

EXCHANGE AUCTIONS: A REVIEW OF EXPERIENCES

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Abstract

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The foreign exchange crises facing many developing countries in the early 1980s resulted in various modifications to exchange rate regimes. One response in a limited number of cases has been the introduction of an exchange auction. Under such a regime, the central bank regularly sells a given amount of foreign exchange through a bidding process and buys foreign exchange in the intervening periods at the previous auction-determined rate.

The first section of the paper places the exchange auction in the context of the alternative exchange rate regimes to be adopted following exchange crises, comparing and contrasting an exchange auction with the four major alternatives: intensified administrative allocation of foreign exchange at the prevailing fixed rate, overvaluation of the fixed rate, crawling peg regime, freely floating market. The conditions under which an auction compares favorably with the alternatives are highlighted.

A number of important structural considerations are involved in introducing an exchange auction. The next section of the paper analyzes the various institutional features and options and describes the relevant experiences of three countries, Uganda (1982-85), Sierra Leone (1982-83) and Jamaica (1983-85). Various sub-sections describe access to the system which is based primarily on the type of transactions, normally remaining relatively restricted for capital account transactions; determination of the quantity supplied to the auction; determination of the exchange rate; the typical transitional multiple rate system, with one lower fixed-rate market and one floating rate market; special treatment on certain categories of transactions, such as petroleum imports and public sector expenditures; the forward market and some issues regarding the resulting allocation of foreign exchange.

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## A. Introduction

The foreign exchange crises facing many developing countries in the early 1980s resulted in various modifications to exchange rate regimes. One response in a limited number of cases has been the introduction of an exchange auction. Under such a regime, the central bank regularly sells a given amount of foreign exchange through a bidding process and buys foreign exchange in the intervening periods at the previous auction-determined rate.

It is important to place the exchange auction in the context of the alternative exchange rate regimes that can be adopted to resolve an exchange crisis and to restore a cushion of international reserves. The following section (Section A) compares and contrasts an exchange auction with the four major alternatives: intensified administrative allocation of foreign exchange at the prevailing fixed rate, overvaluation of the fixed rate, crawling peg regime, freely floating market. The conditions under which an auction compares favorably with the alternatives are highlighted.

A number of important structural considerations are involved in introducing an exchange auction. The next section (Section C) analyzes the various institutional features and options and describes the relevant experiences of three countries, Uganda (1982-85), Sierra Leone (1982-83) and Jamaica (1983-85). To tackle problems encountered with such a system, the structure of the auction can and has been modified. Although certain weaknesses remain, these modifications can strengthen the auction's suitability as an alternative exchange rate regime following an exchange crisis. The first sub-section describes access to the system which is based primarily on the type of transactions, normally remaining relatively restricted for capital

account transactions. The next sub-section discusses the frequency, scope and determination of the quantity supplied to the auction, which are key to understanding the dynamics of the system. The sub-section on the determination of the exchange rate discusses the choice between marginal and Dutch auction pricing options and also the impact of the regime on the real exchange rate.

Typically, a country moves initially from a fixed rate regime with administrative controls to a transitional multiple rate system, with one lower fixed-rate market and one floating rate market. The next sub-section clarifies the allocation of transactions between these markets and the alternative ways to manage the path of the fixed rate in relation to the floating rate. The unified auction regime can be modified as well to confer special treatment on certain categories of transactions, such as petroleum imports and public sector expenditures, as described in another sub-section. Other sub-sections describe the forward market and some issues regarding the resulting allocation of foreign exchange.

#### B. Exchange Regimes Following Exchange Crises

As a result of the external and policy-induced macroeconomic disturbances to the developing economies in the 1970s and early 1980s, the foreign exchange reserves of many central banks were drained, and the exchange regimes in those countries came under increasing pressure. There are various alternatives for resolving such a crisis and for restoring a certain level of reserves. One of the common responses involving the maintenance of a fixed rate regime is to ration foreign exchange, usually with the introduction of quantitative restrictions and capital controls. This was the initial response of Uganda, Jamaica, and Sierra Leone prior to the exchange auction system.

One of the more widely studied responses to such a crisis is a substantial nominal devaluation of the currency. <sup>1/</sup> The extent of the devaluation may not be sufficient to eliminate the binding constraint of quantitative controls and instead may only reduce it. This was the case for Uganda, where a series of discrete devaluations of the shilling had preceded the introduction of the exchange auction. Because an exchange crisis is characterized by the virtual absence of international reserves, and because minor disturbances with a fixed rate would be reflected in quantity fluctuations that could not be absorbed by reserve level changes, the devaluation would have to exceed the equilibrium to ensure that the new fixed rate is perceived as sustainable. In addition, in a situation in which one of the objectives is to restore a certain level of reserves, the devaluation would have to be greater than otherwise to reduce accordingly the demand for foreign exchange and allow reserve accumulation.

A variant on the one-time devaluation in response to a crisis is the adoption of a crawling peg regime. Like the standard fixed-rate regime, a price of foreign exchange is set and determines the quantity demanded and supplied, but, in addition, the central bank can respond to quantity fluctuations by periodically altering the price, usually devaluing the currency further.

Instead of altering the fixed exchange rate, in response to a crisis, a floating exchange-rate regime can be introduced. The central bank fixes its level of reserves accumulation (or intervention) and allows the price of

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<sup>1/</sup> See Goldberg (1985) for a survey of the literature on exchange rate crises in fixed rate regimes where the response is a currency devaluation.

foreign exchange to fluctuate. Such a system can operate in the presence or the absence of capital controls, as in the case of a fixed regime.

The exchange auction blends the flexible exchange-rate regime with the rationing regime. A certain quantity of foreign exchange is rationed regularly through an auction, with the price of foreign exchange adjusting accordingly. Subsequent surrender of foreign exchange up until the next auction is made at this auction-determined rate less commissions, resulting in a ratchet-like flexible regime. The desired reserve accumulation, as well as other transactions discussed below, can be set aside, and the rest of the foreign exchange is auctioned. Most capital account transactions, however, are highly restricted.

Before looking at the particular features of such a system, it is useful to highlight the conditions under which an auction compares favorably with the alternatives. In contrast to an administrative rationing system, an auction uses prices as a mechanism for rationing the available foreign exchange. A regime of increasingly restrictive administrative allocation of foreign exchange generally is viewed as more damaging to the resource allocation process and more encouraging to rent seeking behavior than a price rationing mechanism, as summarized in Bhagwati (1978). <sup>1/</sup> In addition, the auction can establish a higher price for certain categories of supply of foreign exchange as well.

The debate over the superiority of fixed or flexible exchange rate regimes is unresolved for both developed and developing countries. Nonetheless, following an exchange crisis, introduction of a flexible regime has

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<sup>1/</sup> Some of the economic rationale in support of rationing over exchange rate changes are given in Feenstra (1985).

certain advantages over a major devaluation and continued maintenance of a fixed-rate regime. Usually, at this stage, the equilibrium exchange rate is not known to policymakers with much precision. A float removes the need to select a rate. Also, setting quantity and not price assures a more certain path of reserves accumulation, which may be important in the country's relationship with the IMF and other international creditors. An overdevaluation under a fixed regime likewise increases the likelihood of adequate reserve accumulation, but the political costs typically present for any devaluation would be heightened.

A crawling peg appears more similar to the exchange auction, except that the central bank regularly adjusts the price instead of the quantity. However, it appears that the public's perceptions as to the central bank's (and thus government's) role in determining the exchange rate may be different for the two regimes. Under an auction (or other flexible rate regimes), the central bank may not be perceived as determining the exchange rate, even though its reserve management (or intervention) decisions directly affect the quantity of foreign exchange in the market and, thus, its price. Vis-a-vis a flexible rate interbank market, an auction with many participants also may have an advantage since the banks can avoid being pinpointed as the economic agents responsible for the devaluations which may ensue. Another situation in which an auction may make more economic sense than a freely floating market for both sales and purchases of foreign exchange is when the market is thin or characterized by infrequency of transactions. Under the auction system, foreign exchange purchases are accumulated before sales are made.

Thus, the exchange auction may well be a sensible alternative to intensified administrative allocation, overdevaluation, a crawling peg regime,

or a freely floating market as a way to stem the drainage on international reserves and allow them to be restored over time. We now turn to a discussion of the mechanics of the auction and the features introduced to address particular problems.

### C. Institutional Features of Exchange Auctions

An exchange auction is any regime where the allocation of a given amount of foreign exchange is determined through a bidding process. Within that, the institutional dimensions and features of the regime can vary greatly. This part of the paper describes the typical structure for the auction. In addition, it analyzes the alternatives for solving various problems that may be encountered. Much of the analysis is based on empirical evidence from the experiences of the three countries where exchange auctions have been used, Uganda (1982-85), Sierra Leone (1982-83), and Jamaica (1983-85). Rather than describe the chronological development of these regimes, we focus on the issues that need to be addressed. However, a chronological outline of the major developments in those exchange regimes is given in Table 1 to guide the reader in the presentation.

Another part of the analysis draws on relevant economic literature on exchange markets. Auctions and bidding models on strategic behavior have received considerable attention in other parts of economic literature. Unfortunately for our purposes, they generally apply to auctions with structural characteristics other than those considered here, such as the auctioning of one indivisible object, but certain relevant results are presented. 1/

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1/ See Engelbrecht-Wiggans (1980) for a survey and Stark and Rothkopf (1979) for a bibliography. Further work on the optimal design of foreign exchange auctions modeled as a game with incomplete information is being pursued by CPDTA under the direction of Brian Pinto.

1. Access and Entry

a. Type of transaction

Access to the exchange auction system is based primarily on the type of transaction for which the foreign exchange is to be used. Normally, access is relatively unrestricted for current account transactions, but relatively restricted for capital account transactions. This feature reduces the impact that fluctuations in assets demand may have on the capital account, the exchange rate and thus the rest of the economy. To ensure that the foreign exchange allocated through the auction is used for the stated purpose, certain documentation is submitted at the time of the bid. For imports, a pro-forma invoice may suffice. In cases where serious economic distortions can be removed only gradually and therefore the authorities do not wish to relinquish completely administrative influence over import allocation, an import licensing regime may continue to operate in parallel to the auction system, where an import license is required for access to the auction. For example, in Jamaica and Uganda, the import licensing regimes were gradually relaxed over time. However, a more liberal system broke down in Sierra Leone, where a list of prohibited imports was reintroduced after less than two months.

Typically, for capital and services account transactions, the prior approval of the central bank is required, and the nature of the controls remain the same as before the introduction of the auction. Largely excluded from any access to official foreign exchange is any form of capital outflows, other than repayment of registered external debt. Other approved transactions with access to the auction system tend to be limited to profit remittances, dividend payments, certain capital transfers of private non-bank agents such as emigrants and exchange rate cover for commercial banks. Obviously it is

difficult to insulate the auction completely from private capital outflows, loosely referred to as "capital flight," but not necessarily more than under alternative exchange regimes. Although there has been a perception in Uganda and Sierra Leone that the auction provides an opportunity for over- and under-invoicing to certain groups which would have been excluded from an administrative allocation system, controls to prevent over- and under-invoicing can be identical in both systems. In fact, if one of the causes of capital outflows is an expected devaluation of an overvalued exchange rate, then the introduction of a floating system such as an auction serves to reduce short-term capital flight. This appears to be the result in Jamaica.

Since access to the exchange auction for capital transactions remains highly restricted, presumably another illegal (black) market continues to exist. Nonetheless, its scope is largely reduced compared to the previous situation.

b. Number of participants

Restrictions on the individual agents participating in the auction tend to be relatively few. Those authorized to bid usually include commercial banks on behalf of themselves or their customers, bona fide importers from both private and public sector enterprises, and the central bank. In Uganda, all participants other than government and parastatals bid through the commercial banks, and in Sierra Leone all participants bid through the commercial banks. In Jamaica, originally participation was limited to commercial banks, but in March 1984, the participation was enlarged considerably. The literature on various kinds of auctions suggests that it is desirable to widen participation in the auction so as to minimize the ease of collusion. The best example of manipulation was in the case of Sierra Leone. The trading

sector in Sierra Leone is characterized by a high degree of concentration, which could facilitate manipulation. In addition, there was malfeasance. The government had agreed to keep the gap between the official and auction rates narrow, and therefore the central bank eliminated various bids to keep the auction rate low. It also eliminated certain bids and reallocated the foreign exchange in accordance with other objectives not made explicit. The interbank market in Jamaica also was characterized by manipulation by the few commercial banks, supposedly, responding to government pressure and to public criticism of devaluing rates. The enlarged entry to the auction has perceptibly reduced manipulation.

Prior to the auction, the bidder must deposit the local currency equivalent of the bid, to be reimbursed if the bid is unsuccessful. Another common qualification is a minimum bid to reduce transactions costs, for example, \$50,000 in Jamaica. However, commercial banks can pool smaller demands into a bid exceeding the minimum for a small fee, thereby increasing slightly the cost of entry to small bidders.

Although not recommended, other barriers to entry have been used to address unrelated problems. For example, to improve public revenues, access to the auction has been regulated temporarily by a requirement that the bidder be current on payments of certain taxes.

## 2. Frequency, Scope and Size of the Auction

The dynamics of the auction are central to its understanding. One element is frequency. The auctions are conducted frequently. One of the potential advantages of an auction in a thin or lumpy foreign exchange market is that it allows a larger pool of foreign exchange to accumulate. Thus, the frequency would be correlated with the thinness of the market. As expected,

Jamaica's auction occurs more frequently (twice weekly) than in Uganda (weekly) or in Sierra Leone (originally every two weeks, eventually, monthly).

The scope of the auction usually evolves over time from a limited market under a multiple rate regime to a dominant market under a unified official rate regime. In both cases, the auction can be complemented with other special allocation mechanisms to ensure that certain types of transactions, e.g., those related to oil or external debt service, always have access to foreign exchange. The amount of foreign exchange to be auctioned is determined by the central bank and equals available reserves less the amounts allocated for special purposes, discussed further below, and less the desired reserve level. This auction amount is announced prior to the auction.

An important aspect of the dynamics of the foreign exchange market is the expectations of the quantities to be supplied to the auction and, hence, central bank behavior. Generally, the central bank's goals are to manage reserves so as to smooth out the variability in international payments and to increase over time its reserves position, thus reducing the possibility of a renewed crisis. The central banks have not made known any fixed response rules for managing the quantity allocated to the auction. Nonetheless, a few basic principles are followed. In response to what is considered an unwarranted sharp escalation in the auction determined rate (discussed further below), the central bank may increase the auction supply by reducing its reserves target temporarily, equivalent to leaning against the wind in a floating regime. In order to avoid what is considered an unwarranted drop in the rate, the central bank enters its own bid at some reservation price, which of course changes

over time. The literature on auctions suggests that setting a reservation price results in larger expected revenues for the central bank. <sup>1/</sup>

Another aspect of auction behavior is the response on the foreign exchange supply side. By regulation, exporters generally must surrender export receipts within a short time period, reducing the flexibility in timing, although the approval period for other capital account transactions tends to be longer. The minor danger with increased flexibility is a decrease in central bank trading profits since more foreign exchange would be supplied in the period following a transitory exchange auction rate rise. Unlike in a flexible market, this would not be reflected in downward pressure on the rate.

Tables 2 and 3 present limited data on the reserves management and auction supply behavior in the three experiences reviewed here. During the auction regime, Uganda appears to have strengthened its reserves position, Sierra Leone temporarily strengthened its position and Jamaica's position has not deteriorated. Both Uganda (until recently) and Jamaica were able to supply the auction with a sizeable quantity of foreign exchange. With the available data, it is not possible to evaluate the dynamic aspects of reserve management more fully.

### 3. Exchange Rate Determination

#### a. Pricing options

There are two basic systems for determining the exchange rate in a foreign exchange auction using sealed bids. Under marginal pricing, the clearing rate, or the highest rate at which the bids fully exhaust the offered foreign exchange, is paid by all successful bidders who receive foreign

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<sup>1/</sup> It also results in a larger probability that the foreign exchange will not be sold, but this is not as relevant a concern as in other auctions.

exchange. Under the Dutch auction, each successful bidder is charged what he or she bid. Under both systems, all purchases of foreign exchange up until the next auction are made at the marginal rate.

Certain comparisons between the marginal and Dutch pricing systems can be made based on an assumption of competitive non-strategic behavior. In that case, the bids would represent the reservation price of the bidder under both systems. Under the Dutch auction, the central bank is acting as a perfect price discriminating monopolist, capturing all the "consumer" surplus and resulting in an improvement in public finances. This source of public revenue, however, has a serious disadvantage. By increasing the average cost of imports without changing the rate offered exporters, it introduces an element of export bias into the system.

Introducing strategic elements into the analysis presumably would result in different bidding behavior under the two systems. Much of the literature on auctions addresses the choice of a price function, where the choice depends on the strategic properties of the auction and the objective, whether efficiency or revenue maximization. As stated earlier, no theoretical analysis yet exists for an auction with the identical properties of the foreign exchange market, and what can be said is limited at this stage.

In the experiences reviewed here, the perceptions of the policymakers are that the pricing system alters bidding behavior. In light of this, there has been a degree of experimentation. Uganda's system began in August 1982 with a pure marginal pricing system. Because of a perception that participants were placing excessively high bids, the central bank introduced a system in June 1984, discontinued recently, whereby the excess of the actual bid over the marginal bid was reimbursed with non-rediscountable 3-month Treasury bills instead of cash. Under this system, the spread of bids narrowed and the bids

were initially lower. Sierra Leone technically used a marginal pricing system, although there were undenied reports of malfeasance with the commercial auction rate. From December 1983 to November 1984, the Jamaican auction applied marginal pricing, subject to the rate falling within an adjustable band. The midpoint of the band was to be adjusted to the upper limit of the existing band if unsatisfied demand exceeded a predetermined level on average over three consecutive auctions. Since the band was consistently a binding constraint on the auction rate, the authorities removed the bands in November and at the same time introduced a Dutch auction system. The IMF has certain reservations about a Dutch auction because of its possible interpretation as a multiple exchange rate practice, and special Board approval has been required.

Often the quantity of foreign exchange demanded at the marginal rate pushes the total demanded above the quantity offered. Under the existing systems, the marginal bidders receive a pro-rata share of the remaining foreign exchange. If that pro-rata share is insufficient to make the related transaction, a bid for the remaining amount can be submitted at a later auction.

b. The real exchange rate

The real exchange rate is one of the most important relative prices in an economy, and it is generally agreed that the real exchange rate at its equilibrium level improves welfare. <sup>1/</sup> With competitive non-strategic behavior, a flexible rate such as under an exchange auction regime is considered to be in short run flow equilibrium. When the currency under the

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<sup>1/</sup> The real exchange rate can be defined as the relative price international goods to domestic goods or the relative price of tradables to non-tradables. For measurement purposes, the traditional price indexes based on the former are more practical and are used here. See Edwards (1985) for a fuller discussion of these issues.

exchange control regimes preceding the exchange auction is substantially overvalued, i.e., the real exchange rates were less than their equilibrium levels, the auction determined rate would represent a sizeable depreciation. The general perception is that this auction rate also reflects better than the former real rate the fundamental equilibrium rate or the long-run sustainable rate, another concept of equilibrium in the literature. <sup>1/</sup> There has been considerable discussion of the potential problems caused by a divergence between the short-run and long-run equilibrium rates. Although this issue as it relates to the three cases and other floating regimes in less-developed countries is worthy of further study, it is outside the scope of this paper.

In the experiences reviewed here, the trend in the real exchange rates was a depreciation, as expected and desired. The behavior of the nominal and real exchange rates for Uganda, Sierra Leone and Jamaica is illustrated in Figure 1 and detailed in Table 4. The examination of the behavior of the official real exchange rate is complicated during certain phases by the existence of multiple markets, consisting of an official lower fixed rate market and a parallel market with flexible rate clearing mechanism, which are discussed in more detail in the next section. Nonetheless, clearly the eventual unified rates, auction-determined for Uganda and Jamaica and fixed for Sierra Leone, represented sizeable real depreciations in comparison with the previous fixed rate administrative allocation regimes and tended to

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<sup>1/</sup> See Williamson (1983) and Frenkel and Mussa (1984).

proximate the previous auction-determined or flexible rate. <sup>1/</sup> In the case of Uganda, the weighted rate depreciated steadily, with the fixed rate depreciating continually, the share of the market at the more depreciated auction rate increasing continually, and unification in June 1984 closer to the higher auction-determined rate. Absence of recent CPI data prevents analysis of the most recent trends. In Sierra Leone, unification in June 1983 represented a real depreciation from the previous year, but it was quickly eroded as the central bank moved away from the auction concept. In Jamaica, although the real fixed rate appreciated, the share of the market at the more depreciated auction rate was increasing. Since unification in November 1983 and introduction of the auction in December 1983, the real effective exchange rate has depreciated further. Any change in the real exchange rate trend resulting from changes in underlying real factors, such as terms of trade or international capital shifts, should ease adjustment and not be viewed as destabilizing. Jamaica's economy was hit recently by negative shocks to the major bauxite export, with the announced pullout of Reynolds and Alcoa, presumably contributing to the further real depreciation of the Jamaican currency.

c. Volatility

One concern with flexible rates is volatility. Unlike flexibility in the level of the real exchange rate, volatility tends to have negative eco-

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<sup>1/</sup> At the time of unification, as shown by Lizondo (1985) and May (1984), it is not possible ex ante to state whether the unified real rate will be greater or less than the parallel "free" rate.

conomic connotations. <sup>1/</sup> The exclusion of many capital account transactions would reduce some instability, but some speculative behavior would occur through commercial transactions. The behavior of the black market rate is given in Table 5. The central bank has a smoothing role to play in managing its reserves and the size of the auction. Also, reducing the frequency of rule changes would reduce volatility. In the Ugandan case, there has been considerable volatility, particularly when the second auction window was first opened. By 1984, weekly fluctuations of the nominal marginal rate around the monthly average had moderated and ranged up to 10%. The introduction of payment in government securities for the spread between bid and marginal rates resulted in an increased clustering of bids, presumably because lack of information as to the market rate is now more costly, but the marginal bid remained volatile. The rates were more volatile in Jamaica following each change in exchange rate policy. However, by the first quarter of 1985, the trend in the nominal rate was quite flat.

Another concern with an exchange auction system, or floating rates in general in less developed countries, is that of destabilizing inflationary pressures that may be built into the system, going beyond the standard inflationary impact associated with the nominal devaluation of a fixed rate. As shown in Figure 2, the level of inflation did not worsen in Uganda, trended significantly upward in Sierra Leone and trended slightly upward in Jamaica, but there does not appear to be any evidence of destabilizing behavior.

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<sup>1/</sup> See Williamson (1983).

4. Transitional Multiple Exchange Rate Regimes

a. Categories of transactions

The initial response to balance of payments pressure in developing countries often is the introduction of selective quantitative restrictions and thereby special treatment for other categories of transactions. One of the rationales for responding to an exchange crisis by devaluing or floating is to reduce the implied arbitrariness and distortions. However, certain categories may remain for which temporary or more permanent special treatment is considered desirable. Hence, auctions generally are incorporated first into a transitional multiple exchange rate regime and accompanied later under a unified rate regime by pre-auction allocations of foreign exchange to certain transactions.

The multiple exchange rate regime consists of a fixed rate market at a lower exchange rate, typically the prevailing official fixed rate under the previous administrative allocation regime, and another flexible rate market. Capital account transactions are largely controlled in the official exchange market for both the fixed and flexible rate markets, and, hence, this multiple rate regime is distinctly different from a dual rate regime where most capital account transactions are allocated to the flexible rate market and current account transactions to the fixed rate market. <sup>1/</sup> Under such a dual rate regime, the primary objective is to isolate the current account from asset market instability. The primary objective of the multiple rate regime considered here, on the other hand, is to implicitly tax and subsidize certain transactions. The tradeoff is that, while the leakage of some of the capital

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<sup>1/</sup> See Fleming (1974), Flood (1978) and Dornbusch (1985b).

account instability into the auction is reflected in the exchange rate that applies to at least some current account transaction, unlike in a dual regime, any pressures for a widening gap between the rates for capital and current account are moderated.

In the experiences reviewed here, the multiple rate regimes were introduced as explicitly temporary measures. In Uganda and Sierra Leone, one window was opened at a managed lower rate and a second window operated along auction lines. Uganda's system was unified after 22 months in June 1984. Sierra Leone abandoned the system before any unification of the auction in favor of a unified fixed rate regime with exchange controls. In Jamaica, the interbank parallel market existed alongside the official market for 10 months until the introduction of a temporary unified interbank system in November 1983. This was replaced by an interbank auction in December 1983, and access to the auction system was expanded in March 1984. Thus, the Jamaican auction system itself was always unified. Table 1 gives the dates of these major developments.

The foreign exchange allocated to the special lower fixed rate market is largely determined by a process of earmarking the export receipts from this market. The categories of transactions generally include official grants and loans, Fund purchases and traditional exports. The latter are relatively price inelastic in the short run and thus seen as a more optimal source of revenue. This category included all traditional exports in Uganda; 50% of the Marketing Board export proceeds and 67% of the diamond and or company proceeds in Sierra Leone; and bauxite, alumina, sugar, bananas, and tourist-related receipts in Jamaica.

These foreign exchange receipts generally went to finance official debt obligations and certain imports considered "essential" at the same lower fixed rate. <sup>1/</sup> Given that the governments of most high-debt countries have larger payments denominated in foreign currencies than receipts because of external debt, an exchange rate regime that eliminates the overvaluation option has a negative impact on the public finances. This was one of the explanations offered for a gradual transition for official debt obligations from the overvalued fixed rate to the floating rate. As shown in Table 6, estimates of the external debt service as a share of government expenditure eventually rose. Because of an inability of the governments to find sufficient alternative sources of finance to the implicit tax on exports from the overvalued rate and in order to keep the budget deficit within Fund targets, public expenditures were cut in Uganda and Jamaica more gradually, and therefore perhaps more successfully, than would have been required in the absence of the transitional multiple rate regime. The "essential" category includes petroleum and other inputs considered to have significant supply side effects. It also included certain basic food imports considered to be relatively price inelastic and to have income distribution consequences. The economic justification for taxing inelastic traditional exports to finance government expenditures and subsidies to food imports and petroleum is discussed in Dornbusch (1985a).

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<sup>1/</sup> In addition, in Jamaica, a special rate of \$2.25/US\$1 between the official and parallel rates was established for most transactions with other member countries of CARICOM.

Gradually transactions are moved to the higher floating rate, and eventually all transactions are subject to the auction-determined rate. In this transitional period, the behavior of the flexible rate depends critically on the volume of foreign exchange transactions assigned to the market on both the demand and supply side. In the case of Uganda, a large proportion of both receipts and purchases were transferred to the auction during the transition. From July 1983, traditional export receipts except for coffee and cotton and all payments other than oil and debt contracted before a certain date and, from November 1983, oil payments other than fuel imports were transacted through the auction. In Jamaica, a large part of the foreign exchange demand was transferred to the flexible rate market, but only a slightly increased supply. Much of the original list of imports at the fixed rate, including 19 basic foods, all raw materials imported by Jamaica Commodity Trading Company, 10 basic agricultural imports were transferred in June 1983 while on the receipts side a portion of tourist-related transactions were transferred. Sierra Leone abandoned the system before any changes in the scope of the multiple rate regimes were made.

b. Management of transition to unification

Another important factor in the behavior of the multiple rate regime is the management of the fixed rate during the transition since the two rates are determined simultaneously. In their work on dual markets, Nowak (1984) and Lizondo (1984) show that a devaluation in the official fixed market leads to an appreciation of the rate in the parallel flexible market by reducing the excess demand for foreign exchange in the official market which spills over into the parallel market. A policy of adjusting the fixed rate during the period has a number of advantages. By preventing a further overappreciation

of the currency at that rate and, preferably, by leading to a gradual real depreciation; the impact of the eventual depreciation implied by unification is more spread out and less abrupt. In the cases considered here, Uganda followed such a policy of depreciating in real terms the currency at the official rate, while Sierra Leone and Jamaica maintained the official rate at the same nominal level, leading to a real appreciation of the official currencies and in Jamaica a widening gap between the multiple rates. The incentives to spend real resources to move transactions from the higher to the lower rate tier increased and encouraged rentseeking and corrupt behavior. The knowledge that the rates eventually would be unified also led to much speculative behavior. Thus, if a multiple rate system is followed, it is preferable that the official fixed rate moves in such a way as to prevent a widening gap, as in Uganda, or that the transition period be kept short.

The trends during the multiple rate period are illustrated clearly in Figure 1, with the detailed nominal exchange rates and the real effective exchange rates based on trade weights and consumer price indexes given in Table 2. In Uganda, the fixed Window I rate was depreciated by 300% in nominal terms and 80% in real effective terms over the 22 months under the multiple rate regime. The auction determined rate initially jumped 200% above the official rate to 300 Ush/US\$ but did not trend upward, resulting in a large initial real depreciation and then a gradual real appreciation largely because of the transfer of transactions supplying foreign exchange to this market during the transition in addition to transfer of demand. When the markets were unified in June 1984, the nominal unified rate was 10% greater than the official rate and slightly more than the previous dual auction rate. In Sierra Leone, the official rate was maintained at Le 1.25/US\$, resulting in a

25% real effective appreciation over seven months. The nominal auction rate jumped initially 100% and then remained steady at Le 2.45 or 2.50/US\$ over the entire period so that the gap between the rates did not widen. However, this was due to the manipulation of the auction rate as mentioned. Unification in July 1983 was a Le 2.50/US\$, involving a real official depreciation but a return to an exchange control regime. In Jamaica, the official nominal rate was held at \$1.85/US\$, representing a further 10% real appreciation over the 10 months of the dual system. The premium of the commercial over the official rate was initially 50%, but widened to 75% before unification, as the flexible rate depreciated, due largely to the transfer of mainly foreign exchange demand transactions to the flexible rate market. When the markets were unified in November 1984, the nominal rate rose slightly above the previous dual rate, representing a sizeable 75% depreciation of the official currency.

In conclusion, the transitional multiple rate phase can give time for selected sectors to adjust to the impending real depreciation. Both the Ugandan and Jamaican governments considered it economically and politically prudent to delay and smooth out the impact of the depreciation on the public finances and on certain key input and consumer goods prices.

#### 5. Other Special Treatment Categories

Following the unification of the exchange rate systems, a number of foreign exchange purchases continue to be excluded from the bidding process of the auction. To ensure access to foreign exchange for a given quantity of petroleum imports and official external debt servicing, including official trade credit lines, those amounts of foreign exchange are allocated prior to the auction. However, the importer and debtor are charged at the auction determined exchange rate and essentially have made price inelastic bids. They

demand a given quantity regardless of the price. Initially, external arrears also were excluded from the Jamaican auction and allocated foreign exchange consistent with a given arrears repayment schedule. In Uganda, central government bids for foreign exchange were excluded from the auction beginning in July 1983. The government's allocation represented initially no more than 30% of the quarterly amount of foreign exchange provided to the floating rate market and from January 1984 no more than 25%. These central government purchases of foreign exchange went largely for defense equipment purchases, travel expenses, and medical supplies.

The major limitation with the special categories is that they may fully absorb the foreign exchange available making the exchange rate indeterminate. Recently this has occurred in Uganda. Since May 1985, the supply of foreign exchange to the Uganda central bank has fallen short of the quantities set aside for petroleum, medicine and other government supplies, and, therefore, without any supply, the foreign exchange auction has been suspended.

#### 6. Forward Market

Much of the debate on the appropriateness of flexible rates centers on the development of financial markets and the adequacy of speculative behavior where the forward market plays an essential role. Because of the exclusion of many capital account transactions from the auction system, the role of the forward market is limited to facilitating trade transactions. The major agents desiring forward cover are importers using foreign currency denominated trade financing, and those providing it include exporters extending credit. In many developing countries, the former may be larger than the latter, leading to difficulties in introducing a forward market.

The experiences reviewed here reflect the difficulties, particularly in Jamaica where import trade credit is widespread. No attempts were made to introduce such a market in Uganda and Sierra Leone. In principle, Jamaica introduced a full forward market with respect to both payments and receipts in November 1984 when the bands were removed but the market has not worked effectively. The central bank's initial contribution of \$3 million to the market has not been followed by a continuing supply. The absence of an effective forward market in Jamaica has led to a movement of importers from credit financing to sight orders, contributing to a one-time increase in demand for foreign exchange.

#### 7. Resulting Allocation of Foreign Exchange

One of the major critiques of administrative allocation of foreign exchange under exchange control regimes is that the mispricing of foreign exchange distorts relative prices and results in rents and misallocation of resources. <sup>1/</sup> In principal, an auction system allocates foreign exchange to where it earns the highest returns and eliminates rents. While these activities may differ from those that earn the highest social rates of return, administrative foreign exchange allocation is a very incomplete approach to this concern.

Two other concerns have been raised about the allocation resulting from the auction. One concern is the adequacy of the financial system to provide credit to productive units so that they can compete with trading which by its nature generates liquidity internally. Again, the issue of credit market imperfections applies not only to access to foreign exchange but also to credit for domestic purchases. However, it is worth examining the extent

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<sup>1/</sup> See Krueger (1983) and Bhagwati (1978).

to which the allocation of foreign exchange under the auction system has favored the consumption goods trade over imports of productive inputs.

The capital markets are less developed in both Uganda and Sierra Leone. The Uganda auction has a long enough history to demonstrate certain trends. Since the introduction of the exchange system in 1982, the composition of imports has shifted in favor of consumption goods. As shown in Table 7, consumption goods increased from 30% and 27% in 1981 and 1982, respectively, to 38% of unadjusted imports in 1983, while raw material and capital goods imports decreased from 33% and 30%, respectively, to 20% each. However, it is not clear that the mix of consumption goods, which consists largely of rural consumer basics, is sub-optimal in light of increased rural incomes due to agricultural pricing reform. In addition, the majority of imports, especially non-consumption goods, are aid-financed and there have been numerous other problems in disbursing aid. In Jamaica, the composition of imports in 1983 when the dual system was in effect was not significantly different from that in 1982 as shown in Table 7. However, under the previous system, consumption imports demanded in the market without access to official foreign exchange could enter Jamaica using black market funds under "no funds" licenses, and it is not surprising that overall import composition was largely unaffected.

In contrast to potential problems with insufficient credit to productive units, the government can have unlimited credit. The governments in the experiences reviewed here had effective overall controls, often in connection with a Fund program, or were not anxious to place upward pressure directly on the auction rate by bidding based on availability of central bank credit. In Uganda, government access is monitored through a fixed foreign exchange allocation not to exceed 25% of the available supply.

#### D. Concluding Remarks

In general, the exchange auction is viewed as an alternative exchange rate regime under special circumstances. It may be an appropriate response to an exchange crisis. A number of our member countries find themselves in this situation and therefore are considering introducing such a system. This paper reviews the major considerations in choosing an auction from among alternate exchange regimes. In comparison with intensified administrative allocation of foreign exchange, the exchange auction can be a more efficient instrument for rationing a given amount of foreign exchange, including when the auction is simply a part of a multiple rate regime. In comparison with fixed rate regimes, with an auction-determined flexible rate, the central bank avoids the difficult task of selecting an appropriate rate after a crisis, and with the price of foreign exchange rather than the quantity fluctuating, the central bank can be assured of restoring some reserves without resorting to the other extreme of an undervalued currency.

For countries which select such a regime, the paper outlines and analyzes options for structuring the auction. Three countries have operated such a regime with varying success in the 1980s, and their experiences illustrate the possibilities as well as the problems with such a regime. Uganda's system lasted the longest, since 1982, until its recent suspension; Jamaica has used the auction since the end of 1983; the Sierra Leone auction operated for less than a year. Access for capital account transactions has remained highly restricted. The auction regimes could incorporate special treatment for other categories, should that be viewed as necessary, for example, allocating minimum amounts of foreign exchange to petroleum or medicines, as long as these categories do not exhaust the supply. There also

tends to be an initial phase of multiple exchange rates, where the lower official fixed rate market subsidizes priority imports or debt service by taxing certain exports and the parallel auction (or other flexible rate) market clears other transactions. In Uganda and Jamaica, this transitional phase successfully resulted in a politically acceptable real depreciation. On the question of dynamic strategic behavior and alternative exchange rate pricing mechanisms, more analytical work remains to be done.

In addition to the auction's role as a system for relieving a debt crisis, it is important to be aware of the impact such a regime may have on a country's medium-term development. Certainly its success in producing a sustainable realistic real exchange rate is crucial. However, a difficulty arises if it is perceived that the so-called productive sectors do not have sufficient access to foreign exchange to compete in the auction with the more liquid trading sector or if the government's own access to credit is unrestricted. On the other hand, other concerns with increased capital outflows and destabilizing inflationary trends are rejected by the experiences reviewed here.

While it is administratively cumbersome and its properties have yet to be fully explored, the exchange auction most likely will prove to be a relatively popular alternative for those countries experiencing exchange crises. This paper provides the background for those interested in exploring its operation in more detail.

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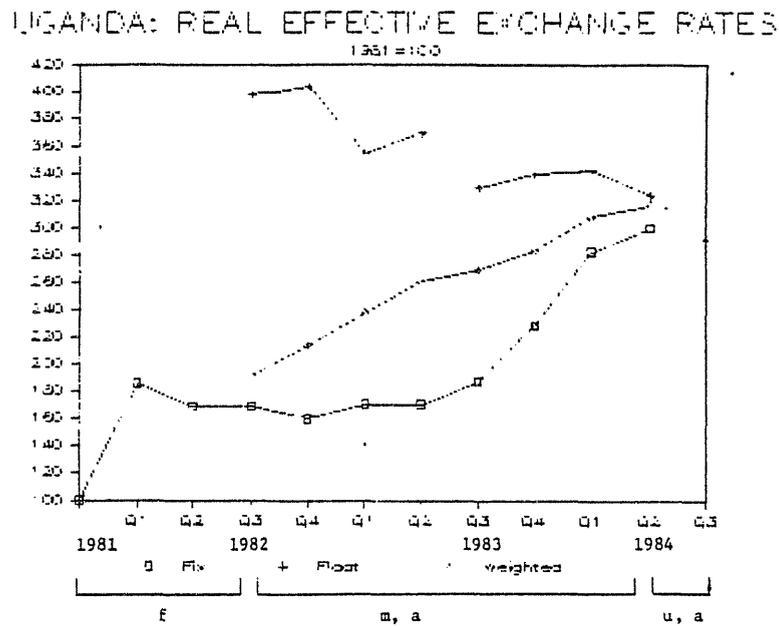
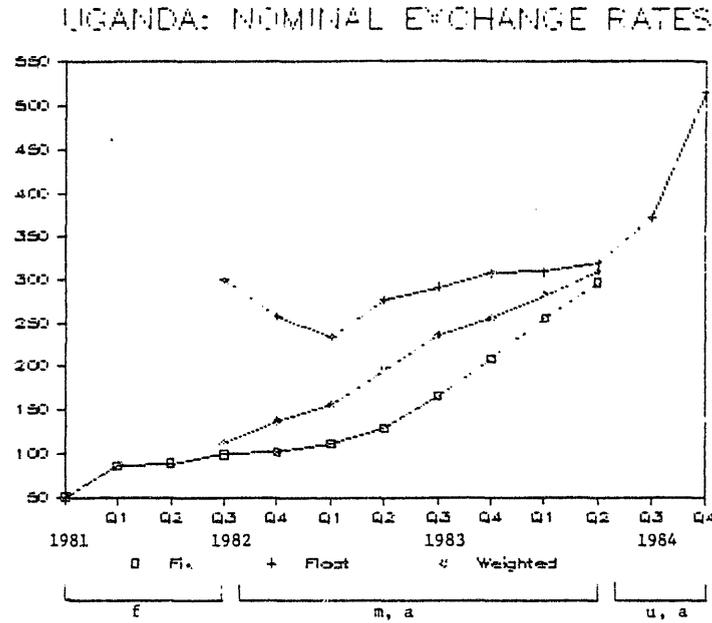
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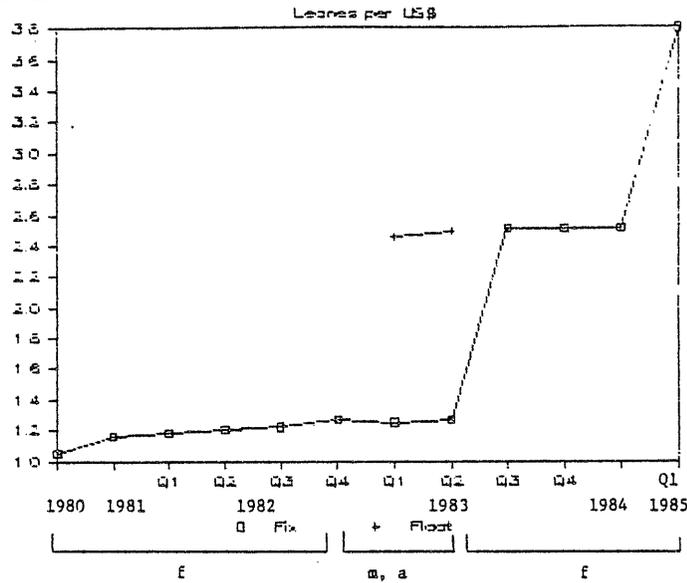
Figure 1



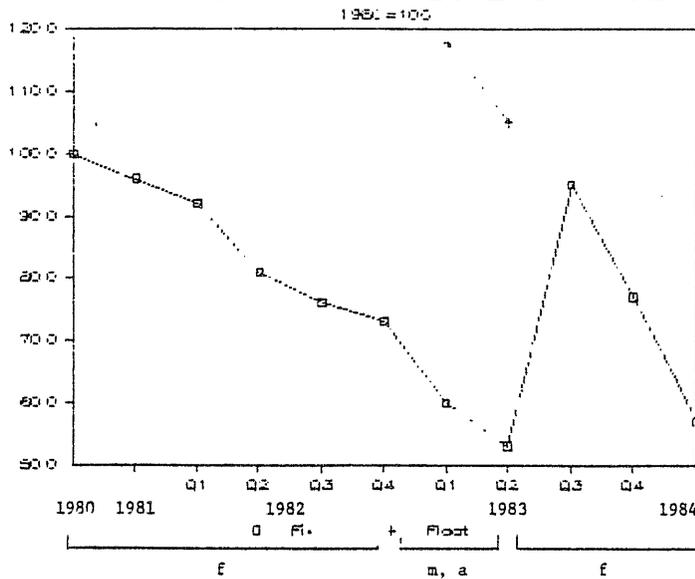
f - fixed rate, exchange controls  
m - multiple rate regime  
a - auction  
u - unified flexible rate regime

Figure 1 continued

SIERRA LEONE: NOMINAL EXCHANGE RATES

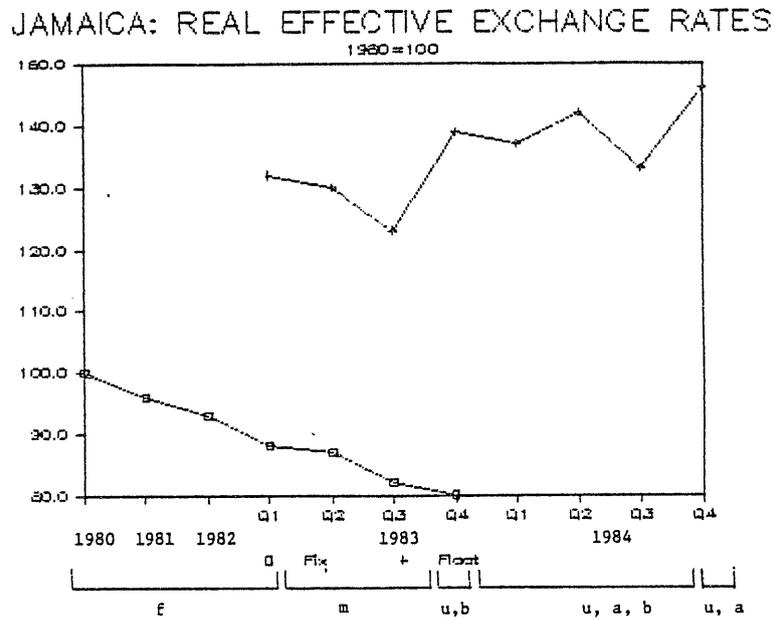
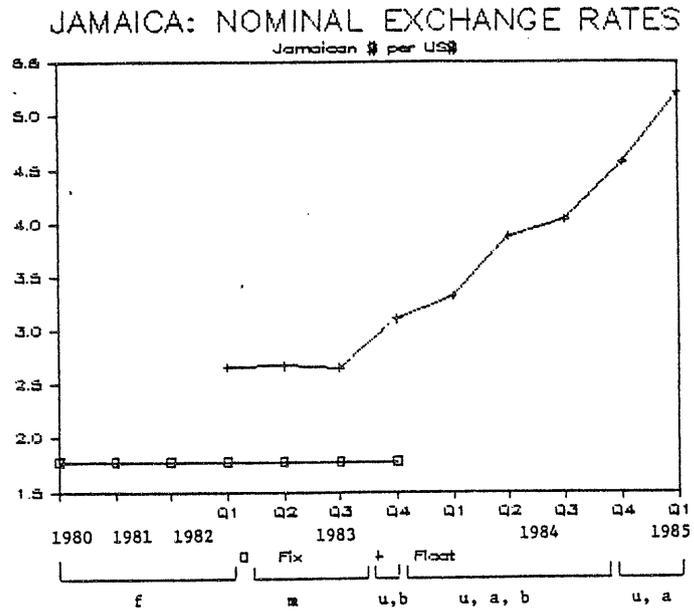


SIERRA LEONE: REAL EFFECT EXCHANGE RATE



f - fixed rate, exchange controls  
 m - multiple rate regime  
 a - exchange auction

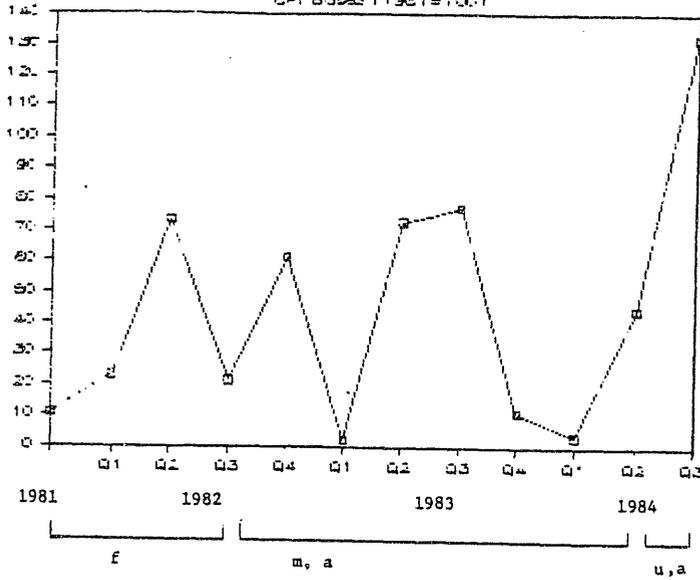
Figure 1 continued



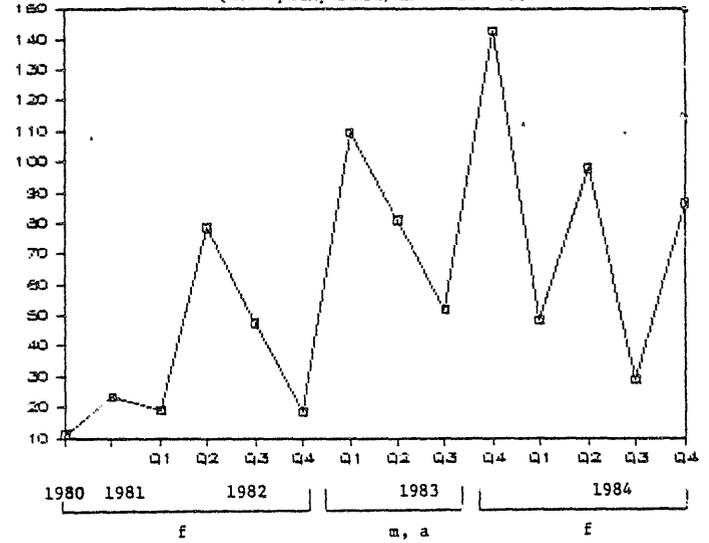
f - fixed rate, exchange controls  
 m - multiple rate regime  
 a - exchange auction  
 f - exchange rate band  
 u - unified flexible rate regime

Figure 2

UGANDA: INFLATION RATES  
CPI Based (1981=100)

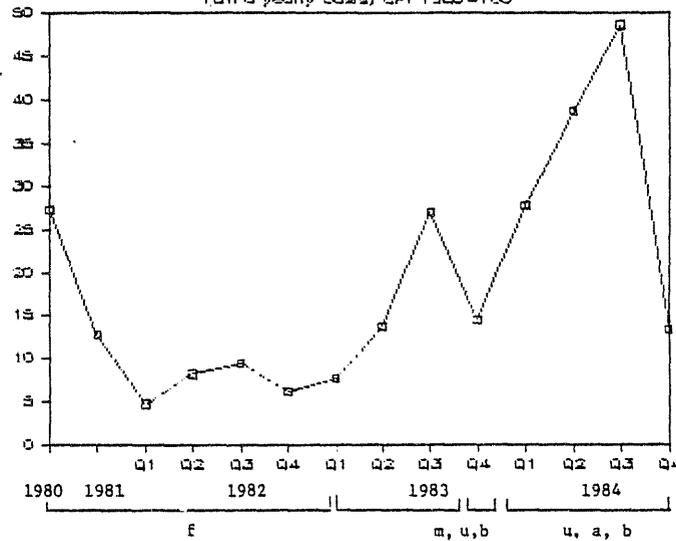


SIERRA LEONE: INFLATION RATES  
(On a yearly basis) CPI 1980=100



The quarterly inflation rates shown above are calculated as quarter-to-quarter rates compounded to yield annualized rates.

JAMAICA: INFLATION RATES  
(On a yearly basis) CPI 1980=100



- f - fixed rate, exchange controls
- m - multiple rate regime
- a - exchange auction
- b - exchange rate band
- u - unified flexible rate regime

Table 1: MAJOR DEVELOPMENTS IN EXCHANGE RATE REGIMES

|             | Uganda  | Sierra Leone  | Jamaica   |
|-------------|---|---|---|
| <u>1982</u> |   |   |   |
| August 23   | Introduction of dual system with managed pegged rate (Window I) and auction (Window II) (m,a) |   |   |
| December 17 |   | Introduction of dual system with official fixed rate market and auction/commercial market (m,a) |   |
| <u>1983</u> |   |   |   |
| January 10  |   |   | Introduction of dual System with official fixed rate market and interbank parallel market (m) |
| July 1      |   | Unification into fixed rate/ exchange control regime (f)  |   |
| November 24 |   |   | Unification into interbank floating market with exchange rate bands (u,b)                     |
| December 28 |   |   | Introduction of auction system in interbank market with bands (u,a,b)                         |
| <u>1984</u> |   |   |   |
| March 22    |   |   | Participation in auction is widened   |
| June 15     | Unification under auction system (u,a)  |   |   |
| November 29 |   |   | Removal of exchange rate bands (u,a)  |
| <u>1985</u> |   |   |   |
| May         | Suspension of auctions  |   |   |

Note: f - fixed rate, exchange controls  
 m - multiple rate regime  
 a - exchange auction  
 b - exchange rate band  
 u - unified flexible rate regime

Table 2: INTERNATIONAL RESERVES POSITION END OF PERIOD

(million US\$)

|      |     | Uganda * |     | Sierra Leone |       | Jamaica |
|------|-----|----------|-----|--------------|-------|---------|
| 1980 |     | 16.8     |     | 30.6         |       | 105.0   |
| 1981 | f   | 37.8     | f   | 16.0         | f     | 85.2    |
| 1982 |     | 72.1     |     | 8.4          |       | 109.0   |
| 1983 | i   |          | m,a | 25.0         |       | 93.1    |
|      | ii  |          |     | 10.4         | m     | 91.2    |
|      | iii |          |     | 7.5          |       | 83.8    |
|      | iv  | m,a      |     | 16.2         | u,b   | 63.2    |
| 1984 | i   |          |     |              |       | 54.7    |
|      | ii  |          | f   |              | u,a,b | 83.6    |
|      | iii |          |     |              |       | 67.2    |
|      | iv  | u,a      |     | 7.7          | u,a   | 96.9    |

\* - IFS figure end 1980 plus change from World Bank CEM.

Note: f - fixed rate, exchange controls  
 m - multiple rate regime  
 a - exchange auction  
 b - exchange rate band  
 u - unified flexible rate regime

Table 3: SUPPLY OF FOREIGN EXCHANGE TO AUCTION

(US\$ millions)

|  | 1981 | 1982       | 1983         | 1984                               |
|--|------|------------|--------------|------------------------------------|
| <u>Uganda</u>                            |      |            |              |                                    |
| Exports / <u>a</u>                       | 246  | 347        | 368          | 389                                |
| Capital Account Balance / <u>b</u>       | 277  | 247        | 214          | 138                                |
| Sales at Window II<br>(of which auction) | -    | 27<br>(23) | 153<br>(127) | 162 / <u>d</u><br>(124) / <u>d</u> |
| <u>Sierra Leone</u>                      |      |            |              |                                    |
| Exports / <u>c</u>                       | 153  | 110        | 107          | n.a.                               |
| Capital Account Balance / <u>e</u>       | 132  | 98         | 9            | n.a.                               |
| Supply to Auction                        | -    | -          | 19           | -                                  |
| <u>Jamaica</u>                           |      |            |              |                                    |
| Exports / <u>c</u>                       | 974  | 767        | 670          | 738                                |
| Tourism Receipts / <u>a</u>              | 284  | 336        | 399          | 424                                |
| Capital Account Balance / <u>e</u>       | 67   | 335        | 248          | 515                                |
| Supply to Auction                        | -    | -          | -            | 223 / <u>f</u>                     |

/a World Bank CEM

/b World Bank CEM, excluding arrears accumulation and reserves

/c IMF RED

/d January-October 1984

/e IMF IFS, excluding reserves

/f March-November 1984

Table 4: EXCHANGE RATES

|                                    | Nominal (US\$) |          |                            | Real (effective) |          |                            |
|------------------------------------|----------------|----------|----------------------------|------------------|----------|----------------------------|
|                                    | fixed          | floating | weighted<br>fixed/floating | fixed            | floating | weighted<br>fixed/floating |
| <u>Uganda (average) 1981 = 100</u> |                |          |                            |                  |          |                            |
|                                    | 1980           | 7        |                            |                  |          |                            |
|                                    | 1981           | 50       |                            | 100              |          |                            |
| f                                  | 1982 i         | 86       |                            | 186              |          |                            |
|                                    | ii             | 89       |                            | 169              |          |                            |
|                                    | iii            | 99       | 300                        | 169              | 398      | 192                        |
|                                    | iv             | 102      | 258                        | 160              | 404      | 214                        |
|                                    | 1983 i         | 112      | 234                        | 171              | 355      | 238                        |
| m,a                                | ii             | 129      | 277                        | 171              | 369      | 261                        |
|                                    | iii            | 166      | 291                        | 188              | 330      | 270                        |
|                                    | iv             | 209      | 307                        | 229              | 340      | 284                        |
|                                    | 1984 i         | 256      | 309                        | 283              | 342      | 308                        |
|                                    | ii             | 297      | 320                        | 300              | 323      | 316                        |
| u,a                                | iii            |          | 371                        |                  | 291      |                            |
|                                    | iv             |          | 515                        |                  |          |                            |
|                                    | 1985 i         |          |                            |                  |          |                            |

Source: IFS - official, IMF - dual

| <u>Sierra Leone (average) - 1980 = 100</u> |        |        |      |  |     |     |
|--|--------|--------|------|--|-----|-----|
|  | 1980   | 1.05 * |      |  | 100 |     |
|  | 1981   | 1.16   |      |  | 96  |     |
| f  | 1982 i | 1.18   |      |  | 92  |     |
|  | ii     | 1.20   |      |  | 81  |     |
|  | iii    | 1.22   |      |  | 76  |     |
|  | iv     | 1.27   |      |  | 73  |     |
|  | 1983 i | 1.25   | 2.46 |  | 60  | 118 |
| m,a  | ii     | 1.27   | 2.49 |  | 53  | 105 |
|  | iii    | 2.51   |      |  | 95  |     |
|  | iv     | 2.51   |      |  | 77  |     |
| f  | 1984   | 2.51   |      |  | 57  |     |
|  | 1985 i | 3.80   |      |  |     |     |

Source: IFS - official, IMF - dual

\* Pegged to the SDR at Le /SDR from 1978 to July 1983.

| <u>Jamaica (average) 1980 = 100</u> |        |      |         |  |     |     |
|-------------------------------------|--------|------|---------|--|-----|-----|
|                                     | 1980   | 1.78 |         |  | 100 |     |
|                                     | 1981   | 1.78 |         |  | 96  |     |
|                                     | 1982   | 1.78 |         |  | 93  |     |
|                                     | 1983 i | 1.78 | 2.66    |  | 88  | 132 |
| m                                   | ii     | 1.78 | 2.67    |  | 87  | 130 |
|                                     | iii    | 1.78 | 2.65    |  | 82  | 123 |
| u,b                                 | iv     | 1.78 | 3.10    |  | 80  | 139 |
|                                     | 1984 i |      | 3.31 ** |  |     | 137 |
| u,a,b                               | ii     |      | 3.87    |  |     | 142 |
|                                     | iii    |      | 4.03    |  |     | 133 |
|                                     | iv     |      | 4.56    |  |     | 146 |
| u,a                                 | 1985 i |      | 5.21    |  |     |     |

Source: IFS - official, IMF - multiple

\*\* Nominal float rate for QIV 1983: Derived as mean of average October rate, end November rate, end December rate. (Monthly average rates for November and December are not available.)

Note: f - fixed rate, exchange controls  
m - multiple rate regime  
a - exchange auction  
b - exchange rate band  
u - unified flexible rate regime

Table 5: BLACK MARKET PREMIUM END OF PERIOD  
(percentage)

|      |     | Uganda |       | Sierra Leone | Jamaica |       |
|------|-----|--------|-------|--------------|---------|-------|
|      |     | fix    | float |              | fix     | float |
| 1981 | f   | 246    |       |              |         | 48    |
| 1982 | i   |        |       |              |         |       |
|      | ii  |        |       | n.a.         |         |       |
|      | iii | 205    | 2     |              | f       |       |
|      | iv  | 155    | 13    |              |         | 65    |
| 1983 | l   | 115    | 12    |              |         |       |
|      | ii  | 133    | 17    |              |         |       |
|      | iii | 88     | 26    |              |         |       |
|      | iv  | 50     | 21    |              | u,a,b   | 1     |
| 1984 | i   |        |       |              |         |       |
|      | ii  |        |       |              | u,a     |       |
|      | iii |        | 63 *  |              |         |       |

Source: Black market rates - Pick's Currency Yearbook  
Official rates - IMF

\* - black market rate quoted in World Bank CEM

Note:

- f - fixed rate, exchange controls
- m - multiple rate regime
- a - exchange auction
- f - exchange rate bank
- u - unified flexible rate regime

Table 6: EXTERNAL DEBT SERVICE

|  | 1981           | 1982  | 1983  | 1984    |
|--|----------------|-------|-------|---------|
| External Debt Service<br>(US\$ millions) | 61.6           | 64.8  | 81.8  | 90.4    |
| Estimated Uganda Sh (billions)           | 3.1            | 6.1   | 12.6  | 32.5    |
| As % of government expenditures          | 9.3            | 9.7   | 13.4  | 21.1    |
|  | <u>Jamaica</u> |       |       |         |
| External Debt Service<br>(US\$ millions) | 397.2          | 258.9 | 205.0 | 357.2   |
| Estimated JM\$ millions                  | 707.6          | 461.2 | 396.1 | 1,408.4 |
| As % of government expenditures          | 33.6           | 19.0  | 14.8  | 48.4    |

Notes:

1981-1984 calendar year figures for government expenditures for Uganda and Jamaica: estimates are derived from reported fiscal years figures. That is, an average of two overlapping fiscal year figures is taken.

1984 government expenditure figure for Jamaica: 1984/85 figure is not available and 1983/84 figure is used.

Table 7: COMPOSITION OF IMPORTS

|                    | <u>Uganda</u>  |           |        |             |
|--------------------|----------------|-----------|--------|-------------|
|                    | 1980           | 1981<br>f | 1982   | 1983<br>m,a |
| Imports *          |                |           |        |             |
| (US\$millions)     | 504            | 415       | 422    | 428         |
| Unadjusted **      | 324            | 310       | 232    | 251         |
| (% Consumer Goods) | (28.6)         | (29.6)    | (26.7) | (38.4)      |
| (% Fuels)          | (38.3)         | (37.5)    | (43.4) | (41.6)      |
| (% Raw Materials)  | (7.0)          | (18.2)    | (13.8) | (7.9)       |
| (% Capital Goods)  | (26.1)         | (14.6)    | (16.1) | (12.1)      |
|                    | <u>Jamaica</u> |           |        |             |
|                    | 1980           | 1981      | 1982   | 1983        |
|                    | f              |           |        | m           |
| Imports ***        |                |           |        |             |
| (US\$billions)     | 1.2            | 1.5       | 1.4    | 1.3         |
| (% Consumer Goods) | (11.2)         | (12.9)    | (16.7) | (16.3)      |
| (% Fuels)          | (38.1)         | (33.2)    | (29.5) | (27.8)      |
| (% Raw Materials)  | (33.7)         | (33.9)    | (30.2) | (32.1)      |
| (% Capital Goods)  | (17.0)         | (20.0)    | (23.6) | (23.8)      |

Notes: \* World Bank CEM

\*\* Excludes government imports where no sectoral composition is available, errors and omissions and other adjustments for valuation and imports without foreign exchange coverage.

\*\*\* IMF RED

Note: f - fixed rate, exchange controls  
 m - multiple rate regime  
 a - exchange auction  
 b - exchange rate band  
 u - unified flexible rate regime