.21
June 1985	0.99828	0.94139	6.04
July 1985	1.03737	0.98877	4.91
Aug. 1985	1.03536	0.98627	4.98
Sept. 1985	1.05940	1.01107	4.78
Oct. 1985	1.07165	1.02491	4.56

Detailed Effective Exchange Rate Developments

In the following, the effective exchange rates of the domestic currencies, the SDR and the U.S. dollar are set out in detail for 13 countries. The nominal effective exchange rate (EER) ^{1/} of the domestic currency shows the development of a country's exchange rate in terms of the currencies of its direct trading partners. It deviates from the SDR's effective exchange rate when the authorities have not strictly adhered to a "clean" peg but adjusted their peg rate against the SDR or adopted a different exchange rate system. The effective exchange rate of the SDR itself indicates the development of its value in terms of the EER basket and therefore the degree to which the SDR basket approximates the individually tailored basket. It departs from the base period value (100) due to the differences in the currencies and exchange rate developments included in the baskets, and in the weighting schemes applied. The SDR's REER incorporates, in addition, the effects of differential developments in consumer price inflation between the currencies in the SDR basket and the trade partners of the country considered. The domestic currency's REER deviates from the SDR's due to changing relative consumer prices between the home country and the SDR currencies in addition to adjustments in the (nominal) peg rate. To indicate the performance of an alternative peg standard, the development of the U.S. dollar relative to the trade basket in nominal and real terms has been included in the analysis.

1. Burma

Burma was the first country to adopt the SDR as a peg standard on January 25, 1975. Its most important trade partner is Japan which accounted for over 21 percent of total trade in the two sample periods. During 1970-73, the first period analyzed, the United Kingdom, Germany, India, the People's Republic of China, Sri Lanka, and Singapore followed with average trade shares between 5 and 8 percent, and numerous other countries accounted for the remaining 40 percent of trade. In the second period, 1975-78, the trade shares of Singapore, the United Kingdom, Indonesia, Germany, the United States, and China ranged between 5 and 9 percent, and about 42 percent of trade involved other countries. The trade baskets tailored according to the assumptions set out above include about 84 percent and 89 percent of Burma's trade in the first and second sample period, respectively. Their structures differ substantially from the SDR composition. The SDR basket with its large U.S. dollar component covered barely 60 percent of the currency weights in Burma's trade basket until 1980, and only 46 percent after the revision of the baskets.

^{1/} The EER of the domestic currency is defined as the ratio of the value of the domestic currency (in terms of the numeraire) against the value of the individually tailored trade basket (in terms of the numeraire). Analogously, the country-specific effective exchange rates of the SDR and the U.S. dollar, respectively, are defined as the ratios of the value of the SDR and the U.S. dollar, respectively, against that of the individual trade basket. The ratios in real terms are adjusted for consumer price inflation.

Despite these differences, the SDR value and the exchange rate basket of Burma's trade partners moved closely from the adoption of the SDR peg until end-1982 when the trade basket's depreciation against the U.S. dollar accelerated slightly compared to the SDR's. By end-1984, the effective exchange rate index of the SDR had appreciated about 7 percent above its initial level in 1975 (Chart 1). Burma's trading partners experienced on average somewhat lower inflation rates than the SDR basket currencies (see Chart 3), resulting in an appreciation of the real effective exchange rate of SDR (Chart 2). A "clean" peg to the SDR would therefore--at comparable rates of inflation--have led to a real appreciation of the kyat by over 10 percent between 1975-79, and a slight further appreciation through 1984.

However, during the first two years of the SDR peg, Burma experienced inflation rates substantially above those of its trading partners. Its domestic rate of inflation amounted to over 40 percent in 1975, causing a large appreciation of the kyat in real terms. As inflation slowed to about 20 percent in 1976, the rise of the REER decelerated. Subsequently, price increases, as reflected in the CPI, came down drastically and mostly remained below those of the country's trading partners. ^{1/} The resulting depreciation of the REER was enhanced when Burma adjusted its nominal exchange rate in May 1977 with a 7 percent devaluation. The REER reached its level at the inception of the peg by early 1978 and fell to 83 percent by end-1980. Since, Burma's real effective exchange rate has fluctuated between 79 and 92 percent of its January 1975 level due to a slight appreciation of the nominal effective exchange rate and unsteady movements in relative prices.

Overall, Burma's exchange rate policy appears to have been successful in stabilizing the REER as long as its domestic inflation was broadly in line with its trading partners'. The sharp deviation in the early peg period was corrected by a moderate devaluation and the slow-down of price increases. While the SDR basket approximated the trade basket better in nominal than in real terms, its marked appreciation since 1979 did not lead to an appreciation of Burma's real effective exchange rate due to moderate price developments in both Burma and its trade partners. However, the CPI used here probably understates actual inflation and the resulting REER may not be a reliable indicator of Burma's external competitiveness.

2. Malawi

Malawi pegged to the SDR on June 9, 1975. It had previously maintained the value of the kwacha on the basis of daily changes in the pound sterling and the U.S. dollar rates which had led to a depreciation of its effective exchange rate and pressure on the domestic price level.

^{1/} This is in part attributable to an extensive system of administered prices for consumer goods covering an estimated 40 percent of Burma's CPI basket, which have not been increased since 1977-78.

The authorities sought to maintain the value of the kwacha in terms of the currencies of its trading partners and to mitigate the effect of exchange rate movements on import prices and the domestic price level.

Malawi's main trading partners during 1970-73 were the United Kingdom, Zimbabwe, and South Africa with trade shares of 33 percent, 13 percent, and 10 percent, respectively. U.S. dollar-denominated trade with the United States and Iran amounted to 6 percent of trade and the remaining 38 percent was related to other countries. Subsequently, trade with Zimbabwe and Iran dropped sharply while South Africa emerged as the second largest trade partner after the United Kingdom with trade shares of 21 percent and 29 percent, respectively. While the United States and Japan each accounted for about 6 percent of trade, 38 percent involved other countries.

The trade baskets constructed here cover about 81 percent and 77 percent of Malawi's trade in the two periods analyzed. Of these, the SDR basket included about 64 percent in 1978, and the basket revision in 1981 reduced the coverage to barely 56 percent. Furthermore, the composition of the SDR and the trade baskets differed substantially since the U.S. dollar is the dominant currency in the SDR basket.

During the first year of Malawi's SDR peg, the currencies of its trading partners depreciated faster against the U.S. dollar than the SDR basket, and the SDR's effective exchange rate rose about 10 percent (Chart 4). It fluctuated around that level until 1980, when the trade basket appreciated against the SDR, reaching the same nominal value in early 1981. The subsequent appreciation of the U.S. dollar was more pronounced against Malawi's trade partners than in terms of the SDR, and the SDR's value rose more than 50 percent above the trade basket's by end-1984. Since inflation in the SDR countries was consistently lower than in Malawi's trade partners throughout the period (Chart 6), the SDR's real effective rate--although moving in the same direction as the nominal rate--remained mostly within 5 percent around its level at the adoption of the peg, with the exception of the 1980-81 drop, and the significant appreciation in 1984 due to the strength of the U.S. dollar (Chart 5). While the SDR was therefore not a very good proxy for the average (nominal) exchange rate of Malawi's trade partners, it performed significantly better in real terms and approximated the development of the EER basket much closer than the U.S. dollar.

The kwacha was pegged against the SDR at the same peg rate for seven years until April 1982, when a devaluation of 15 percent reduced the EER to its level at the adoption of the peg (Chart 4). Malawi's REER had fluctuated about 10 percent above its initial level but fell almost 15 percent with the devaluation (Chart 5). Subsequently, inflationary pressures increased and, together with a faster depreciation of Malawi's trade basket against the dollar, reversed the effect of the exchange rate adjustment on the kwacha's REER by early 1983 (Chart 6). After a further devaluation by 12 percent in September 1983, the kwacha

was devalued by 3.3 percent in January 1984 and repegged to a basket more representative of the country's trade pattern in order to prevent a further unintended appreciation of the nominal effective exchange rate. However, due to the strong rise of the U.S. dollar during 1984, this objective could not be met and the kwacha's EER rose by 10 percent in nominal terms and by 14 percent in real terms over the year.

During the whole period of the SDR peg, inflation differentials between Malawi and the countries represented in the SDR led to a real appreciation of the kwacha against the SDR and its trading partners. Adjustments in the peg rate appear to have stemmed less from efforts to maintain Malawi's competitive position, as from the authorities' concern about Malawi's nominal effective exchange rate that has dominated their exchange rate policy and finally led to the abandoning of the SDR peg.

3. Kenya

Kenya abandoned its U.S. dollar standard and linked its currency to the SDR on October 27, 1975, in an effort to maintain a stable value of the shilling in terms of its major trading partners. At the same time, it devalued by about 38 percent to correct for the unfavorable appreciation a strong U.S. dollar had caused. Simultaneously, Tanzania and Uganda pegged their currencies to the SDR which together accounted for over 1/4 of Kenya's exports and about 8 percent of its imports.

Kenya's dominant trade partner was the United Kingdom with a share of 20 percent during the first sample period, 1970-73. U.S. dollar-denominated trade with the United States and oil exporters in the Middle East accounted for over 11 percent of trade, and Uganda, Germany, Tanzania, and Japan followed with trade shares of 7-8 percent; other countries accounted for the remaining 38 percent of trade. In the period 1975-78, the U.K. share fell to barely 17 percent while those of the U.S. dollar and Germany advanced to 16 percent and 12 percent, respectively. Japan maintained its trade share but those of Tanzania and Uganda halved; 41 percent of trade was covered by other countries.

The trade baskets tailored after the criteria established above include 80 percent and 78 percent of trade in the two periods, respectively. Their structure differs somewhat from the composition of the SDR. The 1978 SDR basket covered about 75 percent of the currency weights in Kenya's trade basket, and the revision of the baskets reduced the coverage to 67 percent. The structural differences notwithstanding, the nominal exchange rate indices of the SDR and the EER basket were closely related until mid-1981 when the Uganda shilling was devalued by 89 percent causing a drop in the value of the tailored trade basket and therefore a relative appreciation of the SDR and the U.S. dollar. Subsequently, the trade basket's depreciation against the U.S. dollar accelerated relative to the SDR's and by late 1984 the discrepancy amounted to over 50 percent (Chart 7). Kenya's trade partners

experienced on average higher inflation rates than the SDR currencies over the whole period (Chart 9), leading to a depreciation of the SDR's real effective exchange rate to 70 percent of its late 1975 level by early 1981. Subsequently, the SDR's nominal appreciation against the trade basket and lower inflation in the SDR currencies resulted in a modest real appreciation of the effective SDR index to 95 percent of its initial level by end-1984.

The Kenyan shilling appreciated modestly in real terms during the first year of the SDR peg, before Kenya's domestic inflation rate rose sharply from 1977 through early 1978 (Chart 9) causing its REER to appreciate by about 10 percent (Chart 8). Subsequently, domestic inflation fell below the trading partners', and Kenya's REER depreciated through 1981 to about 80 percent of its value at the adoption of the SDR peg. World market prices for Kenya's main exports, coffee and tea, had declined since 1978 while import costs rose continuously, eroding Kenya's competitive position and indicating some decline in the exchange rate level sustainable over the medium term. In view of serious balance of payments problems, the shilling was devalued in February 1981 by 4.8 percent and again by 15 percent in September 1981, neutralizing the effect of the sizable devaluation of the Ugandan shilling on its REER index. However, with a new wave of domestic price increases starting in the last quarter of 1981, the Kenyan shilling appreciated by 14 percent in real terms through late 1982. Despite further devaluations in December 1982 of 13 percent and 2 percent, the REER continued to appreciate owing to an appreciation of the EER caused by the strong U.S. dollar, but also owing to continuously high domestic inflation relative to the trade partners'.

The problems Kenya faced in stabilizing its REER and maintaining its competitiveness therefore appear to be mainly of domestic origin including untimely adjustment to changing external conditions. An SDR peg accommodated by compatible monetary policies and adjusted for the 1981 large step devaluation in Uganda, one of its main export partners, would have provided stimuli to Kenya's external competitiveness comparable to the policies followed since 1981.

4. Tanzania

Tanzania changed its currency peg from the U.S. dollar to the SDR on October 27, 1975, simultaneously with Kenya and Uganda which accounted for about 10 percent of its total trade. The new peg rate also encompassed a devaluation of 38 percent to stem the effect of rising import prices and declining export volumes on the balance of payments.

Tanzania's main trade partners during 1970-73, the first sample period, were the United Kingdom, China, U.S. dollar-denominated trade with the United States and Iran, and Kenya which together accounted for almost half of total trade. During 1975-78, Germany emerged as a major trading partner and, together with the United Kingdom and trade in U.S. dollar accounted for over 40 percent of Tanzania's trade flows, while trade with China, Kenya, and Zambia fell substantially.

The trade baskets used here cover 87 and 85 percent of total trade in the two respective periods. Their structures differ substantially from the composition of the SDR baskets; the 1978 SDR basket covered only 58 percent of the currency weights in Tanzania's trade basket and about 57 percent after the basket revision in 1981. Despite these structural discrepancies, the value of the SDR basket approximated the EER basket rather closely and only after mid-1983 appreciated by more than 10 percent above the trade basket, reaching 20 percent by end-1984 owing to the sharp rise of the U.S. dollar (Chart 10). Since inflation differentials between the SDR currencies and Tanzania's trade partners were minor (Chart 12), the SDR approximated the trade basket even better in real terms, and the SDR's effective exchange rate appreciated by only 10 percent above its initial level through end-1984 (Chart 11).

In contrast, the shilling's REER appreciated about 10 percent beyond its level at the inception of the SDR peg by early 1977 due to higher domestic price increases in Tanzania than its trade partners (Chart 11). As relative domestic inflation was contained by the end of the year, the REER declined to its initial level before accelerating domestic price increases caused a real appreciation of 15 percent by the end of 1978. Faced with high domestic inflation, a sizable balance of payments deficit and declining production and exports, the authorities devalued the shilling by 10 percent against the SDR and repegged to an undisclosed currency basket intended to reflect the role of Tanzania's major trading partners. The shilling's exchange rate subsequently matched that of the U.S. dollar fairly closely until early 1982, while rampant domestic inflation resulted in a continuous appreciation of the REER to about 70 percent above its level at the beginning of the SDR peg. In March 1982, the shilling was further devalued by 10 percent and the composition of the peg basket modified to reduce the share of the strengthening U.S. dollar. Two further devaluations of 20 percent and 36 percent followed in June 1983 and June 1984, but they only briefly interrupted the shilling's appreciation in real terms.

Overall, the SDR is a rather close proxy for Tanzania's trade weighted basket. Since the abandoning of the SDR peg in 1979, the shilling's REER has doubled from its original level with disastrous consequences for Tanzania's external competitive position, owing mainly to rampant domestic inflation and the lack of timely and appropriate exchange rate adjustments.

5. Uganda

Together with Kenya and Tanzania, which accounted for 17 percent of its trade during 1970-73, Uganda switched from a U.S. dollar peg to an SDR peg on October 27, 1975, simultaneously devaluing by 38 percent against the U.S. dollar. Uganda's trade flows were concentrated on the United Kingdom (21 percent), Kenya, and the United States which held trade shares of 13-16 percent, followed by Japan and Germany accounting for 6-9 percent of trade during 1970-73. In the second sample period, 1975-78, the United States and Kenya emerged as the dominant partners

with trade shares of 18-21 percent while the U.K. share fell to 17 percent, and those of Germany and Japan to 5 percent. The EER baskets tailored here cover about 87 percent of total trade in both periods; their structures are substantially different from the SDR basket's due to the important role of the Kenyan shilling and the pound sterling.

However, the fact that the Kenyan shilling was also pegged to the SDR dampened differential developments of the values of the trade basket and the SDR which were minor through 1981 (Chart 13). Subsequently, the appreciating U.S. dollar induced an appreciation of the SDR's effective exchange rate by 10 percent at end-1983 and by 25 percent at end-1984 above its initial level. In real terms, the SDR appreciated even less relative to the trade basket as inflation in the SDR countries was continuously lower than for Uganda's trade partners (Charts 14 and 15).

The shilling's REER, however, showed an accelerating appreciation after mid-1976 in the presence of persistently high domestic inflation. During almost six years of an unadjusted SDR peg, the real effective exchange rate rose by over 1,000 percent which led to a devaluation of 89 percent against the U.S. dollar in June 1981 and subsequent discrete exchange rate adjustments according to a set of indicators. In August 1982, a dual exchange rate system was introduced with a managed and a floating exchange rate that were unified to an independent floating system in June 1984. While Uganda's effective exchange rate depreciated by 79 percent in nominal terms between August 1981 and December 1984, the high domestic inflation relative to the trade partners limited the depreciation in real terms to 51 percent over the same period.

Overall, Uganda's disadvantageous experience with its SDR peg and its abandonment in 1981 aroused out of domestic economic developments rather than the nature of the SDR as a peg standard itself.

6. Mauritius

Mauritius pegged its currency to the SDR on January 5, 1976, delinking the rupee from the pound sterling in an effort to stabilize its receipts from sugar exports to the EEC ^{1/}, and to mitigate the effect on domestic prices of exchange rate movements in Mauritius' main supplying countries.

Its main trading partner is the United Kingdom which held an average trade share of 37 percent, during 1970-73. Canada followed with a share of 11 percent; oil imports from Iran and trade with the United States amounted to about 9 percent, and trade with South Africa to 6 percent, while the remaining 38 percent of trade involved other countries. During 1975-78, France became the most important partner

^{1/} Denominated in European units of account, the fluctuations of which were better approximated by the SDR than by the pound sterling.

after the United Kingdom with 9 percent and 39 percent of trade, respectively; the dollar's share remained at 9 percent and South Africa's rose to 17 percent, leaving other countries with 36 percent of trade.

The constructed EER basket accounted for 85 percent and 91 percent of Mauritius' trade in the two sample periods. Although the 1978 SDR basket included about 85 percent of the currency weights in the EER basket and 72 percent after the basket revision in 1981, the basket structures differed markedly.

Mauritius' trade structure is similar to Malawi's in its concentration on the United Kingdom: the SDR value moved therefore similarly against Mauritius' EER basket in nominal and real terms as for Malawi--in contrast to the developments of the domestic currencies (Charts 16 and 17). In early 1976, Mauritius' domestic inflation was somewhat lower than that of its trade partners and the rupee appreciated slightly in real terms (Charts 17 and 18). Subsequently, the trade partners' average price index rose above Mauritius', and relative prices remained stable until 1979, leaving the rupee's effective exchange rate in real terms about 5 percent above its initial level. The devaluation of almost 23 percent in October 1979 caused a steep increase in the domestic price level and by early 1980 the REER had climbed back to almost its predevaluation level. When in early 1981 the U.S. dollar firmed even more sharply against Mauritius' trading partners than against the SDR, the REER rose to over 108 percent before the rupee was devalued again in September by almost 17 percent. The subsequent pressure on domestic prices led to some rebound in the real effective exchange rate which was enhanced by the U.S. dollar-fueled appreciation of the SDR against the trade basket. In February 1983, the authorities decided to abandon the SDR peg and switch to a basket more representative of Mauritius' trade pattern. Subsequently, the effective exchange rate of the rupee depreciated to about 70 percent of its early 1976 level, and the REER declined to about 95 percent of its level at the adoption of the SDR peg.

Overall, the SDR approximated Mauritius' trade basket reasonably well until 1984 when it appreciated markedly against the trade basket on the strength of the U.S. dollar. Combined with prevailing monetary policies and inflation rates in the SDR currencies, the instabilities of the REER were smaller for the SDR than for the rupee. The large step devaluations did not permanently stimulate Mauritius' competitive position since the effects were eroded by the induced surges in domestic prices and the relative appreciation of the SDR from 1981 on. Since the adoption of a different composite currency basket peg in early 1983, the REER of the rupee has been virtually stabilized owing to a slight continuous depreciation of the rupee and low domestic inflation compared to its trade partners.

7. Zaire

Zaire pegged its currency to the SDR on March 12, 1976, simultaneously depreciating by 42 percent against the U.S. dollar, its previous peg standard, in an effort to restore the profitability of its export sector, to re-establish a sustainable medium-term balance of payments equilibrium, and to maintain a more stable value of its currency against its major trading partners. Zaire is a main exporter of primary products such as copper, cobalt, and diamonds. Its copper is exported mostly to a processing plant in Belgium, which therefore held a trade share of 27 percent during 1970-73. The Netherlands, France, Germany, the United Kingdom, the United States, and Japan held shares of 6-8 percent, and the remaining 30 percent of trade related to other countries. In 1975-78, Belgium's share fell to 21 percent, while those of the United Kingdom and the United States rose to 10 percent; France, Italy, and Germany held shares of 7-9 percent, and other countries accounted for 36 percent of trade.

For the individually tailored baskets, import weights were used as discussed above. They included 78 percent and 81 percent of total imports in the two sample periods. The 1978 SDR basket included virtually all of the currencies in Zaire's import basket, however, it contained only 52 percent after the basket revision since--apart from changes in the general import pattern--the Belgian franc was not included in the revised SDR basket, but accounted for 22 percent of Zaire's import basket.

The value of the SDR basket was somewhat below Zaire's import basket until 1981, when the appreciation of the U.S. dollar and its heavy weight in the SDR basket caused the SDR's effective exchange rate to appreciate (Chart 19). By end-1984, the SDR value was about 25 percent above Zaire's second best basket. Since relative prices between the two baskets were rather stable throughout the period and have risen only slightly since 1983 (Chart 21), the SDR value deviated less from the import basket in real terms (Chart 20).

These differences were small compared to the large variations in the exchange rate indices of Zaire (Charts 19 and 20). ^{1/} Zaire experienced sizably higher inflation rates than its trading partners over the whole period (Chart 21), and it corrected for the resulting sharp appreciations of its real exchange rate periodically through major devaluations: by 34.5 percent in January 1979, by 25 percent in August 1979, by 30 percent in February 1980, by 40 percent in June 1981, and by 77.5 percent in September 1983 when it abandoned the SDR peg. Zaire adopted a floating exchange rate regime with dual exchange markets which were unified in February 1984. Since delinking from the SDR, Zaire's REER fluctuated about 20-30 percent below its level at the inception of the SDR peg.

^{1/} For the calculations presented official market rates have been used for lack of alternative data but it should be noted that throughout the period substantially depreciated parallel market rates had to be borne by many importers. Their inclusion would dampen the size of changes in Zaire's REER.

While the SDR represented price and exchange rate developments in Zaire's trade partners reasonably well, high domestic inflation made large-step devaluations necessary which were not implemented in time and therefore led to the abandoning of the SDR peg system.

8. Zambia

Zambia delinked the kwacha from the U.S. dollar and pegged it to the SDR on July 9, 1976, simultaneously devaluing by about 20 percent in order to improve the competitiveness of its export sector and reduce the country's high dependency on imports. Its exchange and trade system has been very restrictive throughout the period considered because of Zambia's continuously difficult balance of payments position.

Zambia is, like Zaire, a main exporter of copper. Its main trading partners during 1970-73 were the United Kingdom and Japan which accounted for 21 percent and 16 percent of trade, respectively; Italy, Germany, the United States (including oil imports from Iran), South Africa, and France held trade shares of 6-9 percent, and 26 percent of trade involved other countries. During 1975-78, the shares of the United Kingdom and Japan fell to 19 and 12 percent, respectively, while the U.S. dollar covered 16 percent, Germany 12 percent, Italy 7 percent, France 6 percent, and other countries 28 percent of trade. Import weights were used for the individual tailored baskets as discussed above. The resulting baskets covered 86-87 percent of total imports. The SDR basket included some 73 percent of the currency weights in the tailored basket after the basket revision in 1981 against 70 percent previously, as Zambia's import pattern changed toward a heavier weight for the U.S. dollar. But the marked structural differences due to the high trade weight of the United Kingdom and the inclusion of South Africa remained.

These differences, however, were not reflected in major discrepancies of the nominal value indices of the SDR and the EER basket until 1983 when the latter depreciated faster against the U.S. dollar and the SDR's effective exchange rate rose (Chart 22). Throughout the period, inflation was lower in the SDR countries and the relative price index increased (Chart 24). Consequently, the real effective SDR exchange rate depreciated about 10 percent until 1980 and later rebounded slowly to reach its initial level by late 1984 (Chart 23).

With the adoption of the SDR peg, the kwacha was devalued by 20 percent. Since domestic inflation rates were higher than for the trade partners, Zambia's REER rose almost 9 percent in four months. This level was maintained until late 1977 and in early 1978 the authorities reacted to the continued fall in relative prices of the trade partners with a 10 percent devaluation. After a partial rebound, the REER showed a declining trend to about 5 percent below its initial level by end-1980 owing to relatively low inflation and a moderate depreciation of the SDR against Zambia's import basket. Subsequently, however, the inflation differential to its trading partners widened and, combined with the effective appreciation of the SDR, the kwacha appreciated strongly

in real terms. In January 1983, the authorities devalued by 20 percent to compensate for the competitive disadvantage of the mining sector, but the resulting pressure on the domestic price level absorbed half of the effected drop in the REER. In July 1983, Zambia abandoned the SDR peg and the exchange rate has since been managed in accordance with an undisclosed basket more representative of Zambia's trade pattern. Subsequently, the kwacha has depreciated sharply and continuously, while price increases have exceeded the trade partners'. As a result, the kwacha's REER had depreciated by 25 percent by end-1984.

Similar to the development in Zaire--although less pronounced--the SDR represented a reasonably good proxy for Zambia's import basket, but problems related to inflationary developments led to a change in the exchange rate regime and peg standard.

9. Sierra Leone

Sierra Leone repegged its exchange rate from the pound sterling to the SDR on November 1, 1978, devaluing by 5 percent at the same time. Its trade structure differs substantially from the SDR composition since its main trade partner is the United Kingdom with an average trade share of 37 percent during 1973-76. The U.S. dollar (including oil imports from Nigeria) accounted for 15 percent of trade, followed by the Netherlands, Japan, and Germany with 6-8 percent. The remaining 21 percent of trade was related to other countries. The trade basket constructed covered 79 percent of Sierra Leone's trade, of which the 1978 (1981) SDR basket included 96 percent (85 percent), although in quite different proportions.

Since the trade basket's value index was somewhat higher than the SDR's until 1981, the SDR's effective exchange rate depreciated by about 8 percent (Chart 25). Subsequently, the strength of the U.S. dollar resulted in an effective appreciation of the SDR to about 17 percent above the trade basket by end-1984. Relative prices fluctuated somewhat above the initial level (Chart 27), and in real terms the SDR's effective exchange rate depreciated to about 10 percent below the trade basket in 1980, and later rose slowly to its initial level by 1983 and further by 10 percent through end-1984.

The REER of the leone was fairly stable in the first two years of its SDR peg as the price level in Sierra Leone ranged somewhat above the trade partners' (Charts 26 and 27). From 1981, domestic inflation accelerated and remained above the trade partners', putting increasing pressure on the exchange rate and weakening the country's competitive position. For political reasons, however, the authorities were reluctant to devalue the leone and a sizable parallel market developed at a sharply depreciated rate. In December 1982, a dual market exchange rate system was introduced to relieve the difficult balance of payments position. As a large part of Sierra Leone's export receipts continued to be channeled through the more depreciated unofficial market, the authorities devalued the official exchange rate by almost 50 percent in

July 1983, unified the official exchange markets and switched to a dollar peg. The leone's REER (based on the official exchange rate) was reduced to 130 percent of its level at the adoption of the SDR peg, but rose steadily thereafter to 300 percent of its 1979/1980 level by the end of 1984, while the unofficial market continued to flourish. In February 1985, the authorities devalued by 58 percent, abandoned the U.S. dollar peg and relinked the leone to the SDR.

The real effective exchange rate movements in Chart 26 are likely to overstate the size of the real appreciation of the leone since they are based on the official exchange rate. Nevertheless, the loss in Sierra Leone's competitiveness and the abandoning of the SDR peg resulted from other factors, e.g., relative price movements, not the peg standard itself, since the SDR value deviated comparatively little in real terms from the trade basket's. The adoption of a U.S. dollar peg in July 1983 exacerbated the leone's real effective appreciation as the U.S. dollar continued to appreciate strongly against all major currencies and therefore also the SDR and Sierra Leone's trade partners. This appears to have been one reason for the authorities' decision to revert to an SDR peg in early 1985.

10. Seychelles

The Seychelles repegged the rupee from the pound sterling to the SDR on November 5, 1979. Tourism receipts are the major source of foreign exchange and were therefore considered in combination with merchandise export and import flows in the construction of currency weights. In the resulting "trade" basket, the pound sterling, the Kenyan shilling, and the French franc carry the largest weight--in contrast to the SDR's composition. The 1978 SDR basket included 70 percent of the currency weights in the EER basket and only 58 percent after the basket revision in 1981. While on average the tailored basket was slightly appreciated against the SDR in nominal and real terms until 1981, the SDR's effective exchange rate subsequently rose steadily on the strength of the U.S. dollar, and by end-1984 reached 35 percent above its 1980 level (Chart 28). As inflation in SDR currencies ranged below the average of the Seychelles' trade partners, the SDR's effective appreciation in real terms was limited to about 18 percent by end-1984 (Charts 29 and 30).

During the first year of the SDR peg, the REER of the rupee moved closely with that of its trade partners. As rising import prices especially for oil, rice and fish caused pressure on domestic prices, the authorities revalued the rupee by 15 percent in March 1981 lifting the REER of the rupee 20 percent above its initial level. Subsequently, domestic inflation was contained through price controls and ranged below the trade partners', compensating for the relative appreciation of the exchange rate and leaving the REER virtually constant. In mid-1983, sharp price increases raised the rupee's REER by about 10 percent. Subsequently, strict price controls repressed domestic inflation while

the exchange rate continued to appreciate; as a result, the REER remained at a level 30 percent above its value during the first year of the SDR peg. In comparison, the SDR had appreciated less than 20 percent in real effective terms through end-1984.

The revaluation of the rupee in 1981 was followed by a decline in tourist receipts and increased private capital outflows which since have exerted substantial and growing pressure on the balance of payments. This problem was enhanced through the appreciation of the SDR--and with it the rupee--against the currencies of the Seychelles' trade partners that was fueled by the strength of the U.S. dollar against all major currencies after 1981.

11. Somalia

Somalia repegged its currency to the SDR on July 1, 1982 from the previous U.S. dollar peg, unifying a dual exchange rate system and devaluing by 17 and 34 percent on the import and export side, respectively. The aim was to enhance the profitability of export industries, promote import substitution, attract private capital inflows, and reduce the administrative allocation of scarce foreign exchange, but also to increase the stability of the effective exchange rate.

Somalia's most important trade partners during 1976-79 were Italy and Saudi Arabia, accounting for 19 and 12 percent of total trade flows, respectively, followed by the United States with 7 percent. The trade basket tailored here accounted for 81 percent of Somalia's trade flows. However, only 29 percent of its currency weights were covered by the SDR basket. These structural differences, in particular the heavier weight of the U.S. dollar in the SDR basket, resulted in a 10 percent appreciation of the SDR against Somalia's EER basket from mid-1982 to 1984 (Chart 31). As inflation was lower in the SDR countries relative to Somalia's trade partners for the whole period, the SDR's appreciation in real effective terms reached only 5 percent by end-1984 (Charts 32 and 33).

While the shilling was pegged to the SDR with margins of 2 1/4 percent about the peg rate, the Central Bank adjusted the exchange rate in terms of the U.S. dollar only once during the period of the SDR peg (in January 1983). At the same time, Somalia's domestic price increases ranged far above those of its trade partners and caused the shilling's REER to appreciate rapidly (Charts 32 and 33). The authorities therefore introduced a managed floating system in July 1983, whereby the shilling was pegged to the SDR adjusted for relative price developments vis-a-vis the five countries represented in the SDR basket. Margins of 7 1/2 percent about the fixed peg rate in real terms were to be observed with indication bands of 2 1/4 percent. A devaluation of 13 percent in October 1983 had only a brief dampening effect on Somalia's REER, as domestic inflation rates continued to accelerate. By mid-1984, the REER reached a level of 150 percent above that in July 1982. In September 1984, a devaluation of 33 percent reduced the real effective

appreciation temporarily to 70 percent, but its rising trend continued subsequently. In January 1985, the shilling's exchange rate for the bulk of private sector transactions was allowed to float freely while the official rate was devalued by 28 percent and subsequently adjusted in accordance with the real SDR peg and a fixed monthly discount in order to narrow the gap between official and market rates.

12. Rwanda

Rwanda switched from a U.S. dollar peg to an SDR peg on September 6, 1983 simultaneously devaluing the Rwanda franc by 5 percent. The most important trade partners during 1976-79 were the United States, Belgium, and Kenya, with trade shares of about 15 percent, followed by Tanzania, Germany, Japan, and France with shares of 7-9 percent. The trade basket constructed covers about 93 percent of Rwanda's trade flows, while the 1981 SDR basket includes only about 47 percent of these.

The value of the SDR approximated the EER basket very closely before mid-1984 when the rise of the U.S. dollar resulted in an appreciation of the SDR's effective rate by about 8 percent (Chart 34). Since inflation in the SDR countries was lower than in Rwanda's trade partners over the whole period, the SDR deviated in real effective terms by less than 3 percent from the trade basket (Charts 35 and 36). During the first eight months of the SDR peg, the franc depreciated in real terms as domestic price increases were contained below the trade partners'; this was reversed subsequently, however, and the franc's REER appreciated about 10 percent in the second half of 1984.

While the SDR seems to be an appropriate peg standard, the analysis of a longer time period shows that the Rwanda franc had appreciated by over 50 percent during 1980-83, before the adoption of the SDR peg, and a significant adjustment in the level of the exchange rate is needed to regain Rwanda's external competitive position.

13. Burundi

Burundi replaced the U.S. dollar by the SDR as a peg standard on November 22, 1983, simultaneously devaluing by 23 percent. U.S. dollar trade accounted for 27 percent of Burundi's trade flows during 1976-79, followed by Belgium, Germany, and France, with shares of 7-11 percent. The EER basket constructed here covers about 79 percent of all trade flows. Due to the emphasis of both baskets on the U.S. dollar, the 1981 SDR basket included about 67 percent of the currency weights in the trade basket.

As in Rwanda, the SDR was a very close proxy for Burundi's trade basket through 1984 (Charts 37-39). However, the comparatively high inflation rate in Burundi caused the REER of the franc to appreciate by 25 percent during the first year of the SDR peg or 50 percent above the level maintained during 1978. While the SDR appears to be an appropriate peg standard for Burundi, the level of the exchange rate poses a major problem for exchange rate management and the attainment of a competitive external position.



Burma: Effective Exchange Rate Indices, Jan 1975-Dec. 1984
(Jan. 1975 = 100, end-of-period data)

Chart 1: Nominal Effective Rates 1/

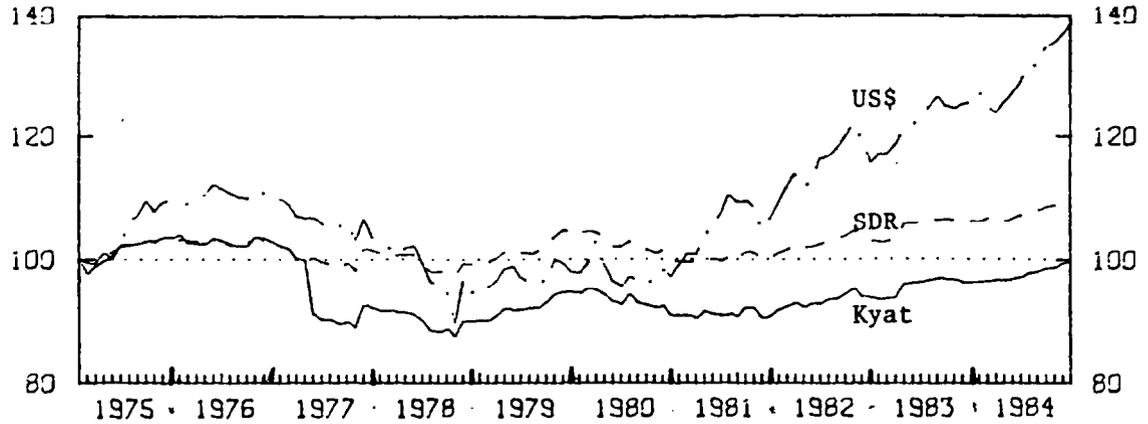


Chart 2: Real Effective Rates 2/

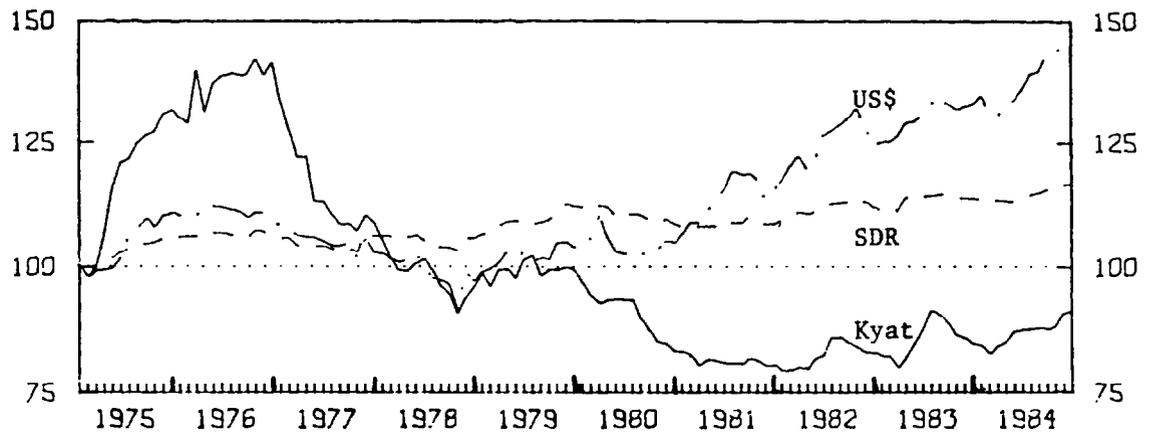
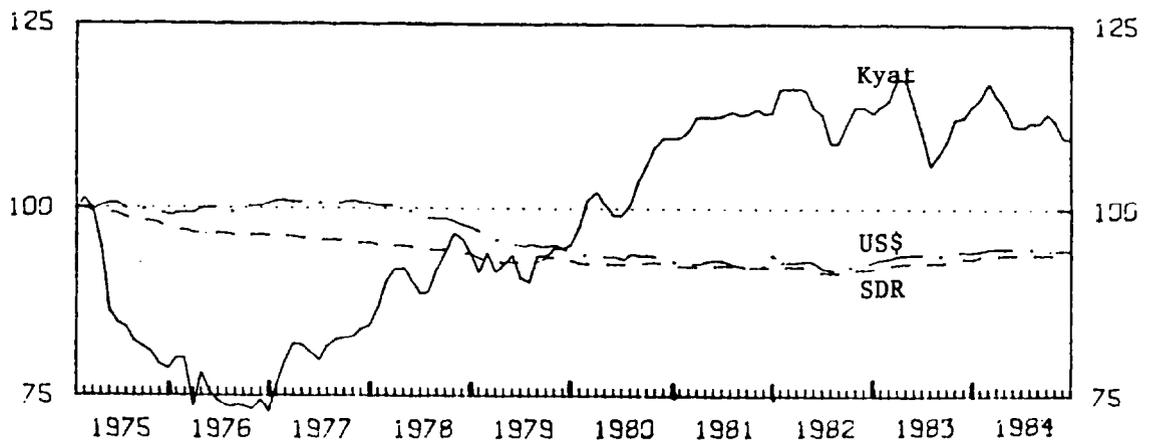


Chart 3: Relative Consumer Prices 3/



1/ Dollar values of the Kyat/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Burma/the SDR currencies.



Malawi: Effective Exchange Rate Indices, June 1975 - Dec. 1984
(June 1975 = 100, end-of-period data)

Chart 4: Nominal Effective Rates 1/

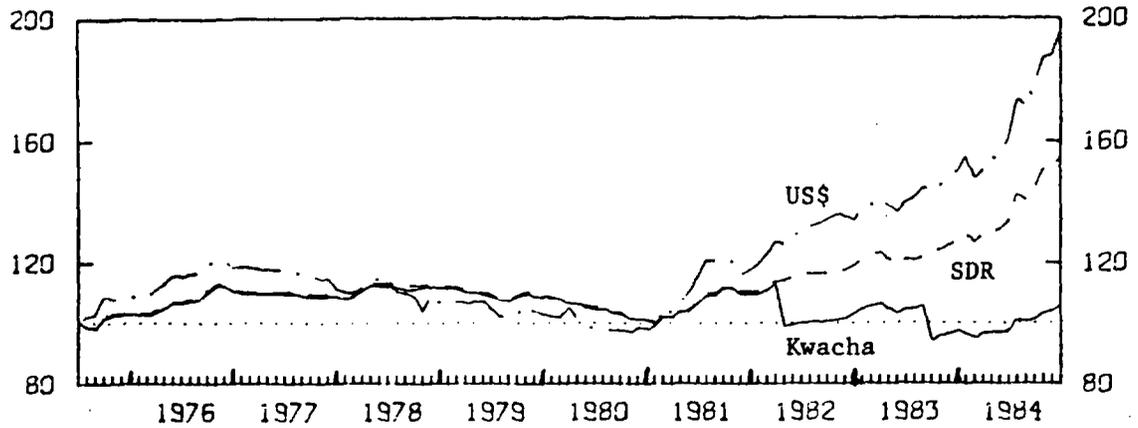


Chart 5: Real Effective Rates 2/

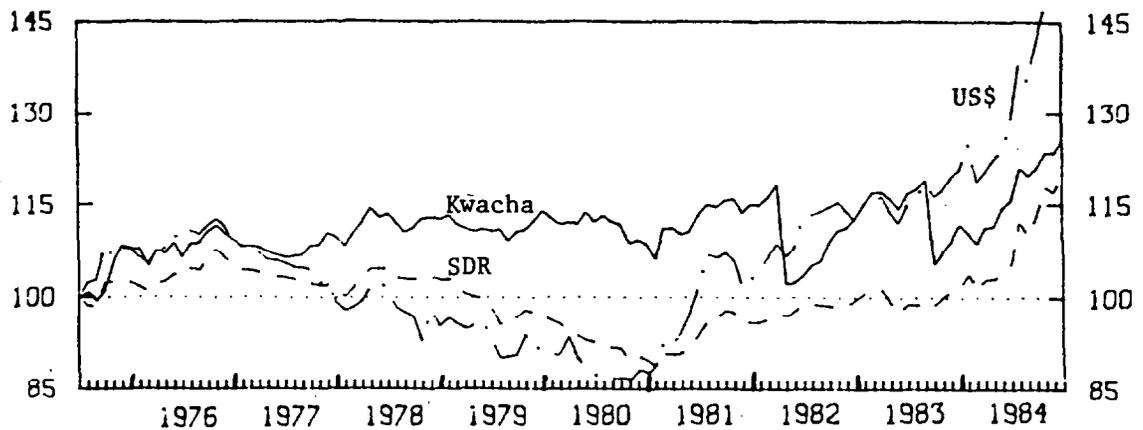
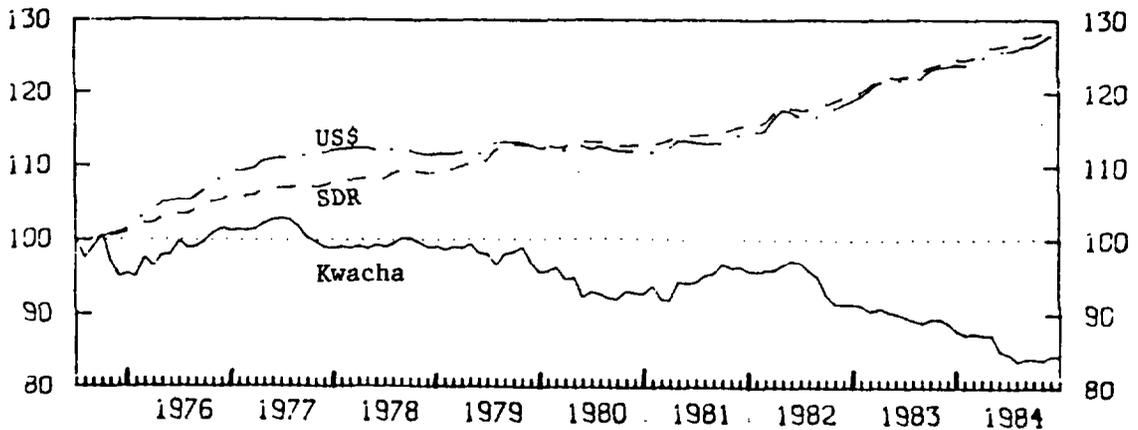


Chart 6: Relative Consumer Prices 3/



- 1/ Dollar values of the Kwacha/SDR relative to the trade weighted basket; a decline indicates depreciation.
- 2/ Nominal effective rates adjusted for relative consumer prices.
- 3/ Partner countries' consumer price indices relative to consumer prices in Malawi/the SDR currencies.



Kenya: Effective Exchange Rate Indices, Oct. 1975 - Dec. 1984
(Oct. 1975 = 100, end-of-period data)

Chart 7: Nominal Effective Rates 1/

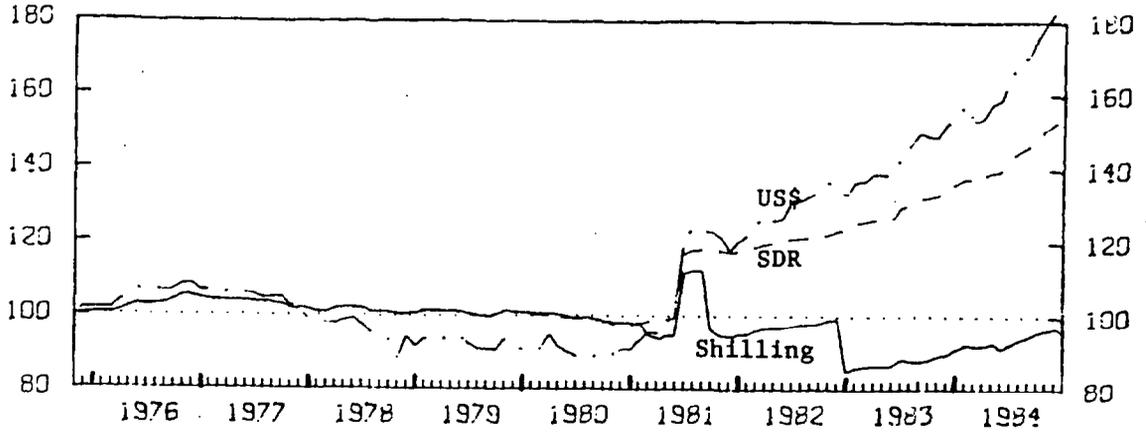


Chart 8: Real Effective Rates 2/

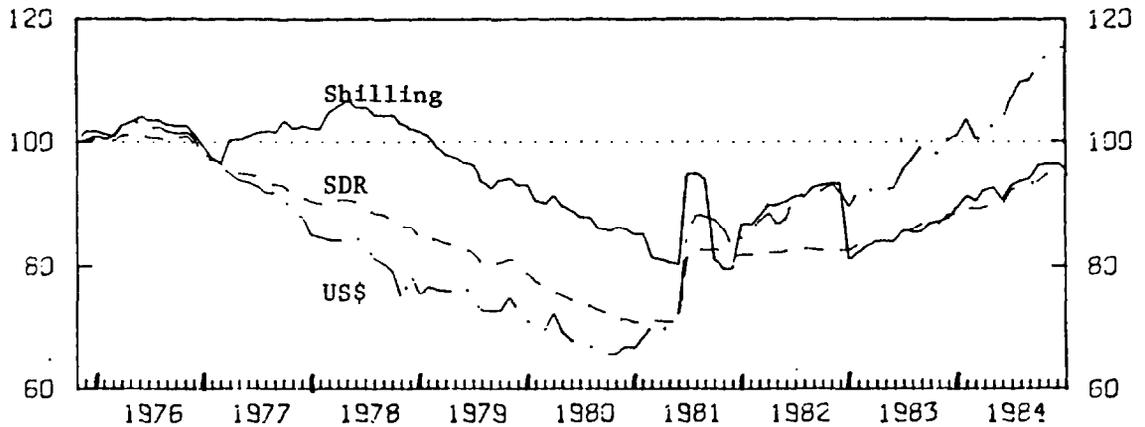
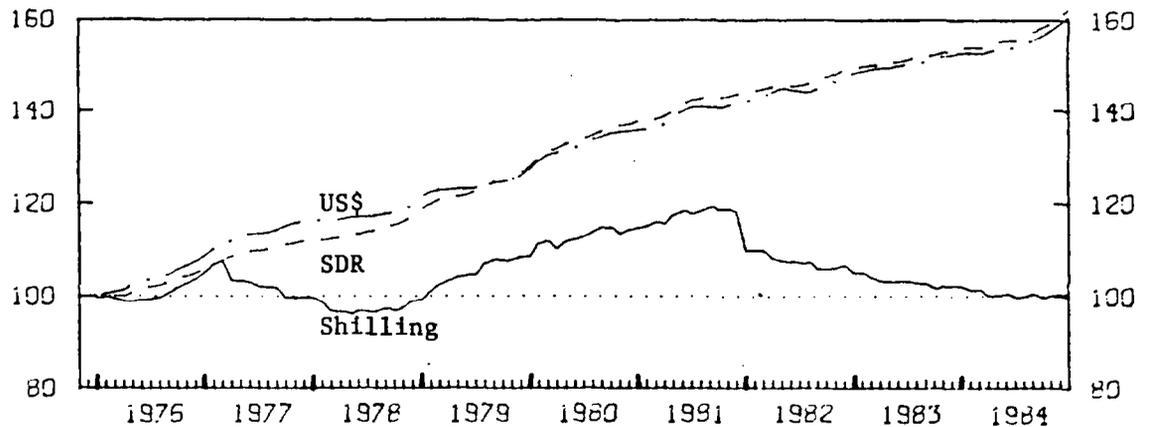


Chart 9: Relative Consumer Prices 3/



1/ Dollar values of the Shilling/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Kenya/the SDR currencies.



Tanzania: Effective Exchange Rate Indices, Oct. 1975 - Dec. 1984
(Oct. 1975 = 100, end-of-period data)

Chart 10: Nominal Effective Rates 1/

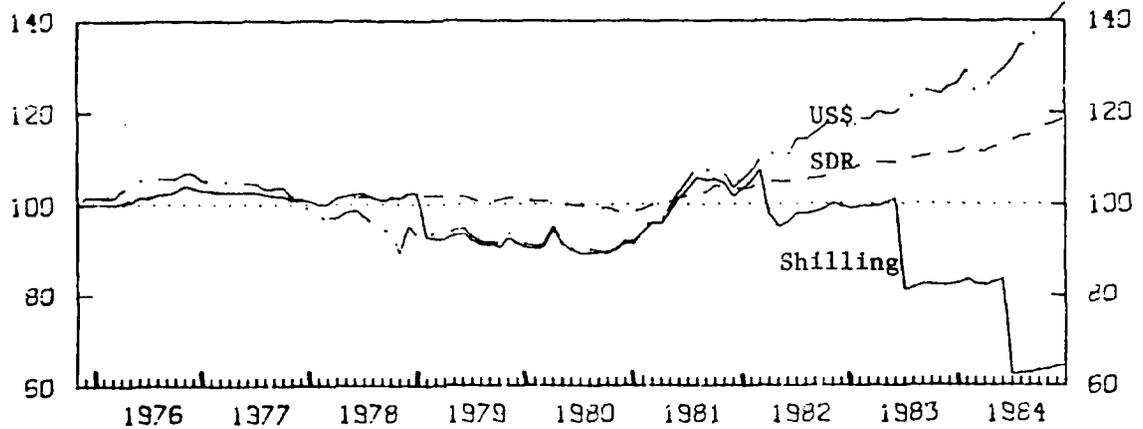


Chart 11: Real Effective Rates 2/

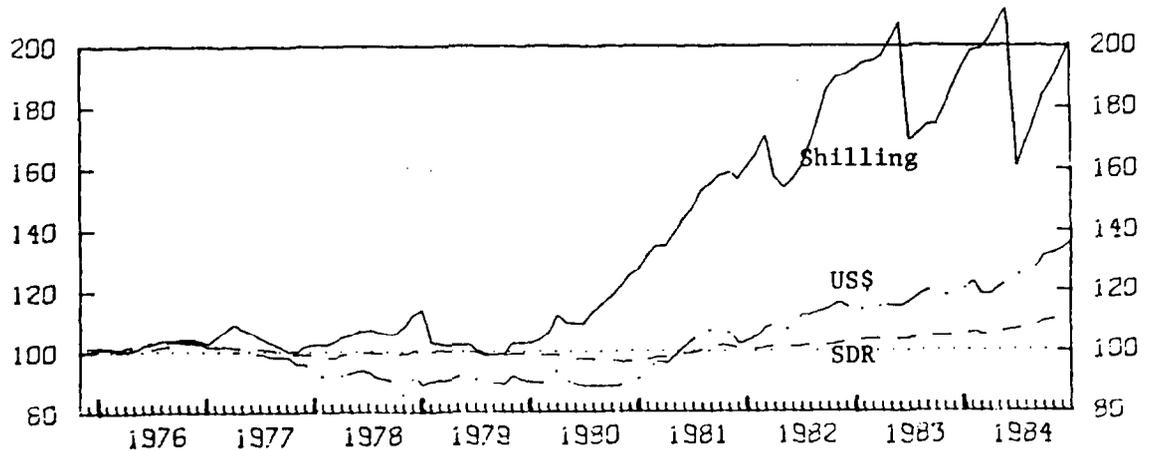
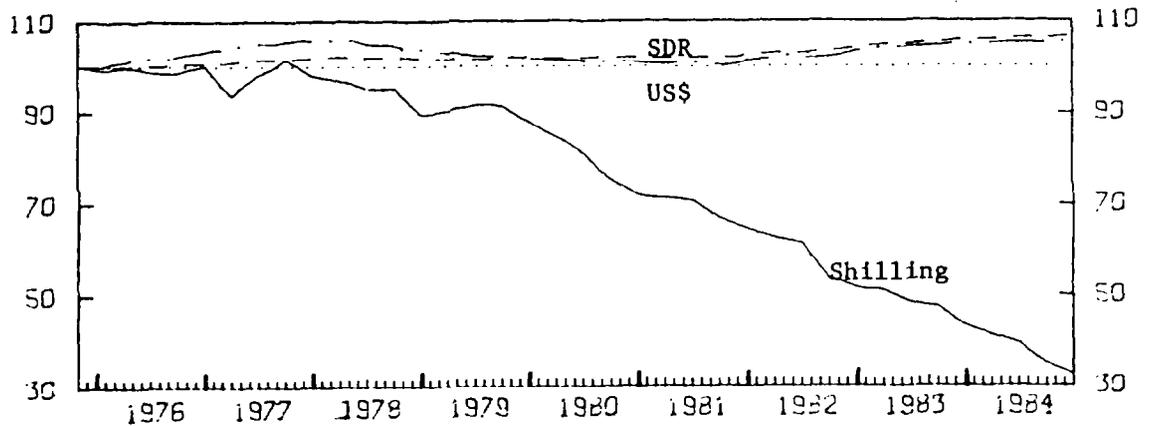


Chart 12: Relative Consumer Prices 3/



- 1/ Dollar values of the Shilling/SDR relative to the trade weighted basket; a decline indicates depreciation.
- 2/ Nominal effective rates adjusted for relative consumer prices.
- 3/ Partner countries' consumer price indices relative to consumer prices in Tanzania/the SDR currencies.



Uganda: Effective Exchange Rate Indices, Oct. 1975 - Dec. 1984
(Oct. 1975 = 100, end-of-period data)

Chart 13: Nominal Effective Rates 1/

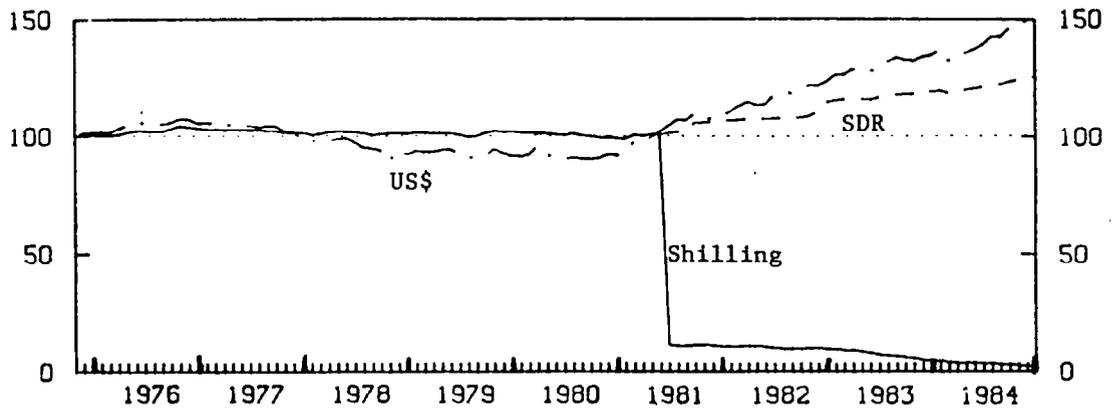


Chart 14: Real Effective Rates 2/

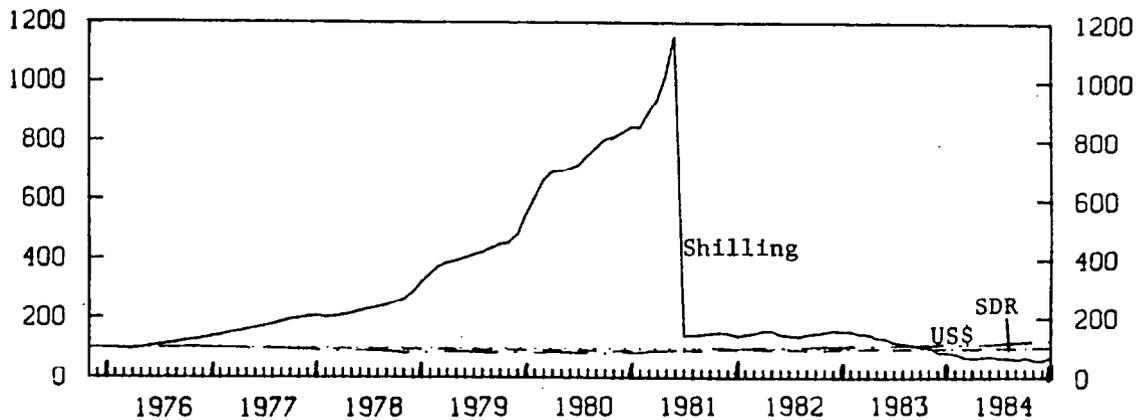
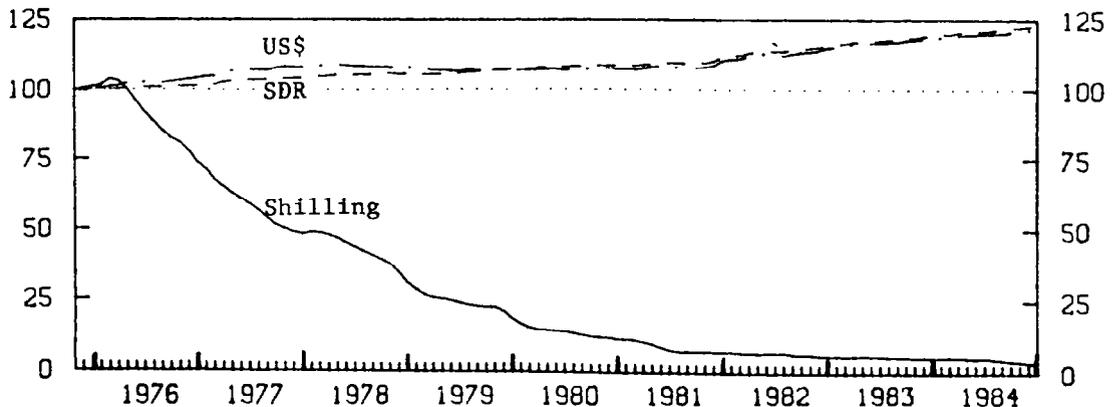
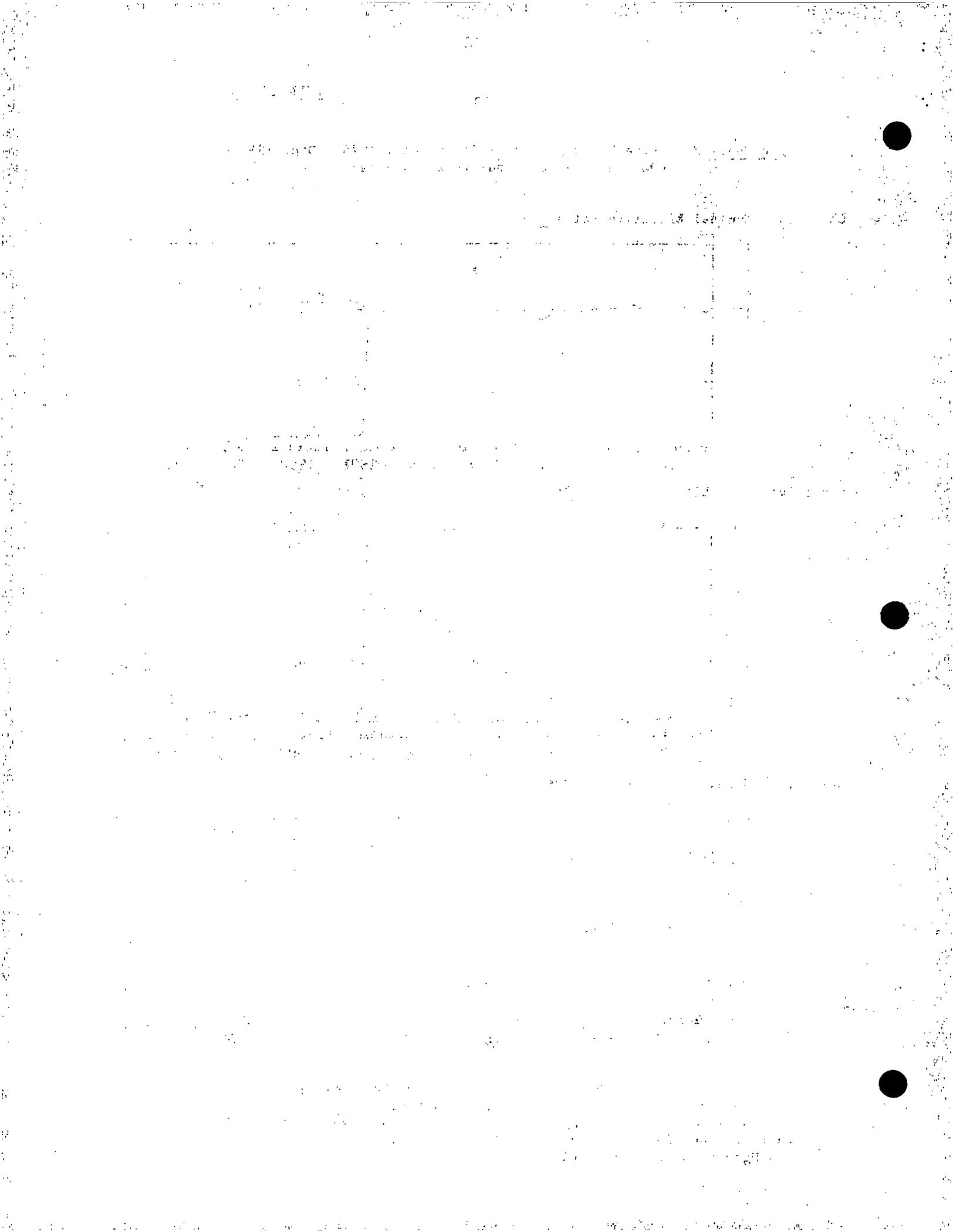


Chart 15: Relative Consumer Prices 3/



1/ Dollar values of the Shilling/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Uganda/the SDR currencies.



Mauritius: Effective Exchange Rate Indices, Jan. 1976 - Dec. 1984
(Jan. 1976 = 100, end-of-period data)

Chart 16: Nominal Effective Rates 1/

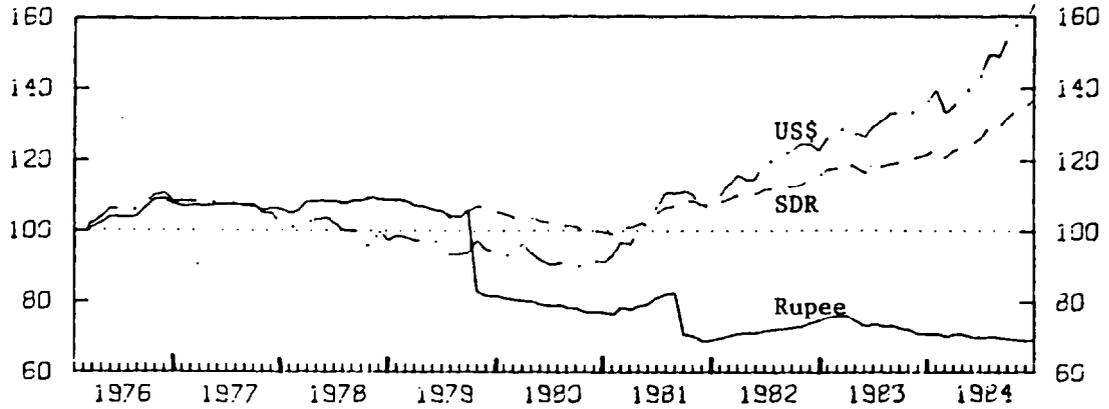


Chart 17: Real Effective Rates 2/

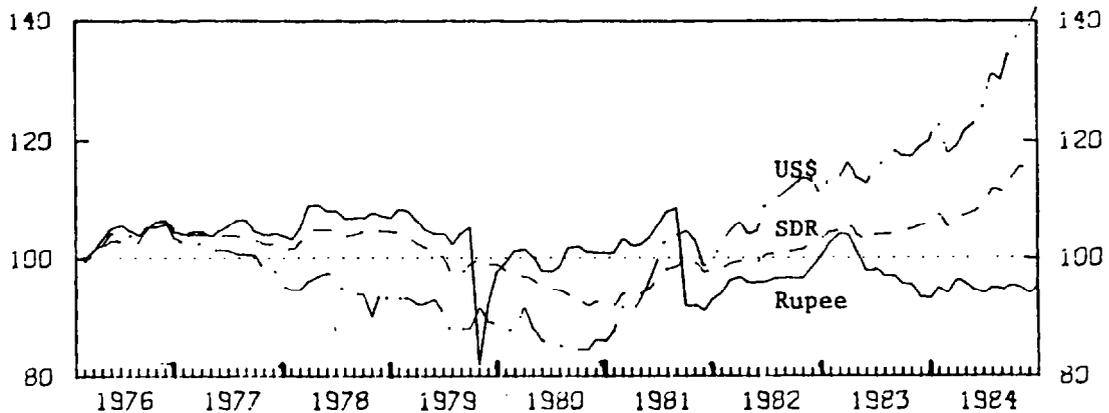
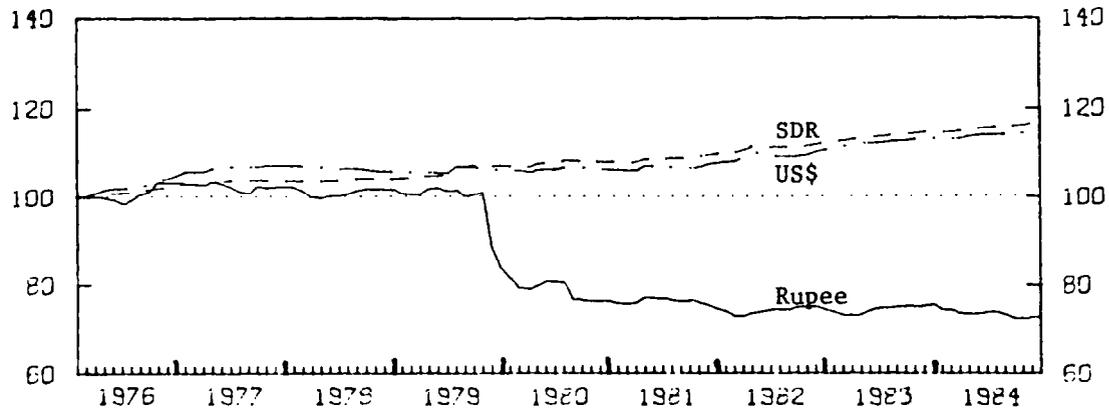
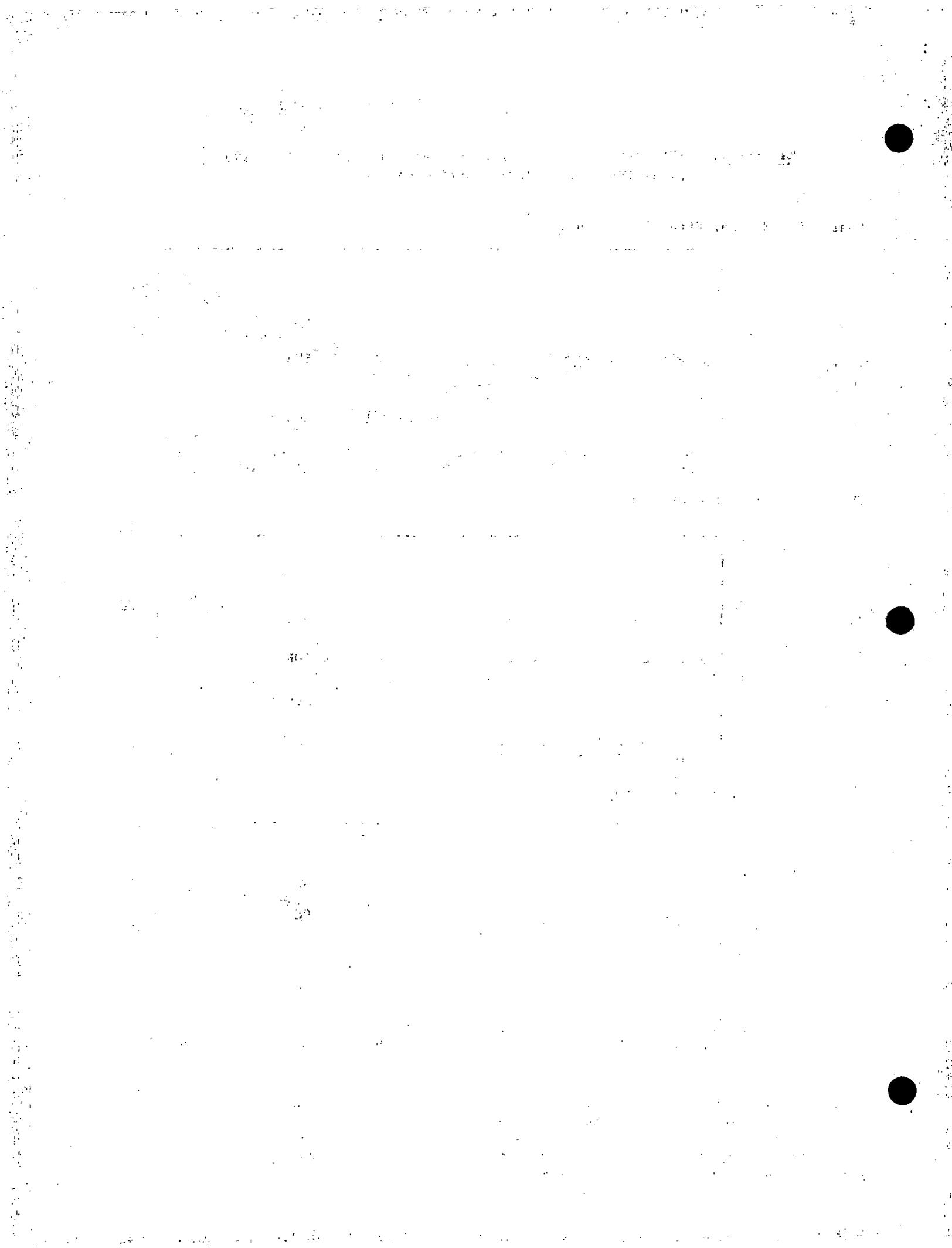


Chart 18: Relative Consumer Prices 3/



1/ Dollar values of the Rupee/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Mauritius/the SDR currencies.



Zaire: Effective Exchange Rate Indices, Mar. 1976 - Dec. 1984
(Mar. 1976 = 100, end-of-period data)

Chart 19: Nominal Effective Rates 1/

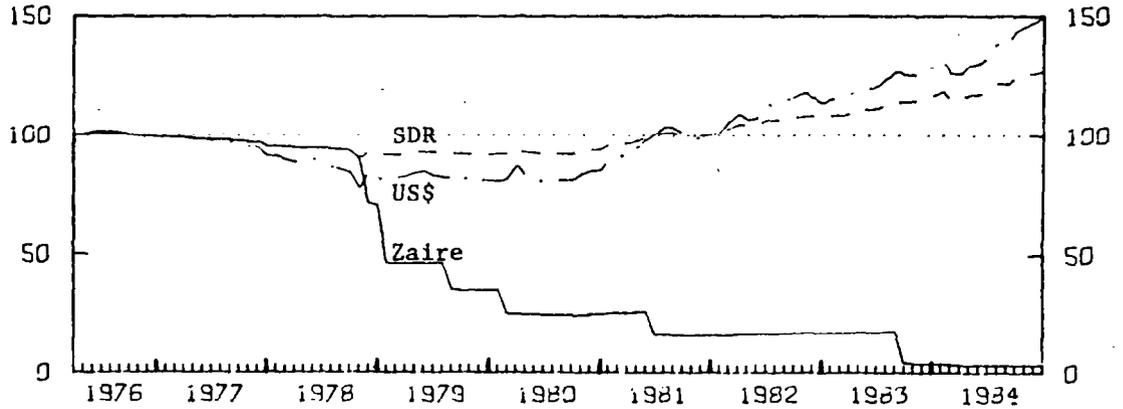


Chart 20: Real Effective Rates 2/

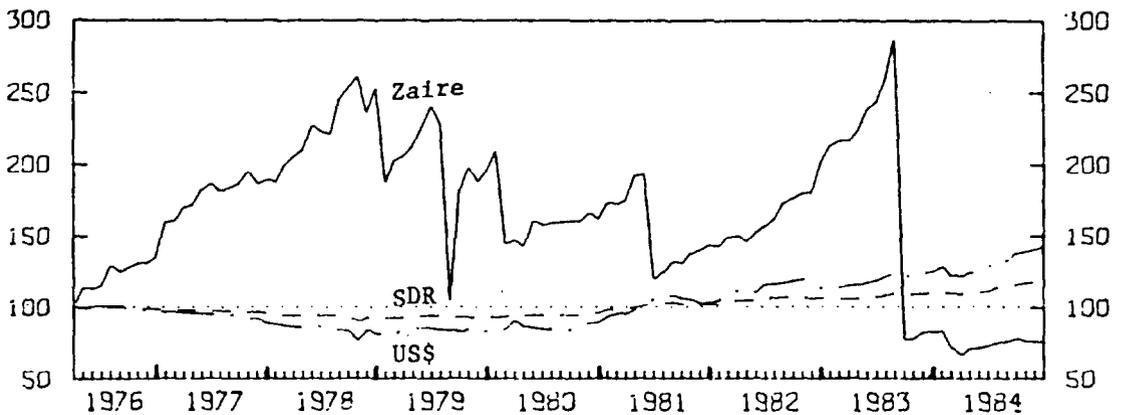
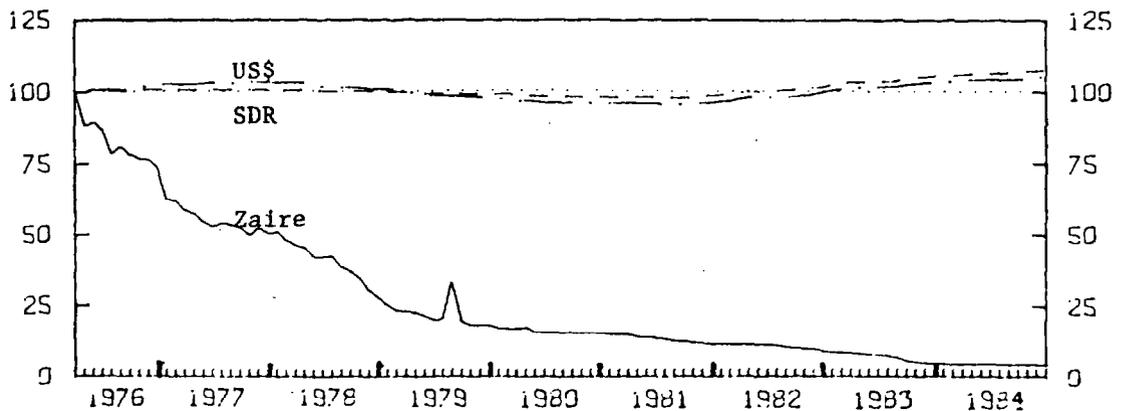


Chart 21: Relative Consumer Prices 3/



1/ Dollar values of the Zaire/SDR relative to the import weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Zaire/the SDR currencies.



Zambia: Effective Exchange Rate Indices, July 1976 - Dec. 1984
(July 1976 = 100, end-of-period data)

Chart 22: Nominal Effective Rates 1/

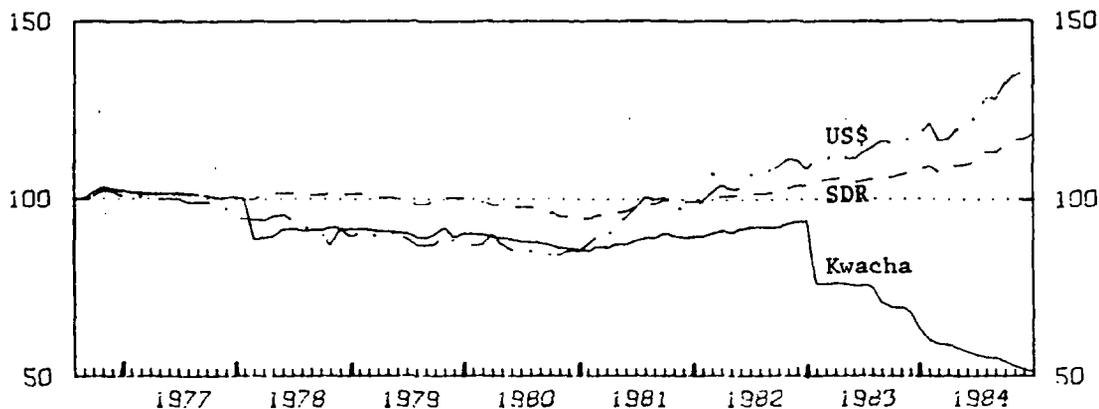


Chart 23: Real Effective Rates 2/

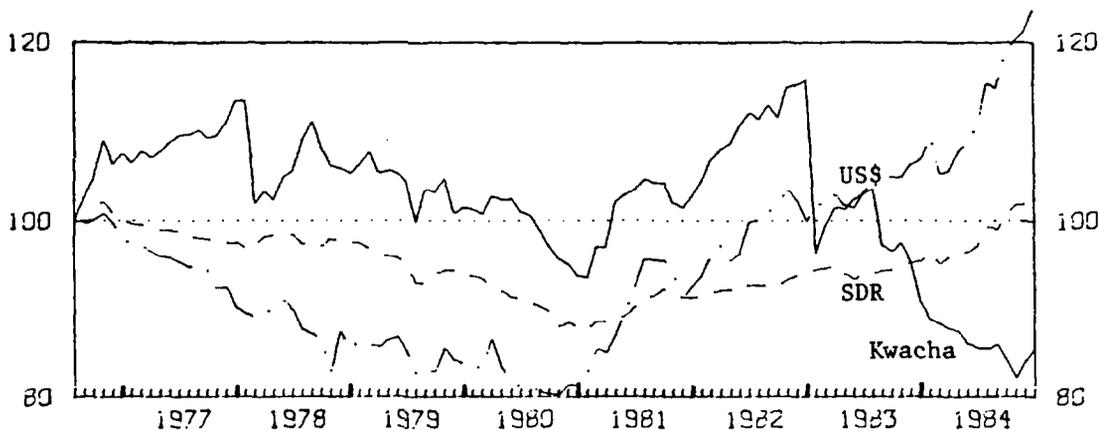
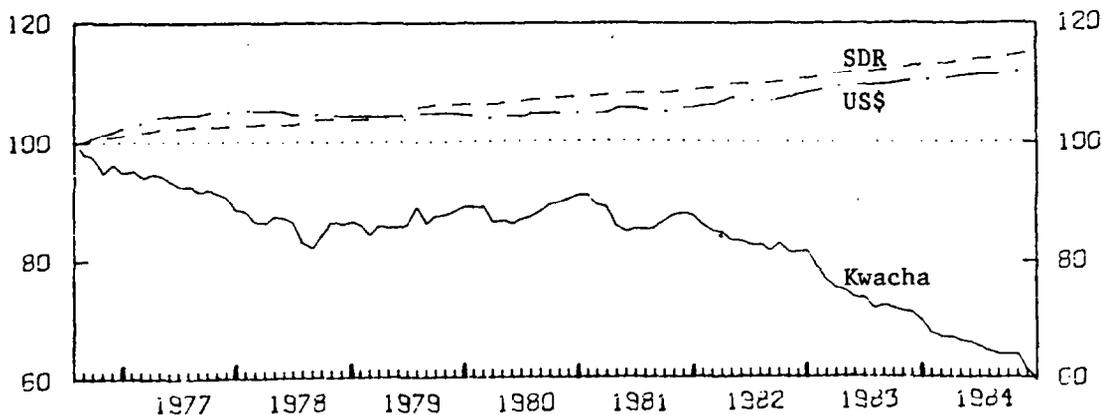


Chart 24: Relative Consumer Prices 3/



1/ Dollar values of the Kwacha/SDR relative to the import weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Zambia/the SDR currencies.



Sierra Leone: Effective Exchange Rate Indices, Nov. 1978 - Dec. 1984
(end-of-period data)

Chart 25: Nominal Effective Rates 1/ (Nov. 1978 = 100)

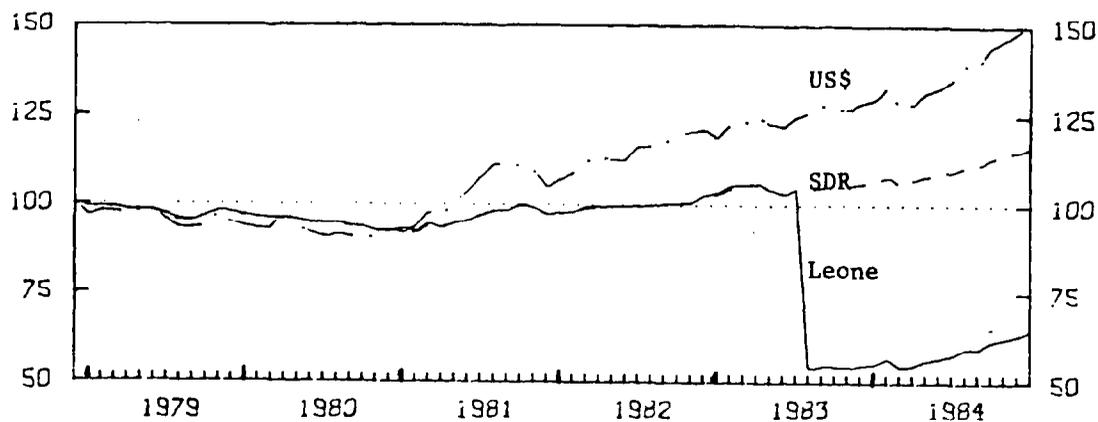


Chart 26: Real Effective Rates, 2/ Q4 1978-Q4 1983 (Q4 1978=100)

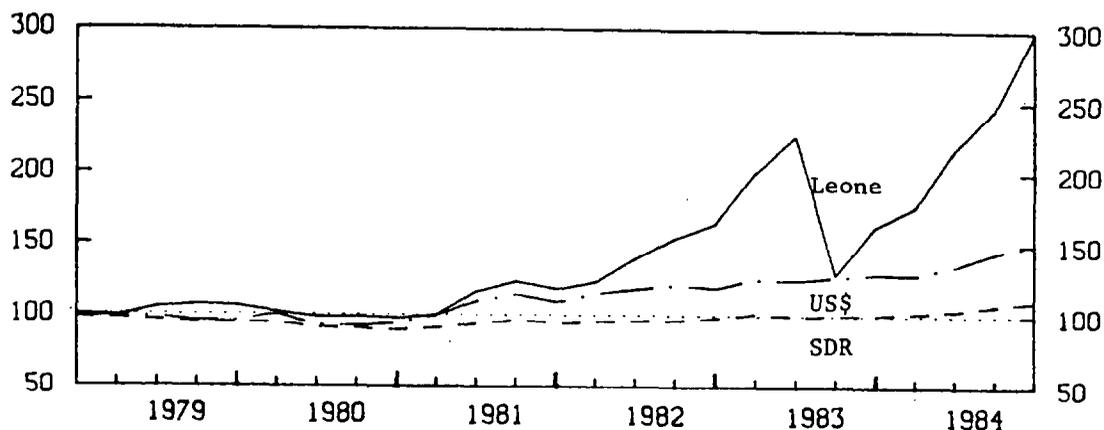
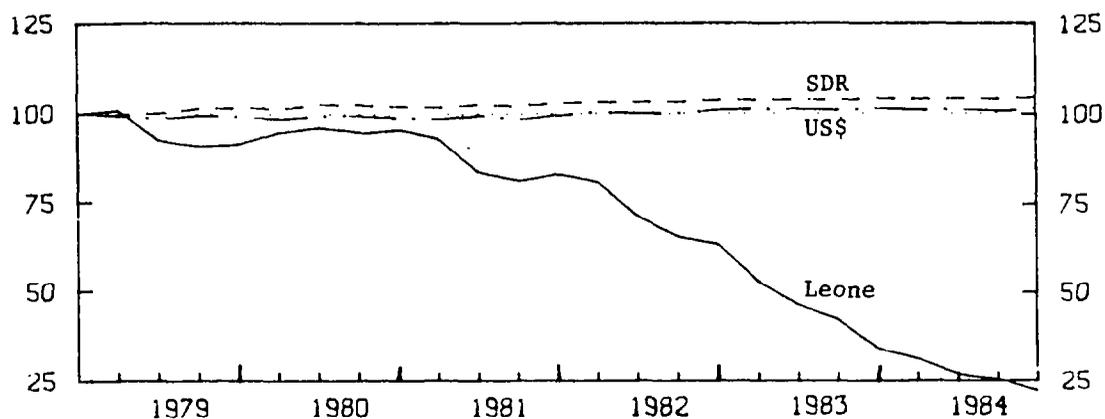


Chart 27: Relative Consumer Prices, 3/ Q4 1978-Q4 1983 (Q4 1978=100)



1/ Dollar values of the Leone/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Sierra Leone/the SDR currencies.



Seychelles: Effective Exchange Rate Indices, Nov. 1979 - Dec. 1984
(Nov. 1979 = 100, end-of-period data)

Chart 28: Nominal Effective Rates 1/

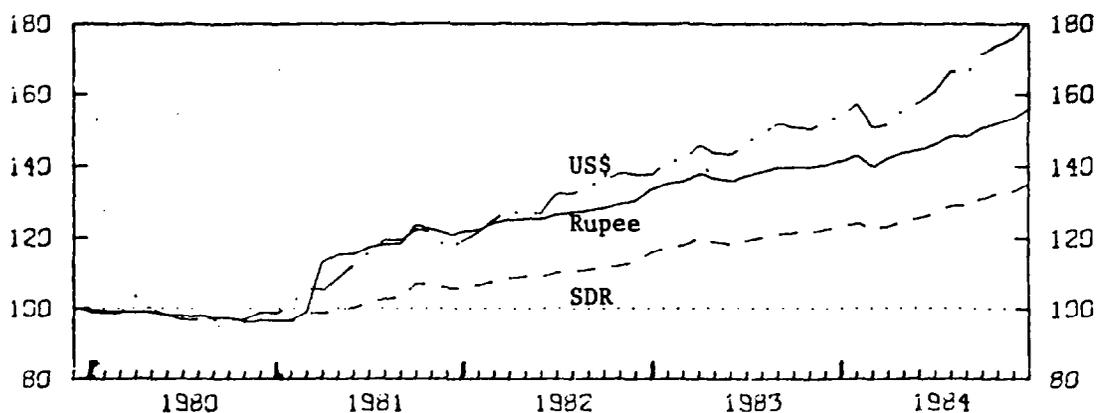


Chart 29: Real Effective Rates 2/

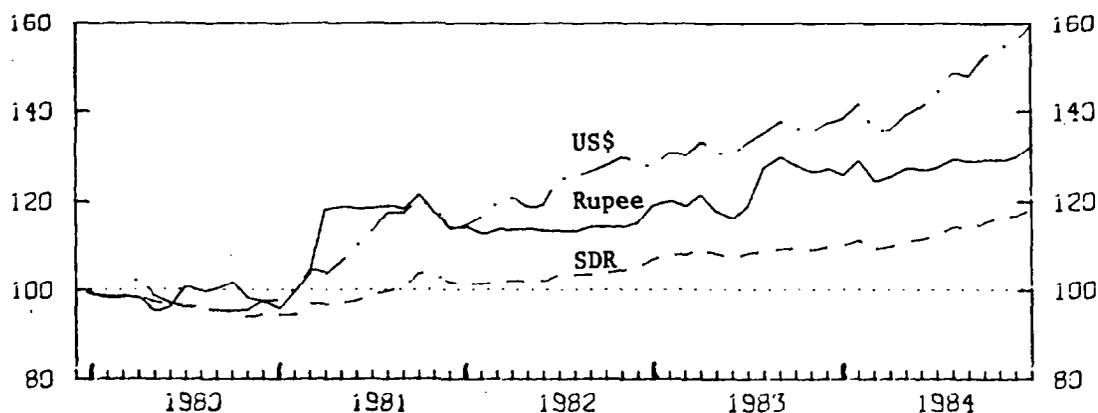
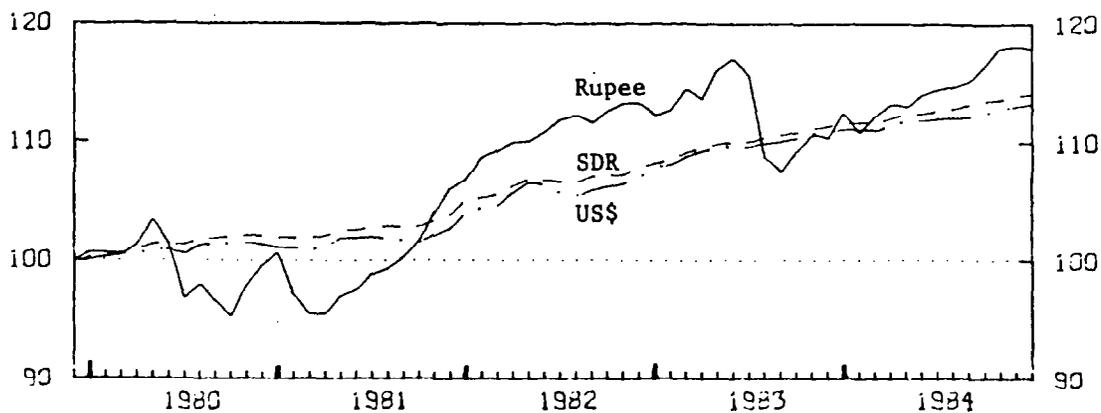


Chart 30: Relative Consumer Prices 3/



1/ Dollar values of the Rupee/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Seychelles/the SDR currencies.



Somalia: Effective Exchange Rate Indices, July 1982-Dec. 1984
(July 1982 = 100, end-of-period data)

Chart 31: Nominal Effective Rates 1/

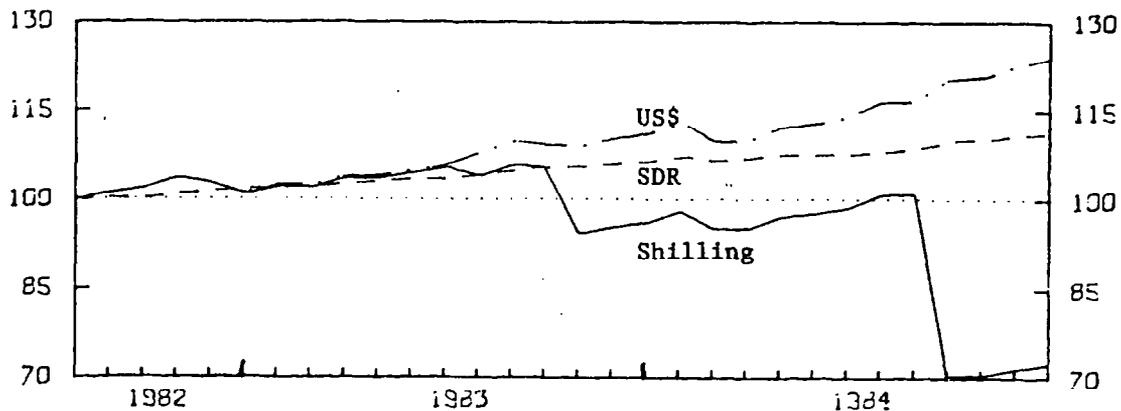


Chart 32: Real Effective Rates 2/

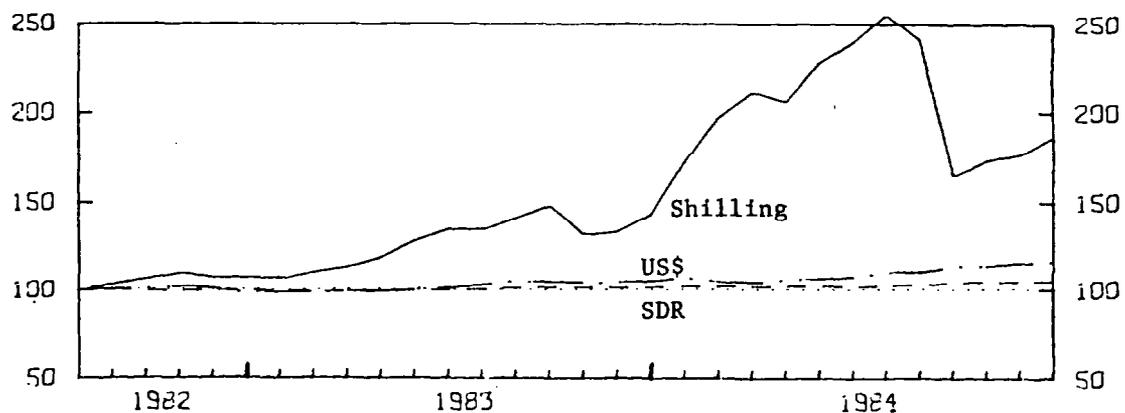
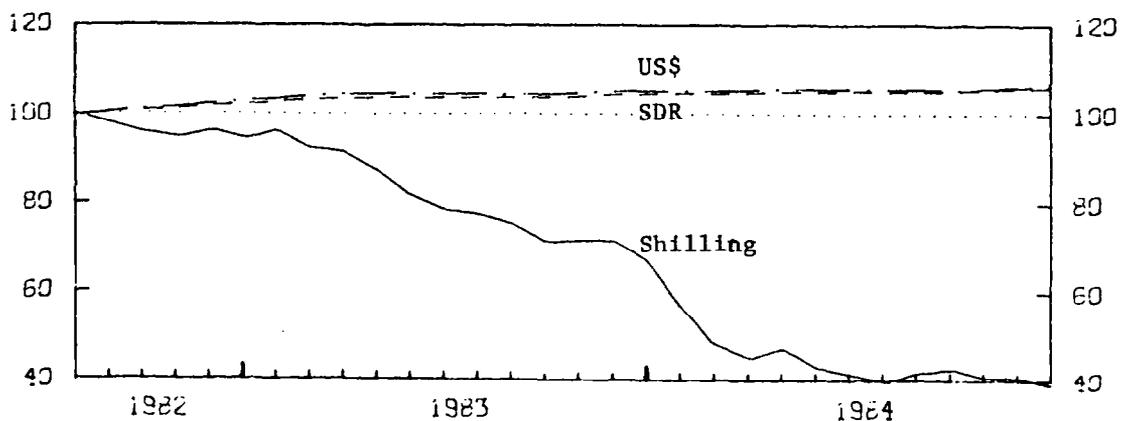


Chart 33: Relative Consumer Prices 3/



1/ Dollar values of the Somali Shilling/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Somalia/the SDR currencies.

11/11/11



Rwanda: Effective Exchange Rate Indices, Sept. 1983 - Dec. 1984
(Sept. 1983 = 100, end-of-period data)

Chart 34: Nominal Effective Rates 1/

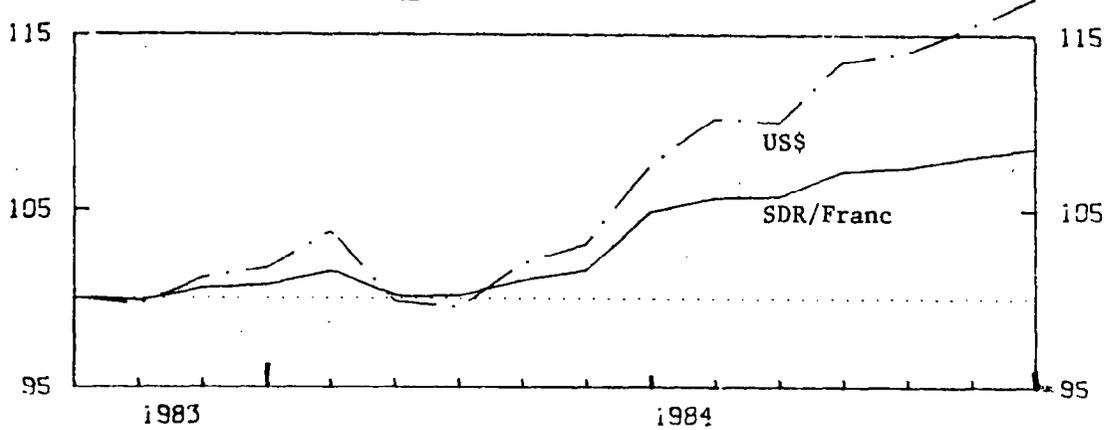


Chart 35: Real Effective Rates 2/

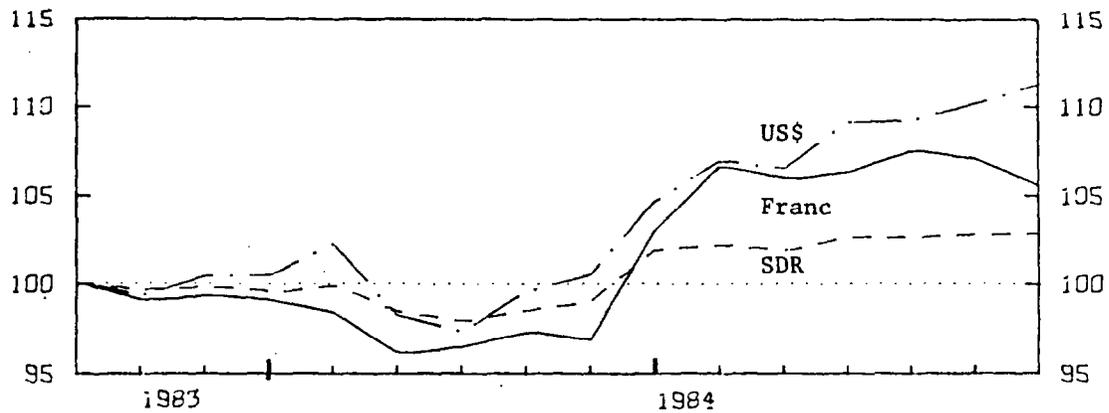
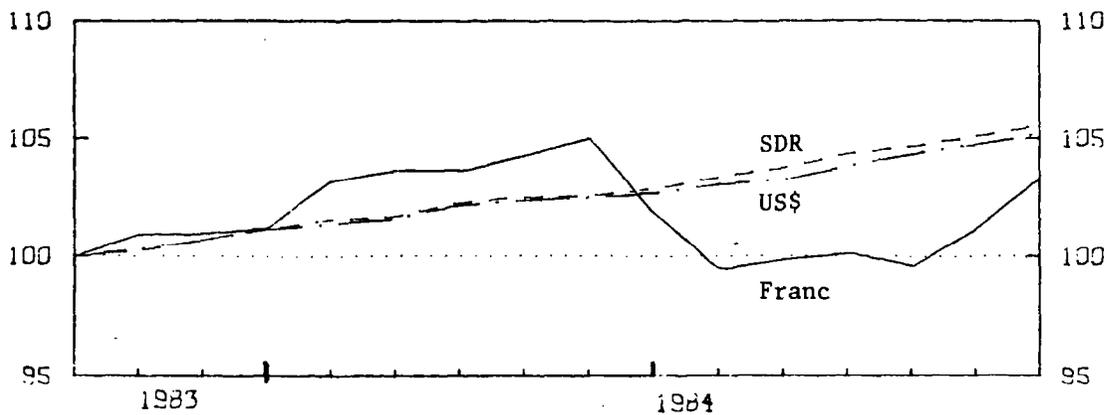


Chart 36: Relative Consumer Prices 3/



1/ Dollar values of the Rwanda Franc/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Rwanda/the SDR currencies.



Burundi: Effective Exchange Rate Indices, Nov. 1983 - Dec. 1984
(Nov. 1983 = 100, end-of-period data)

Chart 37: Nominal Effective Rates 1/

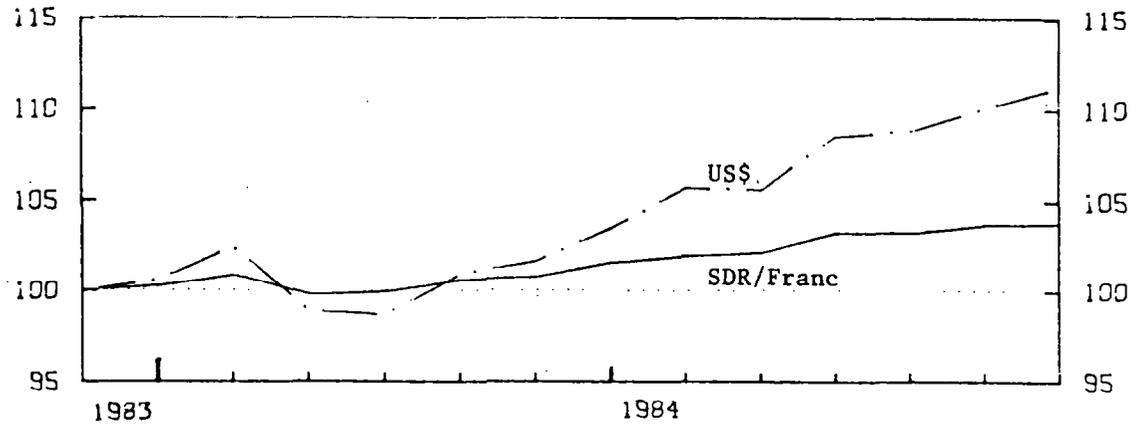


Chart 38: Real Effective Rates 2/

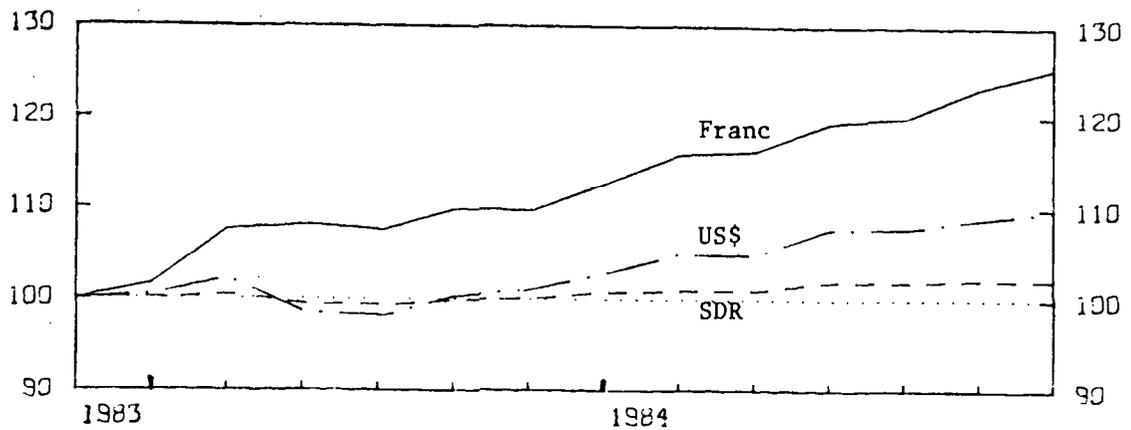
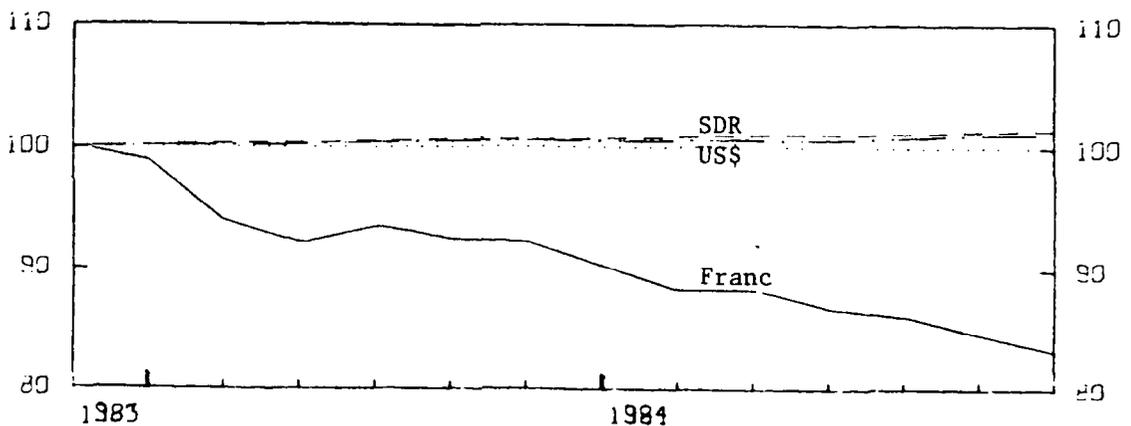


Chart 39: Relative Consumer Prices 3/



1/ Dollar values of the Burundi Franc/SDR relative to the trade weighted basket; a decline indicates depreciation.
2/ Nominal effective rates adjusted for relative consumer prices.
3/ Partner countries' consumer price indices relative to consumer prices in Burundi/the SDR currencies.



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