The Effectiveness of IMF Conditionality in Non-Oil Developing Countries: An Empirical Verification *

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I. Introduction

Policies related to the use of International Monetary Fund (IMF) resources, known as its conditionality, have been a subject of much debate in recent years. The Fund has been accused of adopting a doctrinaire monetarist approach and being insensitive to the individual situations of borrowing countries, of imposing unreasonably onerous conditions, of being ideologically biased against socialism and in favor of free markets, and even of perpetuating dependency. It has also been criticized for being too concerned about short run solutions and too anxious to achieve quick results. Alejandro (1981) and Taylor (1981) have criticized IMF conditionality on both theoretical and empirical grounds. According to Alejandro (1983), the IMF conditionality in the Southern Cone resulted in a large capital inflow in response to a high domestic interest rate, higher inflation and a greater external debt. Green (1983) and Killick (1983) have indicated limited success of the IMF policy prescriptions in Kenya and Tanzania. Both authors asserted that this conclusion can be generalized for the whole relationship of the Fund to Sub-Saharan Africa. IMF conditionality also failed in Jamaica in 1978-79 (Sharpley, 1983).

There is also some evidence on the success of IMF condi-

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tionality in borrowing countries. Donovan (1982) examined empirically the impact of the Fund's lending requirements on the balance of payments, growth, and inflation of developing countries that borrowed from the Fund during the 1970's. He concluded that the countries that undertook Fund programs achieved significant reductions in their external deficits.

There is also much debate over the relative importance of external and internal factors in causing balance of payments problems. If the external factors are the main cause of stabilization problems, then less conditionality should be imposed by the IMF. Khan and Knight (1983) and Doroodian (1985) showed that both external and internal factors were at work against the non-oil developing contries. Black (1981) concluded that, although external factors have been important, internal factors have nevertheless been dominant in causing stabilization problems. Consequently, IMF conditionality should ensure satisfactory domestic policies. On the other hand, Dell (1981) concluded that, based on a cross country analysis for the United Nations, most of the stabilization problems during the 1970's were caused by external factors. Accordingly, he advocated much greater international financing and less conditionality.

While the aforementioned studies and a number of others (discussed below) have investigated the impact of various policy instruments imposed by the IMF on the program countries, little has been done to study empirically the effectiveness of Fund's individual policy prescriptions. The purpose of this paper is to go beyond the previous studies by examining quantitative evidence of the impact of IMF lending policies on balance of payments deficits and hence on demand for loans in 34 non-oil developing countries. The hypothesis being tested is as follows. If the orthodox stabilization program of the Fund is the cure to external deficits, then the countries that undertake adjustment programs supported by the use of Fund resources at time t should have none or less demand for loans at time $t+3$, when adjustments are assumed to be completed. The analysis is based on a simple framework. It uses a demand function where the dependent variable is the use of Fund credit as a proportion of the nominal value of imports, and its independent variables are those IMF *policy instruments* that are quantifiable. These variables are the percentage changes, over a three year interval, in the real

domestic interest rate, the real exchange rate, the domestic credit, and the government deficit as a proportion of nominal GNP.

The organization of the paper is as follows: Section II discusses IMF conditionality; Section III presents the theoretical model and analyzes the empirical results; and Section IV briefly summarizes the results and conclusions.

At the outset it is important to mention certain areas that the paper does not cover, even though they are closely related to the subject at hand: the income distribution effect of IMF conditionality, the origin or the proximate cause of disequilibrium, the impact of changes in international circumstances on balance of payments and hence on demand for loans while the country is undergoing an adjustment process, and finally due to lack of public data the paper does not distinguish between "high" and "low" conditionality.

II. IMF Conditionality

The Fund conditionality is primarily concerned with macroeconomic variables relating to monetary, fiscal and exchange policy. Until recently, balance of payments difficulties were associated with the prevalance of excess demand pressures. Therefore, the policy objectives of conditionality were controlling the level or the rate of growth of domestic aggregate demand, and lowering the rate of inflation. The Fund has changed its procedures in the light of recent events which called for attention to complementary measures aimed at bringing an efficient utilization of resources to strengthen domestic productive capacity (Guitian, 1981). The main features of the IMF stabilization program are a devaluation of the domestic currency, a reduction in the ratio of government deficit to GNP, a contraction in the rate of growth of domestic credit, and an increase in the real interest rate.

A. Exchange Rate Devaluation

Devaluation is designed to bring about a more meaningful balance between production and absorption. It tends to shift resources away from production of non-tradables into production

of tradables, while consumption is shifted from tradables to non-tradables. The use of exchange rate as a policy instrument is frequently a source of controversy. Whether the developing countries can successfully divert their resources to the proper industry depends on the price elasticity of demand for exports and imports. According to Cline (1983), there is substantial evidence that the elasticities are relatively high in these nations. Doroodian (1985), on the other hand, showed that demand for exports and imports of non-oil developing countries are insensitive to prices. The study by Aizenman (1981) suggests that with quotas present devaluation leads to domestic inflation. It also reduces the speeds of adjustment in trade. Krueger (1981) provides a better explanation for the effects of devaluation under trade restrictions. Cline (1983, p. 186) summarizes it as follows:

> The inflationary consequences of devaluation will depend on whether the external influence was open or suppressed. If it was open, devaluation will mean higher prices for imports and inflationary pressures: but if the influence had been suppressed by protection, higher import prices will already have affected the economy, and a package devaluing the currency while jointly removing protection need not worsen inflation.

To deal with the inflationary consequences of devaluation Argentina, Chile, and Uruguay beginning in 1978, adopted the strategy of preannounced devaluation as an integral part of their comprehensive stabilization programs (Blejer and Mathieson, 1981). This policy is expected to generate anti-inflationary effects by opening the domestic economy to increased international trade and capital flows. Blejer and Mathieson (1981) concluded that preannouncement can be destabilizing when the other elements of the stabilization package, especially fiscal policy, are inconsistant with the deceleration of inflation implied by the preannounced crawl.

B. Reducing the Share of Government Deficit in the Economy

In order for devaluation to be successful, it is essential that supporting demand management such as pricing and wage policies be implemented in order to ensure that the immediate reduction in real balance and the changes in relative prices resulting from

devaluation are not subsequently offset. To reduce absorption, the Fund prescribes that the borrowing countries initiate measures to reduce the share of government deficits in the GNP.

There is substantial evidence suggesting that the government deficit has played a significant role in domestic inflation and in the balance of payments disequilibrium of developing countries. Khan and Knight (1983) and Dorrodian (1985) indicated that one of factors that led non-oil developing countries to experience huge deficits in their current accounts during the 1970's was the increasing share of the government deficit relative to GNP. Based on a study by Donovan (1982), Kelly (1982) investigated the extent to which reduction in the balance of payments deficits in program countries resulted from adjustments in the government's financial position as opposed to adjustments in the rest of the economy. The empirical results indicated that, at least for some countries, changes in fiscal deficits have little effect on the rest of the economy and are fully reflected in changes in the current account. Dutton (1971), Aghevli and Khan (1977), and Tanzi (1978) have shown that growing fiscal deficits led to selfgenerating inflation in Argentina and Indonesia. Aghevli and Khan concluded that the results of their study of Indonesia have important implications for other countries that resort to deficit financing. They stress that the selfperpetuating process of inflation, resulting from budget deficits, could easily lead to hyperinflation causing serious economic as well as political instability.[1]

C. *Reducing the Rate of Growth of Domestic Credit*

The orthodox stabilization theory emphasizes excessive money creation as a source of inflation (for a more detailed explanation of this theory see Cline and Chapter 9 of Williamson, 1983 and also Polak, 1957). The theory suggests that any expansion in money supply eventually leaks abroad through balance of payments deficits and reserve losses. Substantial work has been done on the links between monetary growth and inflation (Vogel, 1974; Aghevli and Khan, 1978; Harberger, 1978; and Khan, 1980) and

[1] It should be mentioned, however, that the inflationary pressures of government deficits are stronger in developing countries than in advanced nations. In the absence of organized capital markets, money creation may be necessary to finance the government deficit.

between money and the balance of payments (Frenkel and Johnson, 1976; IMF, 1977; and Magee, 1976). Because of this strong relationship between money supply and the balance of payments deficits, IMF conditionality includes the contraction of money supply growth as one of its main tenets.

D. Raising Real Interest Rate

To stimulate saving and net foreign capital inflows, the IMF stabilization program calls for an increase in real interest rates. In most developing countries nominal interest rates are regulated below the equilibrium level and they are lower than the rate of inflation. As a result a state of disequilibrium for excess demand arises in both the money market and the real sector. This results in credit rationing (Wong, 1977) and the perpetuation of price instability (Leff and Sato, 1980). The IMF is therefore requiring the borrowing country to deregulate the financial market. The resultant increase in the real interest rate is intended to induce domestic producers to switch from capital-intensive to labor-intensive techniques which may reduce the imports of capital and intermediate goods and increase domestic employment (Galbis, 1977). It should be noted that this financial reform has not always been successful. Researchers like Schydlowsky (1979) and Bruno (1979) have argued that financial deregulation may lead to stagflation, rising prices and falling output. Foxley (1981) has shown the aforementioned consequences in Chile and Argentina.

It is important to bear in mind that the above factors may exert a systematic influence on each other. This interaction gives rise to practical difficulties in making a clear cut distinction between the effect of each factor on the demand for loans.

III. Empirical Evidence of the Effectiveness of IMF Conditionality

The analysis in the previous section has been descriptive and aggregate in nature. In this section a more systematic empirical examination is made of the respective influences of the five policy instruments on demand for Fund financial resources. For this purpose the evidence is examined for 34 non-oil developing countries

for which the relevant data are available.[2] The required data were obtained as follows: the IMF provided the largest amounts for borrowings during 1976-77. Consequently, this period was chosen as the base period. The changes in the independent variables (shown below) were calculated for a three-year interval from the base period.

The basic equation considered here has the following form:
$UFB/M = a_0 + a_1RC + a_2\,(FP/GNP)C + a_3RIRC + a_4MSC + e$
where:

$$RC = FC - (CPIC - WCPIC)$$
$$RIR = (NIR - CPIC)$$

The definition of variables are as follows:

UFB = Use of fund credit during 1979/1980, depending on whether the base year for the home country is 1976 or 1977, in U.S. dollars;
M = Nominal imports of the home country during 1979/1980, in U.S. dollars;
R = Real dollar price of domestic currency;
E = Nominal dollar price of domestic currency;
CPI = Consumer price index of the home country, 1980 = 100;
WCPI = Consumer price index in industrial countries (a proxcy for foreign price level), 1980 = 100;
FP = Fiscal position (revenues — expenditures), in domestic currency;
GNP = Gross domestic product of the home country, in domestic currency;
NIR = Nominal domestic interest rate measured by discount rate;
RIR = Real domestic interest rate;
MS = Domestic money supply measured by M_1 definition of money;
e = error term.

[2] These 34 countries are Bangladesh, Bolivia, Cameroon, Chile, Costa Rica, Cyprus, Dominican Republic, Egypt, Greece, Guyana, Haiti, Israel, Jamaica, Kenya, Korea, Malawi, Mexico, Morocco, Nepal, Pakistan, Panama, Papua New Guinea, Peru, Philippines, Portugal, Senegal, Sri Lanka, Sudan, Tanzania, Thailand, Turkey, Yugoslavia, Zaire, and Zambia.

The suffix "C" represents the percentage change from the base year.

Based on the discussion in Section II, one would expect devaluation or a reduction in the ratio of government deficit to GNP to result in less demand for IMF resources at the end of year three; while a reduction in the domestic real interest rate or an increase in the growth of domestic credit would increase the demand for the Fund's financial resources.[3] Furthermore, since some countries like Chile, Israel, Peru, and Turkey experienced an extremely high rate of growth in domestic credit, an intercept dummy and a slope dummy for the domestic credit variable MSC were included in the model. The data for the variables included in the model were obtained from various issues of *International Financial Statistics* and the 1984 edition of *World Tables* published by the International Monetary Fun and the World Bank.

The results of applying the ordinary least squares technique to this equation are shown below:

$$\begin{aligned} UFB/M = &- 27.88 + 47.78\,D + 0.191\,RC + 0.044\,(FP/GNP)C \\ &(-1.54) \quad (2.58) \quad (5.36) \quad (2.70) \\ &- 0.288\,RIRC + 0.061\,MSC - 0.169\,DMSC \\ &(-4.27) \quad (2.14) \quad (-2.226) \\ &R^2 = 0.77 \qquad F = 7.66 \end{aligned}$$

Note: The parentheses underneath each coefficient represent t-values. D is the dummy variable for the intercept and DMSC is the slope dummy for the MSC variable.

According to these results, all estimates but the intercept are statistically significant at the 5% level or less and have the expected signs. The equation appears to be reasonably well-determined and explains a large portion of variance in UFB ratios in the sample. These findings provide strong support for the orthodox policy measures advocated by the IMF to solve balance of payments problems. Devaluation in a typical non-oil developing country proves to be an effective policy instrument to deal with a balance of payments deficit. Although this paper does not address the question of reallocation of resources, these results would imply

[3] The import variable was used only to scale the UFB in order to make it comparable across countries.

that devaluation can shift resources away from production of non-tradables into tradables and consumption from trdables to non-tradables. This would lower the demand for imports and increase the supply of exports which would eventually lead to an imporvement in blances of payments and less demand for loans. The estimate indirectly supports the argument that the demand for exports and imports of developing nations are price elastic. This result suggests that each one percent of real devaluation at time t would cause the demand for the fund resources as a proportion of imports to decrease by 0.191 percentage point at time t + 3. These findings also support the IMF orthodox stabilization policy in that the main cause of balance of payment disequilibrium is excessive domestic expenditures which result in a rapid rise in the domestic rate of inflation and a fall in domestic capital formation. Therefore, the borrowing country should implement demand management policies to reduce absorption domestic investment to bring about a more meaningful balance between production and consumption. The statistical results indicated that an increase of one percent in the real domestic interest rate or a reduction of one percentage in the ratio of fiscal deficits to GNP would lead, on average, to a decline of 0.288 percent and 0.044 percent in the UFB ratios, respectively. Finally, the statistically significant coefficient on domestic credit growth rate confirms the view that a rapid rise in the money supply leaks abroad through balance of payments deficits. This in turn would result in more demand for the IMF loans. An increase of one percentage point in the domestic credit growth rate would increase the UFB as a percentage of imports by 0.061. In countries that experienced a rapid growth rate in domestic money supply, the impact of the reduction in the rate of increase by domestic credit on demand for the Fund's resources is less significant, perhaps because of the severe economic distorions that are caused by hyperinflation. As a result, a one percent reduction in the growth rate of domestic credit will not have much of an impact on the demand for loans.

As the units of measurement differ for the variables, an alternative way of ascertaining the relative importance of the factors under consideration is to calculate the beta coefficients.[4] The beta

[4] As is well known, beta coefficients measure the change in the explained variable (in standard-deviation units) for a unit change in each explanatory variable (also expressed in standard deviation-units), holding all other variables constant.

coefficients are independent of the unit of measurement and can thus be compared directly. These coefficients are presented in Table 1.

Table 1

VALUES OF BETA COEFFICIENTS FOR THE MODEL[5]

Variables	BI	MSC	DMSC	RC	(FP/GNP)C
	-2.07	0.61	-0.55	0.80	0.46

It is evident from this table that the most important variable is the domestic real interest rate; the devaluation of domestic currency is the second most important variable. It is interesting to note that a reduction in domestic credit and a fall in the ratio of government deficit to GNP turned out to be roughly equal in importance as determinants of demand for loans in this sample of non-oil developing countries.

If these results are treated as relevant estimates for the average non-oil developing country, they suggest that countries should not wait too long before reaching a stabilization agreement with the Fund. The policy instruments advocated by the IMF can strengthen their balance of payments within a reasonable period of time. This conclusion is in line with that reached by Khan and Knight (1983): that the non-oil developing countries could have reduced their balance of payments deficits by adopting a more flexible exchange rate and tighter demand management policies during the period from 1973 to 1980. The newly industrialized countries that adopted a more flexible exchange rate supplemented with a broad range of demand management policies experienced considerable success in moving their economies toward equilibrium during the 1970's. However, it is important to note that since this study does not take into account qualitative factors such as cultural factors, the natures of the economic system, and diversity in the export sector, it does not suggest that the IMF should impose the same conditionality on all nations.

5 Since the standard distribution of beta coefficients is not known one can not perform formal tests of significance in assessing the relative importance of the explanatory variables.

IV. Conclusions

This paper attempted to assess the effectiveness of International Monetary Fund stabilization program, which has come under much debate in recent years. It examined empirically the relationship between the policy prescriptions imposed by the Fund on borrowing countries at time t and the demand for loans at time t + 3. The empirical results supported the hypothesis that a reduction in the rate of increase in domestic credit, a devaluation of the domestic currency, an increase in the real interest rate, and a reduction in the radio of government deficits to GNP are the relevant policy tools for solving a balance of payments problem. These findings also confirmed results obtained by Donovan (1982) and Kelly (1982) and are in line with the Cline (1983) argument that countries should not wait too long to reach an agreement with the Fund. Cline's study on the Peruvian stabilization program in 1975-78 showed that delay in concluding an agreement with the Fund could create a crisis of large proportions. The results of the present study have also indicated that, regardless of the origin of disequilibrium and given that the balance of payments difficulties are not self-reversing, the countries with balance of payments problems should initiate an adjustment of the basic supply and demand in the economy.

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