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SM/86/162  
Correction 1

July 25, 1986

To: Members of the Executive Board  
From: The Secretary  
Subject: Theoretical Aspects of the Design of Fund-Supported  
Adjustment Programs

The following corrections have been made in SM/86/162 (7/2/86):

Page 22, footnote 1, line 2: for "(June 1)" read "(June 9)"

Page 26, footnote 1, line 3: for "(June 1)" read "(June 9)"

Page 70, footnote 2, lines 2-3: for "EBS/84/227 (November 7, 1984)."  
read "EBS/84/232 (November 16, 1984)."

Page 75, footnote 1, line 2: for "(5/9/79)" read "(5/11/79)"

Corrected pages are attached.

Att: (4)

Other Distribution:  
Department Heads

results depend crucially on the private sector's expectations generated by government policies. The strategy of a shock approach--such as a currency reform and price freeze, accompanied by strong fiscal and monetary measures--has often met with initial success, but the long-run results, which depend on a variety of factors, are more uncertain. There is still much to be learned about the effects of monetary policy, exchange rate movements, price and wage controls, and interest rates on the inflationary process.

The examples just mentioned underline the importance of using knowledge of different time lags to ascertain the proper timing and strength of policy measures, as well as to setting realistic intermediate objectives. If policy instruments are chosen that achieve desired objectives only in the long run, and if the objective must be met in the short run, then the use of such instruments may have to be supplemented by the temporary use of other measures. This may have to be done even in those instances where the policy instruments with the weaker short-run effects are superior from an efficiency standpoint--for example, exchange rate adjustments are preferable to import restrictions as a means of improving the balance of trade, but the restrictions are likely to show stronger immediate effects. As this example also makes clear, a medium-term policy strategy must specify time paths for the objectives and instrument variables contained in the program.

An important instance in which the knowledge of time lags is crucial for economic policy decisions is when a choice must be made between a shock treatment or a gradualistic approach to policy reform. It is true that political considerations may be paramount in making such decisions; often, a gradualistic approach is chosen because of its greater political acceptability. Nevertheless, the gradual introduction of measures whose results are achieved only with a long time lag may result in an unacceptably long waiting period. This is typically the case with structural reforms, which frequently encounter strong political resistance and are therefore introduced in stages. Such gradualism leads to especially unfortunate results when accompanied by demand-management policies that are introduced over a short period. Such temporal misalignment of policies can lead to unnecessarily large declines in income and output over the short run or, alternatively, to unnecessarily large foreign borrowing over the period required for the results of supply-side policies to catch up with those of demand-management measures.

### III. A Theoretical Analysis of Financial Programming: Monetary and Fiscal Policy

The previous section has described Fund-supported adjustment programs as complex packages of policy measures designed to achieve a viable balance of payments, in the medium term if not in the short term. While programs

differ considerably in their details, there is nevertheless a common thread running through them, namely, the need to restore balance of payments equilibrium while maintaining, indeed strengthening, the conditions for achieving a satisfactory rate of long-term output growth. As a necessary condition for achieving this outcome, the basic structure of all programs is built on a financial analysis that aims at ensuring consistency between the impact of proposed policy measures and the desired balance of payments outcome. <sup>1/</sup> This consistency, which is incorporated into a set of balance sheet relationships that relate the assets and liabilities of the banking system to the balance of payments, has sometimes been termed the "monetary approach to the balance of payments" <sup>2/</sup> and has often been mistakenly identified as the "theory" underlying Fund-supported adjustment programs. <sup>3/</sup> While Fund staff certainly played a significant role in its development, <sup>4/</sup> and while it is utilized in some form in Fund-supported programs, this financial programming framework is only one element, albeit perhaps a central one, in the theoretical underpinnings of Fund-supported adjustment programs.

This section will outline the basic financial programming framework of an open economy with fixed exchange rates and discuss its principal advantages and shortcomings, leaving to Section IV policies specifically related to achieving medium-term growth objectives. The model serves as a convenient starting point for a more detailed study of the various alternative transmission mechanisms between the array of policies typically included in Fund programs and the ultimate objectives of the balance of payments, price stability and economic growth. While one may base programs on different theoretical relationships, it is shown that monetary consistency, as incorporated in the financial programming approach, must always hold. This model is described in subsection 1, and its extensions set out in subsection 2 highlight the respective roles of monetary and fiscal policy. A more detailed discussion of the specifics of these policies, within the setting of a Fund-supported adjustment program, is given in subsections 3 and 4, respectively. The roles of other policies, both in restoring balance of payments equilibrium and in achieving other objectives, are taken up subsequently in Section IV.

#### 1. Derivation of the basic financial programming framework

The view that the balance of payments is essentially, but not exclusively, a monetary phenomenon--in other words, that the demand and supply of money play a fundamental role in its determination--has a long history

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<sup>1/</sup> See "Adjustment Programs--Broad Design and Key Indicators," EBS/82/98 (June 9, 1982).

<sup>2/</sup> See Frenkel and Johnson (1976). The Fund has also adopted a similar definition for this approach, see IMF (1977).

<sup>3/</sup> See Diaz-Alejandro (1984).

<sup>4/</sup> See Heller and Rhomberg in IMF (1977).

$$(3.3) \quad \Delta M^d = \Delta M$$

These three components, (3.1)-(3.3), can be combined to yield an expression for the change in net foreign assets, in which the balance of payments is given by the difference between the change in the money stock (equal to the change in the nominal demand for money from the equilibrium condition) and the change in domestic credit:

$$(3.4) \quad \Delta R = \Delta M - \Delta D = f(\Delta y, \Delta P, \dots) - \Delta D$$

This equation essentially says that the change in net foreign assets will be positive (the balance of payments will be in surplus) to the extent that the change in the total money stock exceeds the change in domestic credit. Indeed, in the special "small country" case, where the domestic price level is determined by foreign prices through purchasing power parity (or the "law of one price") and real income is assumed exogenous, so that the demand for money is effectively independent of changes in domestic credit, any increases in domestic credit above the desired increase in money will be offset by decreases in net foreign assets on a one-for-one basis. <sup>1/</sup>

The simple model described by (3.4) can also be put in a more general framework, similar to that suggested in Section II.2, by explicitly considering income and expenditure relationships and the role of private capital movements in an open economy. The analysis here still retains the money demand function as the main behavioral relationship, although, as discussed later, this is only one of a number of relationships that need to be quantified in arriving at a framework for analysis. We can begin by restating (2.1), namely, that the gap between income and absorption is equal to the current account (equal to differences between imports and exports of goods and services):

$$(3.5) \quad CA = Y - A$$

The current account must be matched by changes in net foreign assets of the banking system ( $\Delta R$ ) and in the net foreign indebtedness of all nonbank residents ( $\Delta FI$ ),

$$(3.6) \quad CA = \Delta R - \Delta FI.$$

Since the change in net foreign assets of the banking system is also equal to the difference between the change in the money supply and the

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<sup>1/</sup> This type of analysis is characteristic of the "Chicago version" of the monetary approach to the balance of payments. See Fränkel and Johnson (1976).

change in domestic credit from the balance sheet of the banking system, it can be seen that combining (3.4) and (3.6) yields:

$$(3.7) \quad CA + \Delta FI = \Delta M - \Delta D$$

In terms of the difference between nominal income (Y) and domestic absorption (A), equation (3.7) can be rewritten as:

$$(3.8) \quad Y - A + \Delta FI = \Delta M - \Delta D$$

In other words, calls on resources by residents (absorption) will exceed the sum of the supply of domestic resources (income) and foreign savings (changes in net foreign indebtedness) when the change in domestic credit exceeds the change in the money stock.

If it is assumed that  $M^d$  is a function of a few variables and that these variables are independent of  $\Delta D$ , then the conclusion remains that a ceiling for  $\Delta D$  will determine  $\Delta$ , i.e., the balance of payments. It should be noted, however, that any current account balance matched by an appropriate nonbank capital flow is also consistent with equilibrium in this framework. Moreover, in each case one would still have to determine whether the domestic price level, the domestic interest rate, or domestic expenditure might be influenced by a change in net domestic assets.

With the overall outlines of the financial programming framework in mind, it is relatively straightforward to show how the basic relationship between the change in net foreign assets and changes in domestic credit--i.e., equation (3.4)--can be used for the design of a financial program.<sup>1/</sup> In the simplest case, only three steps are required. First, it is necessary to set a target for changes in net foreign assets over some specified period, generally a year. Second, an estimate is made of the probable course of the demand for money over the same period. This involves projecting, or setting targets for, the principal determinants of money demand, such as real income and prices. If a simple velocity function is being utilized, then all that is needed is a projection for nominal income and an assumption of how the income velocity of money, if not assumed constant, is likely to behave over the period. For more general demand for money functions, such a projection would require estimates of the parameters that link the demand for money to the relevant explanatory variables. Finally, given a forecast of the demand for money during the period in question and the overall balance of payments target (i.e., changes in net foreign assets), the corresponding figure for the change in net domestic assets of the banking system is deduced from the balance sheet identity of assets and liabilities.

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<sup>1/</sup> See "Formulation of Credit Ceilings in Stand-By Arrangements," SM/71/145 (June 11, 1971), and "Adjustment Programs--Broad Design and Key Indicators," EBS/82/98 (June 9, 1982).

then decide to shift their effort into subsistence food production or even leisure. As for the analogous argument made on the import side, namely, that when imports are controlled directly, exchange rate changes do not control the volume imported, recent experience in a number of countries has shown that controls and misaligned prices breed black market operations, and, moreover, that economies formerly self-sufficient in food production can, when imported food becomes progressively cheaper, become increasingly dependent on imported foodstuffs.

If it is established that the alignment of relative prices is inappropriate, say, because the existence of an unsustainable current account balance, it is possible to correct this situation, in principle, through policies other than exchange rate adjustment. In general, however, the latter is likely to be a much simpler way of achieving the correct alignment than are deflationary policies designed to force down domestic prices and wages, which in most countries tend to be resistant to downward changes without substantial falls in output. In some cases, where price misalignment has occurred through exogenous exchange rate movements--for instance, an effective appreciation of the major currency to which the domestic currency is pegged--exchange rate action is again the obvious means of restoring a correct alignment. Indeed, a number of countries now maintain exchange rate regimes that are designed to make such corrections more or less automatically, either by pegging to a trade-weighted basket of other currencies, or by frequently adjusting the exchange rate for the domestic currency according to a formula that takes into account foreign and domestic inflation.

While it is generally accepted that exchange rate adjustment is the simplest way of restoring a previously existing alignment of domestic and foreign prices that had changed because of domestic inflation or foreign exchange rate movements, it is more difficult to decide to what extent exchange rate policy should bear the burden of an external adjustment, the need for which has arisen for other reasons, such as long-run changes in the terms of trade, the need to adjust to a different level of net capital inflow, or the permanent decline in domestic resources associated with traditional export commodities. In considering the role of exchange rate policies in this context, one must in general compare the impact of alternative policy packages, which may or may not include an exchange rate adjustment. 1/

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1/ Too often, for example, "the effects of a devaluation" are studied as if in isolation from other policies, and its allegedly deflationary effects are cited, as if there existed some other combination of policies that would have accomplished the same adjustment in a non-deflationary way, an eventuality that may in many cases be impossible. For arguments supporting the view that devaluations will be necessarily contractionary, see Diaz-Alejandro (1965), Krugman and Taylor (1978), Dornbusch (1981) and Hanson (1983). A contrary view is presented in Gylfason and Schmid (1982).

The fact that exchange rate adjustments may have both desirable and undesirable short-term effects has led some countries to establish a dual exchange rate system, under which selected transactions take place at an "official" exchange rate maintained by intervention of the monetary authorities, while the remaining transactions take place at a "free" or "parallel" exchange rate, which is usually determined by market forces and is in most cases more depreciated than the official rate. A dual exchange market may also enable the authorities to increase revenues from the foreign exchange profits of the central bank. Nevertheless, such a system creates additional complications in the design of adjustment programs, and because of the administrative problems and price distortions arising from a dual exchange system, Fund-supported adjustment programs generally specify the eventual unification of exchange markets. <sup>1/</sup>

c. Determining the desirable extent of exchange rate adjustment

The task of determining the degree of exchange rate change required, in conjunction with other policies, to achieve a given amount of adjustment in the balance of payments, is extremely complicated. <sup>2/</sup> In the first place, it is not just merchandise imports and exports that are affected by a change in exchange rates; in many countries, large changes in flows of private capital, workers' remittances and other invisible transactions may result. Moreover, it may be difficult to predict the impact of an exchange rate adjustment on all types of external transactions if the previous misalignment was so large as to encourage a sizable parallel market. Finally, the results may be yet more uncertain if the policy package includes liberalization of the foreign trade and payments system. In view of these problems, it is not surprising that the move to an appropriate exchange rate is often accomplished gradually and by utilizing to some degree market forces. Where a parallel market existed before the exchange rate adjustment, it may be maintained for a certain period or at least the rates previously prevailing in that market will be relied upon as an indicator of an appropriate "market-related" or "equilibrium" rate.

In many instances, however, there is reluctance to depend upon the market to determine an appropriate rate, and in any event one may wish to arrive at an independent judgment of what such a rate should be. It has become common practice in the Fund to base such judgments at least in part on indices of real effective exchange rates, based on some combination of export and import weights. These indices are especially useful when domestic rates of inflation have been considerably higher than those abroad; in such instances, broad judgments as to the range of necessary exchange rate correction can be reasonably sound. Two caveats are in order, however. First, one should beware of attaching

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<sup>1/</sup> See Lizondo (1984), (1985).

<sup>2/</sup> For a detailed discussion of this issue, see "Formulation of Exchange Rate Policies in Programs Supported by the Fund," EBS/84/232 (November 16, 1984).

choice of speed of adjustment is essentially a variant of the "gradualism versus shock" issue that has been discussed in Section II.4. However, since there are ample reasons, already spelled out above, for considerable uncertainty as to the proper amount of exchange rate movement, it may be best at the start to make only the minimum amount of adjustment that is certain to be needed. Following that, further moves can be made in small stages, observing the results at each step, until the desired balance of payments adjustment has been obtained. Against this, however, it is sometimes argued that if a country is not willing to adjust the exchange rate frequently, one might wish to devalue by more than initially necessary in order to avoid the capital flight arising from the expectation of a further imminent devaluation.

### 3. External debt management policies

The pursuit of an adequate rate of economic growth, consistent with a sustainable balance of payments over the medium term, requires, in the first instance, a judgment about the ability of a country to obtain and productively employ resources made available from abroad. In the context of an adjustment program, guidelines on external debt management basically describe policies that would provide the country with the maximum sustainable net resource transfer over the medium term. <sup>1/</sup> These guidelines have typically involved setting limits on the level and maturity composition of the external debt acquired; in situations where external financing has become scarce, a country's debt strategy may also include negotiation of rescheduling the existing stock of external debt, attempts to increase the flow of concessional financing, and limiting the amount of short- and medium-term borrowing on non-concessional terms. The amount of sustainable and obtainable foreign borrowing--whichever is lower--defines the necessary degree of adjustment of the imbalances in the economy; hence, external debt management policies become of critical importance in financial programming.

This section first discusses the real aspects of debt problems and then the financial aspects.

#### a. Real aspects of debt problems

At the most basic level the problem of determining the sustainable level of foreign borrowing is one of allocation of real resources over time and across countries. In terms of the monetary framework developed in Section III.1, the difference between domestic income (Y) and absorption (A) must be matched by an equivalent change in net foreign assets (R) and changes in net external indebtedness (FI), i.e.:

$$(4.1) \quad Y - A = \Delta R - \Delta FI$$

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<sup>1/</sup> See Loser (1977) and "External Debt Management Policies" (SM/79/125, 5/11/79).



This section focuses primarily on the relationship between a country's use of the net goods and services provided by nonresidents and the net external debt associated with these flows. For the present analysis the monetary authorities are combined with the rest of the economy so that the change in total foreign debt is defined as:

$$(4.2) \quad \Delta FD = \Delta FI - \Delta R$$

For developing countries there is a strong presumption that net foreign savings can and should be utilized to augment the stock of domestic capital over and above what could be provided by domestic savings; in addition, short-term and medium-term borrowing (such as the use of Fund resources) may also be used to smooth the consumption path over time. This presumption in turn implies that the "normal" external position for a developing country would involve net inflows of goods and services from abroad, conventionally measured by the current account balance. Roughly speaking, the addition to the stock of net financial debt over time must contribute to the country's ability to make payments to nonresidents; this is the fundamental relationship underlying the notion of sustainability. In the aggregate this means that the value of net exports of goods and services must increase sufficiently in order to pay nonresidents for the use of their savings without impairing the flow of imports required for supporting the full utilization of productive capacity. <sup>1/</sup>

The analytical framework relevant to this question deals with the relationships among foreign and domestic savings, capital formation and growth and has been extensively reviewed in publications by Fund staff. <sup>2/</sup> This framework, which is based on the "growth with debt" literature, focuses on the net exchanges of goods and services among countries and its main lesson is that a country should acquire foreign savings (in the form of net imports of goods and services) as long as this provides the basis for paying the required rate of return to the supplying country over the time period during which the resources are made available. The basis for paying the required rate of return is usually thought of as the increased output made possible by the additional real capital that can be accumulated with the aid of net foreign savings. <sup>3/</sup> To be sure,

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<sup>1/</sup> To be sure, an ongoing process of import substitution may reduce the rate of growth of exports implied by this criterion. But import substitution has natural limits in most cases, so that this qualification would be likely in most instances apply only for a period of some years, not over the long run.

<sup>2/</sup> See, for example, Loser (1977), and McDonald (1982).

<sup>3/</sup> It might also be optimal for countries to utilize external debt to smooth consumption over time in the face of various internal and external shocks. A more general criterion would be that the pattern of distribution of world savings should be welfare enhancing. See Williamson (1973).