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April 4, 1985

To: Members of the Executive Board

From: The Secretary

Subject: The Effects of Fund-Supported Adjustment Programs on Economic Growth: A Survey of the Empirical Literature

There is attached for the information of the Executive Directors a paper giving a survey of the empirical literature on the effects of Fund-supported adjustment programs on economic growth.

If Executive Directors have technical or factual questions relating to this paper, they should contact Mr. Mohsin Khan, ext. 7679.

Att: (1)

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Department Heads

The Effects of Fund-Supported Adjustment Programs on Economic Growth: A Survey of the Empirical Literature

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Approved by Wm. C. Hood

April 3, 1985

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I. Introduction

The Fund's Articles of Agreement make it clear (Article I) that the promotion of growth of output and trade is a primary objective of economic policy, and that the elimination of payments disequilibria is sought "in accordance with" this objective. Thus, Fund-supported adjustment programs have to be designed to achieve a viable balance of payments within the context of improved long-term growth performance and price stability. 1/ Nevertheless, Fund policies and programs have come under increasing criticism in recent years in the popular press, as well as in certain academic circles, regarding the impact of such programs on economic growth. 2/ Indeed, it has been frequently argued that rather than fostering the growth of output, Fund programs tend to cause economic dislocation characterized by, among other things, a slowdown in economic activity, increased unemployment, and a general worsening of living standards.

This paper addresses some aspects of this criticism, and brings to bear the empirical evidence available in the literature on the subject, with particular emphasis on the results for developing countries. It should be stressed at the outset that the focus of the paper is exclusively on existing evidence; no attempt is made here to provide any new empirical results. The evidence is in large part indirect, since in most cases the studies from which it is obtained were not necessarily undertaken with the express intention of illuminating the strengths and weaknesses of Fund programs. The conclusions drawn from this body of empirical evidence are accordingly not definitive in respect to the criticism cited above, and are in any event tentative. The survey does, however, furnish information about the current state of empirical knowledge on the issue, and delineates those areas where there exist important gaps that need to filled in order to properly assess the validity of the criticisms of Fund programs. Other work relating to the effects of programs has been produced, or is under preparation in the Fund. 3/

1/ See Guitian (1981).

2/ This is only one of the many criticisms made of the Fund. For a review of the broad lines of the criticisms that occur most often in appraisals of the Fund and its policies, see Nowzad (1981).

3/ This includes, among others, the reviews of programs prepared regularly by the staff, such as: "Upper Credit Tranche Stand-By and Extended Arrangements Approved in 1981," (EBS/83/216, 10/4/83); and, "Experience with Adjustment Policies," (EBS/84/228, 11/13/84). Other relevant papers are "Supply-Oriented Adjustment Policies," (SM/81/78, 4/6/81); "Formulation of Exchange Rate Policies in Programs Supported by the Fund," (EBS/84/232, 11/16/84); and papers being prepared on the global effects, and the effects on income and wealth distribution, of Fund-supported programs. These general papers are further supplemented by periodic staff reviews of particular programs.

The plan of this paper is as follows. Section II defines the approach that is taken here to analyze the empirical evidence on the subject of Fund programs and economic growth. It discusses the circumstances in which member countries typically seek Fund assistance, the specific objectives of Fund programs, the policy content of the typical program, and the criteria which affect the choice between demand-side and structural, or supply-side, measures in programs. It then describes the main issues that arise with respect to the effect of programs on growth, the empirical approach that would be called for to examine these issues properly, the type of evidence that is available, and the approach adopted in this paper in interpreting this evidence.

The empirical evidence that can be used to infer the effects of Fund programs on growth is examined in the next two sections of the paper. Section III looks specifically at the evidence produced by econometric models on the effects of individual policies. These individual measures include monetary policy, fiscal policy, supply-side policies, and exchange rate policy. Section IV, on the other hand, surveys the evidence on the effects of complete policy packages based on cross-country analyses undertaken both within the Fund--in connection with the reviews of programs--as well as outside the institution. As these two sections emphasize, both the model-based and cross-country approaches involve many difficulties and problems; furthermore they do not yield results that are totally consistent with each other. An attempt is made in Section V to reconcile the conflicting evidence produced by the two approaches using some illustrative simulation experiments. These simulations also provide an indication of how alternative combinations of demand-side and supply-side measures can be expected to influence the rate of growth of output in the short term. Finally, Section VI summarizes the conclusions that may legitimately be drawn from the empirical evidence that is presently available, and points out the directions where additional efforts would be likely to yield a significant payoff in terms of a better understanding of the relationship between Fund programs and economic growth.

II. An Empirical Approach to Analyzing the Effects of Fund Programs on Economic Growth

1. Objectives of Fund programs

In analyzing the effects of Fund-supported adjustment programs on the level or rate of growth of output, it is crucial first to consider the circumstances in which such programs are introduced. Typically the need for a stabilization program, whether supported by the Fund or otherwise, arises when a country experiences an imbalance between aggregate domestic demand (absorption) and aggregate supply, which is reflected in a worsening of its external payments position. While it is true that external factors, such as, for example, an exogenous deterioration of the terms of trade or an increase in foreign interest rates, can be

responsible for the basic demand-supply imbalances, very frequently these imbalances can be traced to inappropriate domestic policies which result in excessively rapid expansion of aggregate domestic demand relative to the productive potential of the economy, and in serious distortions in relative prices. 1/ If foreign financing is available the relative expansion of domestic demand can persist for extended periods of time, albeit at the cost of a widening current account deficit, a loss of international competitiveness owing to rapid domestic inflation, an inefficient allocation of resources caused by the distortions in relative prices, and a rising foreign debt burden.

Clearly this disequilibrium state cannot continue indefinitely, as the country steadily loses international competitiveness and eventually creditworthiness. In the absence of appropriate policy action, the country would face an adjustment resulting from a cessation of foreign financing, and it is likely that this forced adjustment would be very disruptive. The basic objective of the Fund in these circumstances is to provide for a more orderly adjustment of the imbalance between absorption and aggregate supply so as to achieve a viable balance of payments position within a reasonable period of time. This concept of a viable balance of payments has two important aspects. First, it implies that the balance of payments problems will be eliminated and not merely suppressed, and second, that the improvement in the country's external position will be durable.

The Fund's task is, in the first instance, to ensure that foreign financing is at a level that is consistent with the country's present and future debt-servicing capacity. This may involve setting limits on foreign borrowing or, as has been more evident in recent years, ensuring that the requisite amount of foreign capital inflows is in fact forthcoming to meet the financing gap. 2/ The permissible rate of foreign borrowing essentially defines the necessary degree of adjustment of the imbalances in the economy. To achieve the required adjustment the Fund designs a stabilization program that includes measures to simultaneously restore a sustainable balance between aggregate demand and supply, and expand the production of tradables to ease the balance of payments constraint.

2. Policy content of Fund programs

a. Description of Fund programs

While stand-by arrangements with the Fund are often viewed as synonymous with devaluation and domestic credit restraint, Fund programs are in fact complex packages of policy measures that are geared to the

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1/ See Khan and Knight (1983) for a discussion of the respective roles of foreign and domestic factors in the current account outcomes of non-oil developing countries during the 1970s.

2/ For example, during 1983 lending by the Fund exceeded $12 billion and the Fund helped to secure over $21 billion in additional bank lending to countries with programs.

particular circumstances of the country. 1/ More importantly, the choice of policies, and the nature of the policy mix in programs, are the result of an extensive negotiation process between the country authorities and the Fund. Aside from monetary and exchange rate policies, a typical Fund program would call for fiscal measures, such as reductions in government expenditures and increases in taxation, increases in domestic interest rates and producer prices to more realistic levels, policies to raise investment and improve its efficiency, trade liberalization, and wage restraint. While there is considerable overlap among these various policies, it is convenient to group them into the following three categories: demand-side policies; supply-side policies; and policies to improve international competitiveness.

Demand-side policies, as conventionally defined, are measures whose primary objective is to influence the aggregate level or rate of growth of domestic demand and absorption. Such policies include the whole range of fiscal, monetary and domestic credit measures that are associated with traditional macroeconomic policy. While these policies also have effects on production and supply, at this level of abstraction it is useful to label policies whose primary effect is on aggregate absorption as "demand-oriented" policies.

Supply-side policies, on the other hand, are intended to increase the volume of goods and services supplied by the domestic economy at any given level of domestic demand. Such supply-oriented policies can take a variety of specific forms, but can be broadly divided into two groups. First, there are policies designed to increase current output by improving the efficiency with which factors of production, such as capital and labor, are utilized and allocated among competing uses. This category would include measures to reduce distortions caused by price rigidities, monopolies, taxes, subsidies and trade restrictions. The second category encompasses policies designed to raise the long-run rate of growth of capacity output. Under this heading would be included measures such as incentives for domestic saving and investment. Also important are policies designed to increase the inflow of foreign savings, whether in the form of private lending, foreign direct investment, or increased development assistance. These two categories of supply-side policies are obviously interrelated, since policies that increase current output may, by themselves, lead to a larger flow of saving and investment, and a higher rate of growth of capacity output.

1/ For a discussion of the types of policies usually contained in Fund programs, see Crockett (1981), and Guitian (1981).

Policies to improve international competitiveness contain elements of both demand-side and supply-side policies, since they are based on combinations of measures (such as devaluation cum wage restraint) that are intended to affect the program country's real exchange rate. This is why considerable importance often attaches to the role of exchange rate policies in stabilization programs. In general, to the extent that a specific combination of policies alters the real exchange rate it will affect both real domestic absorption and the incentive to produce tradable goods.

In summary, it would be misleading to suggest that Fund programs rely exclusively on one or two policy instruments that are directed solely at restraining domestic demand. As the above discussion has indicated, much more is involved in the design of Fund programs than a mechanical application of the simple monetary approach to the balance of payments, supplemented perhaps by an exchange rate change. 1/ From this standpoint, it may be noted that many of the alternative policies proposed by critics, particularly those relating to the supply side, already form an integral part of Fund programs. For example, in one of the few concrete expositions of an "alternative" stabilization strategy, Diaz-Alejandro (1984) sets out a policy package whose general characteristics are in most respects indistinguishable from a typical Fund program. 2/ Considering the case of a country facing an unsustainable balance of payments position and experiencing high inflation, the author proposes a policy package that includes fiscal and monetary restraint, wage guidelines, increases in domestic interest rates to positive real levels, gradual tariff reductions, the introduction of incentives for import substitution and export promotion, measures to maintain and expand investment, and the adoption of a crawling-peg exchange rate regime, with the emphasis placed in the direction of "undervaluation" of the real exchange rate to support export promotion and import liberalization. Other critics of Fund policies, such as Taylor (1981), have further argued for the use of controls on imports and capital flows as a substitute for demand-management policies and exchange rate action, on the grounds that these are less costly alternatives.

If the guidelines for stabilization suggested by Diaz-Alejandro (1984) are taken as representative of the types of programs typically proposed by the critics of the Fund, there is little to take issue with. The basic

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1/ Diaz-Alejandro (1984), for example, is one critic who characterizes Fund programs in this way.

2/ The "real economy" approach advocated by Killick and others (1984) is another example of a specific set of proposals for adjustment. This particular approach emphasizes structural policies at the sectoral level, and argues for adjustment to be spread over a longer time period (5 years) than is considered by the Fund. Other alternative programs either tend to be very general, with little elaboration of the policies that should be adopted, or are restricted to particular countries and specific episodes of adjustment.

difference, if any, arises in connection with some of the critics' proposed use of controls as a policy to correct balance of payments problems. Fund policy leans heavily in the direction of eliminating controls and restrictions on trade and payments; nevertheless, the Fund has on occasion accepted the temporary use of import controls and export subsidies, and the continuation of dual exchange markets as an interim arrangement. What the Fund has consistently opposed is the introduction of new restrictions, as well as the intensification of existing restrictions and other distortions in the trade and payments system, on a permanent basis. 1/ While it is recognized that a theoretical case can be made for controls and restrictions in the short run, in practice it has proved difficult to manage such systems efficiently and effectively over time. Furthermore, such policies, by introducing rigidities in the economy and creating incentives for the inefficient use of resources and forms of production, can turn out to be counter-productive in the long run, and damage the growth potential of the economy.

b. Choice of policy instruments

A crucial question that arises in the design of adjustment programs concerns the emphasis that should be placed on supply-side policies relative to demand-side policies. As the need for a stabilization program typically reflects the prevalence of excess demand pressures, all programs must involve some degree of restraint of aggregate domestic demand. However, this does not mean that adjustment should be based exclusively on reducing absorption, since the imbalance could in principle also be eliminated through expanding domestic supply. While the Fund has stressed the importance of supply-side policies to improve efficiency and the long-term rate of growth, the implementation of such policies for the purpose of improving the balance of payments in the context of an adjustment program raises a number of difficulties that have to be acknowledged.

First, many types of supply-side measures generally exert positive effects on output only after a significant delay. 2/ For example, investment programs designed to raise the rate of growth of capacity output take time to come to fruition. Another example concerns steps to eliminate distortions in the structure of relative prices in the economy in order to create improved incentives for production and exports. Such measures take time to exert beneficial effects, particularly if labor and capital are not very mobile among different activities; in this case, major changes in the pattern of resource allocation may necessitate a long period of adjustment during which some factors of production remain unemployed. For both of the above reasons, most supply-side measures--even

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1/ The use of controls on trade and payments also is inconsistent with the objectives of the Fund as set forth in the Articles of Agreement.

2/ Of course there may be situations when the supply response is fairly rapid, i.e., if there exists substantial excess capacity in the economy.

those designed to alter output by improving price incentives rather than by increasing investment--may exert beneficial effects only over the longer term. These examples suggest that in any given program the extent to which supply-side policies can be emphasized relative to demand-side policies depends on the length of the period over which the adjustment effort is intended to achieve its objective. This horizon is obviously constrained by the amount and duration of foreign financing that a Fund program can make available to the country, both through the Fund's own resources as well as through private banks and other sources.

A second important constraint on the use of certain supply-side measures is that they may impact on the political and social objectives of governments. Many types of government policies that create distortions (in the sense of deviations of prices from marginal costs) are designed to achieve objectives other than economic efficiency and may have been implemented with full knowledge of their likely adverse effect on resource allocation. Such policies may include, for example, food subsidies, employment programs, restrictions on imports of certain categories of goods and services, capital controls, etc. Changes in such policies often have a strong impact on equity as well as economic efficiency, and the Fund is enjoined to respect the views of sovereign governments in these matters.1/

Even if these difficulties with supply-side policies were somehow overcome, this would not imply that demand-side policies could be dispensed with. Supply-side policies by themselves do not ensure an improvement in the balance of payments because, other things equal, aggregate demand can rise beyond sustainable levels even with increasing aggregate supply unless it is restrained from doing so. Consequently, stabilization programs have to use both sets of policies, and the decision on the relative emphasis that is to be placed on demand and supply measures in Fund programs is based on a number of criteria, including inter alia:

i. The nature, magnitude and likely duration of the external payments imbalance. For example, if the cause of the balance of payments deficit is a deterioration in the country's external terms of trade, the appropriate response would include supply-side measures designed to change the basic structure of production in the economy. In other words, an adverse external development may alter the mix between demand and supply measures. By contrast, if the initial disequilibrium is the result of excess aggregate domestic demand, perhaps owing to excessively expansionary fiscal and domestic credit policies, then the response would normally rely more heavily on demand restraint than on supply-side measures.

1/ Of course the Fund can, and frequently does, render advice on the budgetary costs of such policies.

ii. The initial level of the country's external indebtedness and the amount of additional financing that can be expected. These conditions determine the length of time over which the adjustment process can take place.

iii. The nature and importance of the constraints facing the government in pursuing policies that have important social and political implications.

3. Issues relating to growth

The general criticism that Fund programs are in some sense inimical to growth appears to have two main elements. The first criticism is that a number of policy recommendations contained in Fund programs--particularly those relating to the restraint of aggregate domestic demand and to exchange rate action--are thought to exert an adverse effect on economic growth, employment, and the level of activity. The second is that the policy recommendations are also unduly harsh, in that they have a much larger deflationary effect on the economy than is, in fact, needed to secure the objectives of the stabilization effort.

In addressing these criticisms a distinction needs to be drawn between the short-term issues and the longer-term issues relating to the effects of Fund programs on growth.

a. Short-term issues

If the initial situation is one of excess aggregate domestic demand, then in order to achieve the objectives of the adjustment program there must necessarily be a reduction in absorption in the short run. While this reduction in absorption can be perceived as representing a decline in living standards, it should not be regarded as a "cost" of the program, since all that is being done is to bring absorption back into line with availability of resources. The issue here is really what effects the reduction in absorption--whether brought about by appropriate demand-side policies or by exchange rate action--would exert on the level and rate of growth of output or real income. On a theoretical level one can certainly conceive of situations where the reduction in absorption could be achieved without any adverse impact on output. This would be possible, for example, if all of the adjustment were confined to the current account of the balance of payments, through some combination of an increase in receipts and a decrease in payments. In practice, however, this extreme result is unlikely to occur and the reduction in absorption necessary to achieve the objectives will generally be accompanied by some fall in the growth of output, particularly if inflation has become ingrained in the system. This decline in the growth rate is a necessary part of the adjustment to eliminate underlying imbalances in the economy. In other words, the adjustment aims at restoring the economy

to a more stable and sustainable growth path from a higher, but unsustainable, path that generally accompanies the supply-demand imbalances. The critical question, of course, concerns the size and duration of the short-run effects of policies designed to reduce absorption.

The second line of criticism mentioned above relates to the overall design of Fund programs, and is more difficult to assess objectively. Fund programs are not intended to reduce a country's absorption of goods and services below the level that can be financed (out of current savings and capital inflows) on a sustainable basis over time. In this context it would be fair to view any reductions in absorption and growth that go beyond the levels necessary to achieve the objectives of the program as the true "costs" of a program. However, since the "necessary" reduction in absorption, and the consequent decline in growth, are not measurable precisely, such a notion of costs is extremely difficult to quantify. To estimate these costs would require, in the first instance, a clear idea of the quantitative relationships between policy instruments and the levels and growth rates of absorption and output. Secondly, it would be necessary to undertake a careful study of specific stand-by arrangements to determine the amount of adjustment that would be required to achieve the target, and then set the policies accordingly. Finally, the effects of a given Fund program would have to be compared with the outcomes for growth resulting from an alternative feasible set of policies that would achieve the same objectives. 1/ This last point involves estimating an unobserved hypothetical outcome, which as yet has proved to be a fairly intractable problem. 2/

b. Long-term issues

There is also a longer-term aspect to the relation between Fund programs and growth that needs to be considered in any systematic analysis of the subject. Even if it were determined that stabilization programs do exert an adverse short-run effect on output, this could be outweighed by the long-term benefits that would result from the adoption of suitable adjustment policies. Indeed, it is a basic premise of Fund programs that there is no essential conflict between balance of payments recovery and economic growth when the time-horizon of both objectives is properly specified to be the medium term.

This view is based on a number of factors. First, even if a reduction in absorption impairs growth over the short run, to the extent that a Fund program succeeds in avoiding the drastic cut in absorption which would accompany a complete loss of creditor support, it can be said to protect

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1/ This could also include comparing Fund programs with no program or no change in policy.

2/ The difficulties associated with the issue of the "counterfactual" will be taken up in detail in Section II.4.

the growth of the economy currently and in the future. Second, the supply-side, or structural, policies in adjustment programs are intended to enhance the productive potential of the economy through improvement of the allocation of resources and stimulation of domestic savings and investment. If such policies are successful, they diminish any inescapable impact upon growth of measures that focus on reducing absorption. Furthermore, by raising the capacity of the country to service debt in the future, these structural policies allow for a higher level of sustainable capital inflows, and thus a higher rate of economic growth in the long run. Lastly, financial stability resulting from a successful stabilization program can have a beneficial effect on the "state of confidence" in the economy; this can exert a favorable influence on both domestically-financed and foreign-financed investment, leading to gains in employment, productivity, and output.

4. Empirical analysis of Fund programs

Against this background, a comprehensive empirical analysis of the effects of Fund-supported adjustment programs would at least have to consider the following of questions:

(a) What are the short-run effects of Fund-supported adjustment programs on the level or rate of growth of output?

(b) Are these effects larger than they need to be in order to achieve the principal objectives of the program and, in particular, are they significantly larger than the effects that would result from an alternative set of policies?

(c) What are the effects of Fund-supported adjustment programs on the long-run rate of growth of the economy, and how do these relate to the short-run effects?

Unfortunately, empirical evidence is available only on the first of these three questions. The studies that can be used to examine whether adjustment programs of the type supported by the Fund have a short-run effect (negative or positive) on growth can be divided into two broad categories. First, there are studies that use time-series data to determine the effects of specific policies. These can be viewed as "model-based" studies, in the sense that they rely on some theoretical notion of the channels by which changes in individual policies are likely to affect the growth rate in the short run, and then proceed to test the resulting relationship using standard econometric methods. Such time-series studies do not yield direct evidence on the effects of Fund-supported programs per se, as they do not necessarily pertain to countries that have had programs with the Fund, the time periods over which programs were operative, the actual policies adopted in the context of programs, or the circumstances typically prevailing when the programs were introduced. At the same time, however, it is possible to use the results reported in

these studies to infer the effects of programs, if these programs include the same types of policies. For example, if there is evidence in the empirical literature that devaluation or restrictive monetary policies exert an adverse impact on output in the short run, it can be inferred that, other things equal, there would be an initial reduction in growth resulting from a Fund-supported program that relied exclusively on these measures.

The second group of studies uses cross-country analysis to examine how economic growth is affected by a Fund-supported program, taken as a complete package of measures. Such studies have been undertaken, both within the Fund and outside, to test the overall effectiveness of programs. These cross-country studies provide more direct evidence than the time-series studies on the question of the effect of Fund programs, since they focus explicitly on the experiences of countries with programs. Furthermore, they are more general in scope, as they evaluate the impact of different combinations of policies, rather than looking only at individual policies. On the other hand, such studies are unable to determine the extent to which a given outcome is due to the policies adopted, rather than other (non-program) factors. 1/

Comparing the quantitative effects of Fund programs with the corresponding effects of some feasible set of alternative policies--that is, providing answers to question (b)--is regarded as perhaps the most appropriate approach to judging the costs of programs. 2/ For example, if a typical Fund program includes policies such as a reduction in the rate of credit expansion, a lowering of the fiscal deficit, and devaluation, and if the growth effects of such policies are known, then the effects of this combination of policies can be compared with some alternative combination that yields the same current account, overall balance of payments, and inflation targets. Clearly, it is such types of counterfactual experiments that would determine whether Fund programs were somehow more deflationary than necessary.

The "comparison of policies" approach to judging the effects of programs, however, involves a number of difficulties. This approach requires, first of all, detailed empirical knowledge of the links between the various policy instruments included in a typical Fund program and the ultimate objectives for the balance of payments, inflation, and the growth rate. The state of the art in econometric modelling has made significant advances, but is as yet still very much in its infancy, particularly in the case of developing countries. The models that are presently available do not come close to capturing the full complexity of the relevant economic relationships.

1/ This and other problems with the cross-country approach will be discussed in Section IV.

2/ See Guitian (1981).

Even if an appropriately specified model that incorporated the full range of measures in a Fund program were available, a number of additional issues would still have to be faced. First, to the extent that expectations were altered when a Fund program was adopted, the effects would not depend solely on the magnitude of the announced policy changes and the coefficients relating policies to ultimate objectives that were based on past historical experience. For example, an announced reduction in monetary growth could lead to an immediate fall in inflation if it caused domestic residents to revise downwards their expectations of the future rate of inflation. Conversely, if the policy change was not viewed as credible, inflation could persist for much longer than the underlying estimated relationship would indicate, and the adverse effects of an anti-inflation program on output and absorption would be correspondingly larger. It is for this reason that the Fund staff make efforts to ensure that the overall package of measures comprising a Fund adjustment program will be viewed as credible by both domestic residents and foreign creditors.

Second, the comparison of policies using model simulations would have to start by taking explicit account of the disequilibria that the country faced at the time the stabilization program was introduced. However this is no easy task for two reasons. Firstly, if the analysis were begun from a position of disequilibrium, it would be quite difficult to distinguish those changes that occurred as a result of discretionary policy actions from those that would have occurred in any case, owing to the automatic processes that tend to adjust the balance of payments and the domestic inflation rate in a small open economy. Secondly, the time path of the variables during the transition period, and indeed the transition period itself, are not independent of the initial conditions. Consequently, it would be hard to determine whether the behavior of a variable during transition was due to the policies adopted, or simply to the point from which it started.

Third, it is necessary to define precisely the alternative sets of policies against which to compare a given Fund program. These alternatives could presumably differ in the mix of policies consistent with the same objectives (more emphasis on demand-management or on structural policies), or in terms of policy instruments (controls on imports versus devaluation). These alternative programs must, however, have the following features to make them suitably comparable with Fund programs. Firstly, the alternative policies have to be defined in the context of a common set of constraints, such as the state of the international environment and the availability of foreign financing, including the financing provided by the Fund. It would be pointless to compare Fund programs with alternatives that assumed a lower level of foreign interest rates and a larger volume of foreign financing. Secondly, the time frame of the adjustment would have to be the same as that faced by the Fund. Comparing programs that differed in terms of the period over which adjustment was to take place would clearly be inappropriate. Thirdly, the alternative package would have to be acceptable to the country. Since Fund programs are the outcome of detailed negotiations between the country authorities and the

Fund, they reflect the political feasibility of the proposed set of policy measures. Finally, the alternative policies would have to be put forward at the same level of specifity as those included in Fund programs. For example, if export promotion is to receive greater weight, then the exact methods for achieving this objective have to be specified. As mentioned above (Section II.2), there are remarkably few alternative programs proposed in the literature that have such features.

Given such problems, it is not difficult to see why there are no empirical studies available that undertake the relevant comparisons between Fund programs and alternative programs. Consequently, there is no obvious way of determining whether Fund programs are "too harsh," or not. Of course, performing counterfactual experiments with existing models is possible, but these experiments have to be kept relatively simple. For example, one can analyze the effects of certain types of policies (credit restraint, reduced government expenditures, devaluation), or compare the effects of a package including such measures with a package that also includes more supply-oriented policies. 1/ However, because of the fairly simplistic structure of the available models, and the narrow range of policy measures considered, these comparisons of policies can at best be only illustrative.

There is also very little empirical evidence on the long-run effects of Fund programs, and none at all relating to the effects of different combinations of stabilization policies on economic development (question (c)). Even the informal evidence that is available is quite ambiguous on the relationship between financial stability and economic development. While there are many developing countries that have achieved both price stability and high growth by adopting prudent financial policies, a number have also managed to combine high rates of inflation with strong growth performance for extended periods of time. 2/ However, as in the case of the short-run effects, some indirect evidence can be brought to bear from studies of the growth process in developing countries. For example, if the structural policies contained in Fund programs raise the level of investment and increase its efficiency, as they are intended to do, this will presumably result in a higher rate of growth in the long run. At the same time, it should be remembered that investment is only one factor in determining growth, and there is very little known about the effects of stabilization policies on the other factors, such as the growth of the labor force and its productivity, development of skills, and technical progress.

For the reasons outlined above, any study of the quantitative effects of Fund programs has to be severely limited in scope. At this stage the only question on which there is some empirical evidence is whether policies

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1/ See Section V.

2/ At the same time there are, of course, many countries that have simultaneously experienced high inflation and low rates of growth.

designed to reduce absorption and increase supply, including exchange rate policies, have a significant effect on the growth rate in the short run, namely question (a). Accordingly, the next three sections of this paper survey the recent empirical literature that has a bearing on this question. The time-series and cross-country studies that provide the empirical evidence are examined individually, and the results are then combined in order to draw some conclusions about whether Fund programs have a systematic adverse effect on growth. By considering only these two types of studies, the paper does interpret "empirical evidence" in a fairly narrow and specific way. In particular, the present survey excludes case studies of the experience of individual countries with stand-by programs. 1/ This was done essentially because of the difficulties in trying to generalize from the evidence on a particular country at a particular time, and because the case studies do not subject the basic propositions to any kind of formal statistical testing. This survey will obviously not resolve the controversy associated with Fund programs and economic growth; it is meant to represent only a first step in the direction of such a resolution.

III. Evidence on the Growth Effects of Specific Policy Measures

This section examines the empirical evidence that is available from studies that make use of the time-series approach to determining the growth effects of the individual policies typically found in Fund programs. The evidence is grouped according to types of policies; that is, policies to restrain aggregate demand, policies to stimulate aggregate supply, and finally, exchange rate policies.

It should be mentioned that while all the studies considered here deal with developing countries, they do not focus specifically on the subset of program countries as such. 2/ In addition, the policies examined in the empirical literature are not always exactly the same as those pursued in the context of programs, although they are often quite similar. Finally, the time-series studies typically consider policies individually even though, as mentioned previously, Fund programs involve the simultaneous implementation of a number of policy measures; it is quite likely that the measures included in a Fund program may have effects on the rate of growth that are quite different when policies are pursued jointly rather than independently.

1/ See, for example, the papers contained in Cline and Weintraub (1981), and Williamson (1983). The case-study approach is also adopted in "Experience with Adjustment Policies," (EBS/84/228, 11/13/84).

2/ However, program countries are often included in the samples used by the various empirical studies, even though this characteristic is not the main criterion for choice of country.

The common methodology adopted in the time-series studies is first to outline a model that relates the level or rate of growth of output to certain policy instruments (and perhaps a few other variables). This relationship is then tested econometrically using data for an individual country or group of countries. The effects of policy changes on growth are determined either directly from the values of the estimated coefficients, or by performing simulation experiments with the estimated model. This model-oriented approach has the distinct advantage of being able to isolate the effects of a change in a particular policy, which, as will be discussed in Section IV, is something that is not possible in cross-country studies. At the same time, however, it is very difficult to account fully for all the complex linkages between the policy variables and ultimate objectives, such as economic growth. Thus, the specifications that are used are often quite simplistic, and can only serve as approximations to the "true" empirical relationships.

1. Policies to restrain aggregate demand

The two main instruments for controlling aggregate demand are monetary (or domestic credit) policy, and government tax and expenditure policies. 1/

a. Monetary policy

Virtually all Fund programs involve restrictive monetary policies, specifically ceilings on the rate of domestic credit expansion, whether by the banking system as a whole or by the central bank. 2/ Consequently, the relationship between economic growth and monetary or domestic credit expansion is crucial in judging the effects of Fund programs.

Despite the attention received in both the theoretical and empirical literature, the size of the effect of changes in the rate of domestic credit expansion on economic growth is still a matter of considerable controversy. The simple version of the monetary approach to the balance of payments suggests, for example, that in the long run in a small open economy operating under a fixed exchange rate regime, a reduction in domestic credit will be completely offset by international reserve flows that restore the money stock to the level desired by the public. Consequently, this policy would have no long-run effect on the level of output relative to its trend, or on the rate of growth of output. However, it

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1/ The demand-side effects of exchange rate policies are treated separately later in this paper.

2/ Credit policies may also include the placing of sub-ceilings on the extension of credit to the government. These, however, are generally regarded as an aspect of fiscal restraint in Fund programs.

is clear that during the adjustment process a decline in the growth of domestic credit may be associated with a reduction in capacity utilization and a possible rise in unemployment, since prices are not completely flexible downwards. The estimated size and duration of the deflationary effect created by the restrictive monetary policy depends on a number of factors, such as: (1) the speed with which the initial credit restriction is offset by international reserve movements (an effect that depends on the responsiveness of the current account and the degree of capital mobility); (2) the response of domestic inflation to the excess demand for real money balances created by the credit restraint policy; (3) the extent to which the excess demand for money reduces aggregate demand (which depends partly on the degree of excess demand for output in the economy); 1/ and (4) the effect on private investment of a rise in the cost, or a reduction in the availability, of credit. As these factors can interact in complex ways, the net outcome is clearly an empirical question.

In order to form a judgment on the effect of a contractionary monetary policy (defined as a reduction in the growth of either domestic credit or the supply of money) on the growth of output in developing countries, some recent empirical evidence available on the subject has been assembled. While the group of studies surveyed here is selective, it is nevertheless reasonably representative of the empirical work that has been undertaken on this subject during the last five years or so. The only major exclusion would be the large structural macroeconomic models for individual countries, of which there are now quite a few. Table 1 summarizes the first-year effects, derived from the studies surveyed, on the rate of growth of real output (GDP or GNP) of a once-and-for-all change of 10 percentage points in the rate of growth of either money or domestic credit, holding everything else constant.

Most of the empirical results reported in Table 1 suggest that a monetary contraction does indeed tend to exert a deflationary effect on domestic output in the short run, although in a number of cases the effect appears to be quite small. 2/ The studies listed in Table 1 indicate that on average a 10 percentage point reduction in the growth of money or domestic credit would reduce the rate of growth of output by less than 1 percentage point over one year. 3/ This result suggests that

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1/ In general, the larger is the excess aggregate demand in the economy, the smaller would be the effects on growth.

2/ It should, however, be noted that some stabilization programs have involved very large initial reductions in monetary growth, so that the effect on output of tighter monetary policy can in practice still be quite substantial.

3/ The median value of the estimates in Table 1 is 0.8.

Table 1. Short-Run Effect of a 10 Percentage Point Change in the Growth of the Money Supply or Domestic Credit on the Growth Rate of Output

Study	Countries	Policy Variable (Rate of growth)	Effect on Growth of Output 1/
Aghevli and Khan (1980)	8 developing countries	Domestic credit	0.8 2/
Barro (1979)	Brazil, Colombia, and Mexico	Money	0.9 2/
Blejer and Fernandez (1980)	Mexico	Domestic credit	0.4
Blejer and Khan (1984)	24 developing countries	Credit to the private sector	0.5
Edwards (1983)	5 Latin American countries	Money	1.7 2/
Edwards (1984)	9 Latin American countries	Money	0.8 2/
Edwards (1984)	4 Latin American countries	Domestic credit	1.2 2/
Hanson (1980)	5 Latin American countries	Money	1.0 2/
Khan and Knight (1981)	29 developing countries	Domestic credit	0.5
Leiderman (1984)	Colombia, Mexico	Money	0.2
Lipschitz (1984)	Korea	Money	0.7 3/
van Wijnbergen (1983)	Korea	Money	4.0 3/

1/ Effect on real GDP or GNP (in percentage points) over one year.
2/ Simple average of individual country effects.
3/ Cumulated effect over 4 quarters.

even the rule of thumb proposed by Hanson (1980) that in developing countries a 10 percentage point change in the rate of growth of the money supply would alter output (relative to its long-run trend) in the same direction by about 1 percentage point seems to be somewhat of an overestimate. By far the largest estimated deflationary effect is found by van Wijnbergen (1983) in a study on Korea. 1/ However, van Wijnbergen's results are disputed by Lipschitz (1984), who estimates that the reduction in the growth of output would amount to only 0.5 percentage points, using a different type of model for the same economy. Aside from van Wijnbergen (1983), there is a remarkable similarity in the quantitative estimates across the various studies. 2/ The uniformity and apparent robustness of the results is interesting, given that the studies use different models, methods of estimation, sample periods and geographical coverage.

It is also important to point out that the effects of monetary restraint on growth occur only in the short run. In the studies examined the largest estimated impact typically takes place in the first year, and growth starts to pick up fairly soon thereafter. Generally the total effect lasts for about two to three years. Most of the empirical models listed in Table 1 either assume, or find, that a reduction in monetary growth or domestic credit expansion does not exert any long-run effect on the rate of economic growth. 3/

Since the principal channel by which monetary policy is likely to affect growth occurs via its impact on domestic investment, further indirect empirical evidence on the effect of changes in domestic credit on output can be deduced from studies of investment behavior. Generally speaking, a consensus has emerged in recent years that, in contrast to the case in industrial countries, one of the principal constraints on investment in developing countries is the availability of financial resources, rather than their cost. Even when adjusted for risk, the rates of return on capital investment in these countries typically tend to be quite high relative to real interest rates on loanable funds, which are often kept artificially low by governments for a variety of reasons. In such cases one would not expect to find investors undertaking capital formation up to the point where the anticipated marginal product of capital is just equal to its service cost, as is assumed in theoretical models of investment. Indeed, the administrative control of interest rates at low real levels likely results in a chronic excess demand for capital, with perhaps some investments with low rates of return receiving priority over other higher-yielding investments.

1/ Van Wijnbergen's estimate, based on a neostructuralist model associated with the writings of Taylor (1981) and others, is roughly four times as large as most of the results given in Table 1.

2/ The average of the estimates is 0.8 with a standard deviation of 0.4.

3/ Specifically, this means that the assumption of the long-run neutrality of money is either imposed on the model, or found to be satisfied.

In circumstances where the total amount of financing is limited and the price mechanism does not operate smoothly as an allocative device, it is generally more realistic to assume that the flow of private investment in a developing country is constrained mainly by the availability of bank financing. If this is the case, domestic interest rates will influence private investment only indirectly via the effect of an increase in the real return on financial assets in stimulating a larger volume of financial savings by the domestic private sector. Thus, an increase in real credit to the private sector will generally encourage private investment. Although bank loans are relatively short term, borrowing firms can normally roll them over, thereby effectively lengthening the maturity of the debt sufficiently to correspond to the investment period. Since the control of total bank credit generally represents the main instrument of monetary policy in developing countries, the authorities can influence the rate at which private investors achieve their desired level of investment by varying the total flow of domestic credit and its allocation between the public and private sectors.

The results obtained by three recent empirical studies for the estimated effects of variations in domestic credit on real private investment are shown in Table 2:

Table 2. Effect of Changes in Domestic Credit on Real Private Investment

Study	Countries	Policy Variable	Effect on Real Private Investment 1/
Blejer and Khan (1984)	24 developing countries	Credit to the private sector	0.21
Tun Wai and Wong (1982)	5 developing countries	Credit to the private sector	0.36
Fry (1984)	14 Asian countries	Total domestic credit	0.07 2/

1/ Change in real private investment (in dollar terms) with respect to a one dollar change (in real terms) in the policy variable.

2/ Since the dependent variable is defined as the ratio of total real investment to real GDP, this estimate is not strictly comparable to the other two in this table.

The results in Table 2 confirm the hypothesis that in developing countries credit extended by the banking system can have a sizable impact on real private capital formation. Since there is now also considerable evidence on the relationship between growth and investment in developing countries 1/, this result would imply a connection between domestic credit changes and growth, via the effect on private investment. However, it should be noted that two of the three studies in Table 2, that is, Blejer and Khan (1984) and Tun Wai and Wong (1982), use credit to the private sector (in real terms), rather than total domestic credit, as the policy variable. To the extent that Fund programs attempt to ensure an adequate flow of credit to the private sector, the results in Table 2 would likely overstate the effects of changes in total domestic credit.

b. Fiscal policy

Direct evidence on the relationship between changes in government spending or taxes and economic growth in developing countries is quite scarce, especially when compared with that on the links between output and domestic credit discussed above. In standard Keynesian models a reduction in government expenditure or an increase in taxation is expected to have a multiplier effect on the level of real income, at least in the short run. While this is a well-known proposition, there are remarkably few studies that introduce fiscal variables directly into a growth model for developing countries, and those that have done so have not generally found the effect to be statistically significant. 2/ The lack of positive results is probably a reflection of the fact that the relation between fiscal variables and the level of output (or the rate of capacity utilization) in developing countries is more complicated than basic Keynesian macrotheory would suggest. Consequently, what seems to be needed here is a more intensive investigation of the relationship between government spending and taxation, savings, investment, and the growth rate. 3/

1/ This will be discussed later in Section III.2b.

2/ For a test of the hypothesis that an unanticipated change in government expenditures affects real output, see Khan and Knight (1981), page 13. The empirical tests conducted using a model that already included the effects of monetary policy produced inconclusive (i.e., statistically insignificant) results. There are no empirical studies available that find a direct statistical role for taxes in the determination of output in developing countries.

3/ A discussion of the empirical literature relating to the effects of taxation on labor supply, savings, and investment in developing countries is contained in Ebrill (1984).

The effects of fiscal deficits on growth also turn out to be difficult to establish empirically because of the linkage between fiscal policy and monetary policy, which is generally much tighter in developing countries than it is in industrial countries. This link occurs because changes in the money supply are, by definition, equal to changes in credit to the government, changes in credit to the private sector, and variations in international reserves. If domestic financial markets are relatively underdeveloped, so that the government has to rely on bank credit for its financing needs, there is a close correspondence between the fiscal deficit and changes in the supply of domestic credit, unless the authorities are prepared to allow the private sector to be crowded out of the credit markets. An awareness of this close linkage between fiscal deficits and money supply changes is crucial to understanding the limitations on the use of monetary and fiscal policies as independent policy instruments in developing countries. 1/ As such, in models that include the rate of domestic credit expansion or the growth of money, empirical tests tend to suggest that fiscal variables have only a relatively modest independent role.

Other than through the demand side, fiscal policy can influence output via the effects of public sector investment on private investment. In developing countries, in contrast perhaps to the case of industrial countries, the relationship between public and private investment takes on a greater importance because of the relatively larger role played by the government in the overall capital formation process. However, there is considerable uncertainty as to whether, on balance, public sector investment raises or lowers private investment. In broad terms, public sector investment can cause crowding out if it utilizes scarce physical and financial resources that would otherwise be available to the private sector, or if it produces marketable output that competes with private output. Furthermore, the financing of public sector investment, whether through taxes, issuance of debt, or inflation, can lower resources available to the private sector and thus depress private investment activity. 2/

1/ The importance of this linkage is also reflected in the fact that Fund programs often include sub-ceilings on credit extended to the government or the consolidated public sector. Such sub-ceilings serve the dual function of both controlling the public sector deficit and the growth of total domestic credit.

2/ This is not to suggest that all public investment will necessarily crowd out the private sector. Indeed there are a number of public sector investments that would not affect private investment. Certain investments are undertaken by the public sector which the private sector cannot for reasons of scale or financing difficulties. In addition, a number of public sector projects may be partly financed through concessional foreign lending that would not reduce the resources available to the private sector.

It is also clear that public investment to maintain or expand infrastructure and the provision of public goods can also be complementary to private investment. Public investment of this type can enhance the possibilities for private investment, raise the productivity of capital, stimulate private output by increasing the demand for inputs and ancillary services, and augment overall resource availability by expanding aggregate output and savings. Ultimately, the effect of public investment on private investment will depend on the relative strength of these various effects and there is no a priori reason to believe that they are necessarily substitutes or complements.

Specific evidence on the relationship between public sector investment and private investment is not easy to come by, owing to the many difficulties, both conceptual and data-related, involved in modelling private investment behavior in developing countries. Nevertheless, there have recently been a few advances in this direction. For example, the studies by Sundararajan and Thakur (1980), and Tun Wai and Wong (1982) derive models of investment behavior in which public sector investment enters as an independent explanatory variable. While the results for the effect of public investment on private investment were not conclusive in either of these studies, they indicated the merit in pursuing this subject more intensively. 1/ Blejer and Khan (1984), for example, obtained somewhat better results when a distinction was made between infrastructural and other types of public investment. 2/ Using various proxies to represent these two types of public investment, Blejer and Khan (1984) drew several conclusions for the countries in their sample. First, a one dollar increase in real infrastructural public investment would increase real private investment by about 0.25 dollars. Second, an equivalent increase in other forms of public investment would reduce real private investment by nearly 0.3 dollars. These results were consistent with the hypothesis that infrastructural investment would be complementary to private investment, while increases in other types of government investment would tend to crowd out the private sector.

The issue of whether a contractionary fiscal policy that takes the form of a cut in real public sector investment will reduce or expand private capital formation is certainly far from settled. Although the direction of the effect may be uncertain, it is apparent that, by varying the level and composition of public investment, the government can alter

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1/ Sundararajan and Thakur (1980) found the coefficient of the public sector capital stock in the private investment equation to be statistically insignificant in both the countries (India and Korea) they studied. The coefficient measuring the relationship between public and private investment was statistically significant only in one country (Greece) of the five studied by Tun Wai and Wong (1982).

2/ The results are based on a pooled sample of 24 developing countries for the period 1971-79.

private investment and influence the growth rate of the economy over the longer term. As such, in the course of reducing the fiscal deficit, it would be necessary for the government to weigh carefully the short-term consequences of cuts in current spending against the longer-term effects that would occur if the reductions fell more heavily on investment expenditures.

2. Policies to stimulate aggregate supply 1/

Supply-side policies may be described generally under two headings: (a) policies to improve the efficiency of resource allocation; and (b) policies to increase the level and/or rate of growth of capacity output of the economy.

a. Policies to improve efficiency of resource allocation

Unlike measures to stimulate savings and investment, policies focusing on improving the efficiency of resource allocation--principally through the elimination of distortions--are designed to increase the overall level of capacity output that can be produced from an economy's given stock of resources. Nevertheless, attempts to eliminate distortions present a number of practical difficulties. As discussed in Section II, the removal of distortions may initially cause unemployment, and perhaps even reduce welfare in some cases. Furthermore, standard second-best considerations suggest that if a country has a number of significant distortions, the removal of only some of them will not necessarily result in the desired gain in efficiency.

Generally, the main sources of distortions in prices are monopolies and other forms of imperfect competition, public sector pricing policies and government price controls, various types of taxes and subsidies, and tariffs and quotas. By their nature, distortions tend to be both microeconomic in character and country-specific. Nevertheless, there are two general sources of inefficiency that have macroeconomic significance, and have gained importance in recent years. First, there are inefficiencies related to energy pricing policies; the increases in energy prices during the past decade were often accompanied by attempts by country authorities to limit corresponding increases in domestic energy prices. By now, however, it has become widely accepted that countries should systematically pass through higher prices of oil and petroleum products to final users; otherwise, the government would have to absorb the cost of any subsidies in the budget. Furthermore, a policy of subsidizing energy would tend to slow down the shift to less energy-intensive production techniques and patterns of consumption. Thus, the experience

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1/ This section is based largely on the discussion contained in Khan and Knight (1982).

of energy price movements provides one important example of the adverse effects on resource allocation that can result from failure to set domestic prices at their international opportunity cost.

A second major source of inefficiency, particularly in primary producing countries, is that caused by the distortions associated with agricultural pricing policies, which often cause the prices of agricultural commodities to deviate from those that would be established in competitive markets. Such policies have a strong impact on the level and allocation of agricultural production, since they act as a tax on output and exports. It is possible to get an idea of the effect of raising prices on agricultural supply from available estimated price elasticities of supply of selected primary commodities. For example, such estimates have been provided by UNCTAD (1974), and more recently for the Sub-Saharan African countries by Bond (1983). These estimates, shown in Table 3, indicate that the price responsiveness of primary commodities is not as small as might have been thought. Indeed there are some commodities, such as cocoa, coffee, and rubber, where the long-run price elasticity is surprisingly high. By and large, these results suggest that pricing policies to increase the return to producers would tend to stimulate the output of major agricultural commodities, particularly in the longer term.

b. Policies to increase the rate of growth of capacity output

The rate at which the aggregate potential supply of output can be expanded depends, among other things, on decisions about the proportion of current real output that is to be invested in productive capital rather than being consumed, as well as on the nature and quality of the capital stock being added. Once the decision to increase the economy's total potential output is taken, the appropriate supply-side policies are those that favor private saving and (if private sector investment is being emphasized) those that increase the attractiveness of private capital formation. Furthermore, when the authorities choose to expand productive capacity within the public sector, it is necessary to ensure that the policies they adopt do not in turn create disincentives that induce a fall in private sector fixed capital formation.

Policies to foster the expansion of savings in programs supported by the Fund focus primarily on increasing the return on savings. A large number of developing countries impose ceilings and other restrictions on the nominal interest rates offered on savings deposits by the banking system. Under inflationary conditions, these ceilings may imply very low or negative real interest rates on financial savings. If financial savings are interest-sensitive, adjusting interest rates to more realistic levels would clearly be called for; this would presumably stimulate flows of both domestic and foreign savings. The increase in savings would raise domestic investment, and thereby capacity growth. As such, the effectiveness of Fund policies in raising capacity output would depend on (i) the degree of interest-sensitivity of savings; and (ii) the effect of increased investment on the growth rate.

Table 3. Estimates of Long-Run Price Elasticities of Supply of Selected Primary Commodities

Commodity	UNCTAD (1974)	Bond (1983) 1/
Cocoa	0.20	0.79
Coffee	0.20	1.33
Cereals	0.40	--
Groundnuts	--	0.52
Palm kernels	0.30	0.25
Palm oil	0.30	0.49
Cotton	0.40	0.50
Sisal	0.50	0.62
Rubber	0.30	0.99
Tobacco	--	0.65
Timber	0.50	--

1/ Median value of estimates reported in Table 2, page 710.

(i) Effect of interest rate policies on savings

Despite the considerable amount of research effort expended on the subject of the interest responsiveness of savings in general, and in developing countries in particular, there is still much doubt as to whether an increase in interest rates would, on balance, raise the savings rate. 1/ Empirical work on savings behavior in developing countries, and particularly on the relation between savings and interest rates, has been handicapped by severe limitations of data. For example, savings data as a rule are calculated as a residual item in developing countries, whether by taking the difference between GNP and consumption expenditure, or by substracting the current account deficit (less net factor income from abroad) from gross domestic investment. In either case, the data on aggregate savings can be subject to very substantial measurement errors. Furthermore, as mentioned previously, nominal interest rates in many developing countries are regulated, so that they often exhibit little or no variation for extended periods of time. Suffice it to say that these two factors have made it very difficult to employ standard empirical methodology in analyzing this subject.

Recently, however, there have been some modest advances in estimating the effect of interest rate changes on saving behavior. Essentially this has been the consequence of researchers focusing their attention on the response of real savings to variations in real rather than nominal interest rates. This is clearly a more sensible approach from a theoretical perspective, and in addition has the practical advantage that, while nominal interest rates may be relatively constant over time, real interest rates can and do fluctuate widely as inflation rates vary. Fry (1980), (1984), for example, finds that savings rates in a number of Asian countries are positively related to real interest rates. The most recent estimates, Fry (1984), show that for a pooled sample of 14 Asian countries the coefficient measuring the effect of the real interest rate on savings deposits was between 0.05 and 0.08, depending on the specific model in question. This would imply that a 10 percentage point increase in the real interest rate would, other things equal, raise the ratio of savings to GDP by a little less than 1 percentage point. These results for Asian countries are supported by McDonald (1983), who found that real interest rates played a significant role in the determination of real savings in the case of 12 Latin American countries. The average short-run elasticity of savings with respect to real interest rates was about 0.2, and the corresponding long-run elasticity was of the order of 0.3. 2/ While the dispute

1/ Of course this controversy is not exclusive to developing countries; there is just as much uncertainty about the relationship in industrial countries.

2/ These values are close to Fry's (1984) estimates when the latter are converted to elasticities.

on the interest-responsiveness of savings is far from being settled, 1/ these recent studies do lend a certain amount of support to the hypothesis that savers in developing countries are likely to modify their behavior as the (real) rate of return on savings changes.

Aside from the issue of the responsiveness of domestic savings, some observers have expressed doubt that the flow of savings from the rest of the world will exhibit significant interest elasticity. Appropriate exchange rate and interest rate policies in the context of a comprehensive stabilization program can significantly influence capital inflows by creating a climate of confidence in the economy. The resulting increase in foreign savings, whether through capital inflows or remittances, can be far in excess of what would be implied by estimated interest rate elasticities. Such evidence as is available suggests that a financial reform that involves the removal of ceilings on domestic interest rates can indeed have a strong effect on the capital account of the balance of payments. For example, the relaxation of interest rate ceilings in Argentina, Chile, Korea, and Uruguay was followed by such large capital inflows that the authorities experienced considerable difficulties in maintaining stability in the growth of domestic liquidity. 2/ This phenomenon of excessive inflows of capital, however, represents more of a case for exercising caution in undertaking a financial reform, rather than an argument against the basic policy.

(ii) Investment and growth

Policies designed to raise the long-run rate of growth of per capita output in the economy must necessarily involve measures to increase the rate of capital formation. 3/ Assuming that such measures are implemented and are successful in raising investment, what would be the impact on growth? This question can be addressed by formulating an aggregate production function that relates the rate of growth of output to increases in the various factors of production--such as the capital stock (of both domestic and foreign origin), the labor force, as well as technical progress and the use of imported inputs--and then estimating the resulting model with

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1/ Giovannini (1983), for example, finds little evidence on this question for a group of Asian countries similar to those studied by Fry (1980), (1984).

2/ This experience essentially forms the basis for Diaz-Alejandro's (1984) argument for capital controls (on both inflows and outflows) during a stabilization program.

3/ Of course, together with increases in physical capital there must be a corresponding improvement in the efficiency of investment. Other factors, such as improvements in human capital (education, skills, and health of the population), increases in the labor force, and technological developments, are also very important in the growth process.

either time-series or cross-section data. The expected positive relation between economic growth and investment in developing countries has been documented in a number of studies; for example, some of the empirical evidence on the elasticity of output growth with respect to capital formation and growth of the labor force is shown in Table 4.

Table 4. Estimates of the Effects of Increases in Factors of Production on the Growth of Real GDP

	Elasticity of growth with respect to changes in:	
Study	Capital 1/	Labor 2/
Robinson (1971)	0.17	0.54
Michalopolous and Jay (1973)	0.24 (domestic)	0.60
	0.12 (foreign)	
Balassa (1978)	0.16 (domestic)	0.92
	0.24 (foreign)	
Tyler (1981)	0.25	0.98
Blejer and Khan (1984)	0.18	0.59

1/ Defined as the ratio of investment to GDP.
2/ Rate of growth.

The estimated effects of a change in the ratio of investment to GDP or GNP on the rate of growth of real output are quite similar across studies, despite significant differences in the samples and periods of estimation. On average, the estimates in Table 4 are consistent with the view that a 1 percentage point increase in the ratio of investment to income would, other things equal, raise the overall growth rate by about 0.2 percentage points. 3/

3/ These estimates should, however, be treated with a degree of caution. Because capital endowments differ among countries, estimates of the marginal productivity of capital based on cross-section data may be somewhat misleading.

3. Exchange rate policies

There are several reasons why it is worthwhile to devote separate consideration to the use of the exchange rate as a stabilization tool. First, as discussed in Section II, imbalances that give rise to the need for stabilization are frequently a result of the loss of international competitiveness caused by an overvalued exchange rate. Second, since it is simultaneously an expenditure-switching and expenditure-reducing policy, devaluation affects both domestic absorption and domestic supply, and thus contains elements of both demand-side and supply-side policies. Finally, it is probably fair to say that of all policy measures recommended by the Fund, devaluation has provoked the most discussion and criticism. One extreme position is that devaluation not only fails to improve the current account of the balance of payments, but also induces stagflationary pressures in the process. Even if such a policy is effective in changing trade flows, it is still regarded as too costly in comparison to alternative policies that could be used to improve the balance of payments (Taylor (1981)).

The discussion on exchange rate policies here concerns itself solely with the issue of whether devaluation has a contractionary effect on output in the short run. No attempt is made to assess either the effectiveness of devaluation to correct external imbalances or the inflationary consequences of the policy. Both aspects are, of course, very important, but they are not directly related to the growth issue being addressed here. 1/ Furthermore, it should be stressed that in the studies reviewed, the policy of devaluation is basically considered in isolation. Since devaluation is seldom, if ever, undertaken on its own, but is usually accompanied by a number of other policies, the measured effects obtained from various studies are at best only suggestive of orders of magnitude.

The basic demand- and supply-side aspects of devaluation have been discussed fairly extensively in the literature. 2/ Consider, for example, a situation where excess real domestic demand is reflected in a current account deficit. A devaluation increases the level of foreign prices measured in domestic currency terms and thus the price of tradable goods relative to nontraded goods in the domestic economy. On the demand side, the effect of a devaluation on domestic absorption is unambiguously negative: the main demand-side effects are a reduction in private sector real wealth and expenditure, owing to the impact of the rise in the overall price level on the real value of private sector financial assets,

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1/ In the long run, as mentioned in Section II.3, correcting the external imbalance may certainly set the stage for more rapid growth later. In the present context, however, the focus is exclusively on the short run.

2/ See, for example, Guitian (1976) and Dornbusch (1981).

and on real wages and other factor incomes whose nominal values do not rise proportionately with the devaluation. For these reasons, devaluation decreases domestic demand and, looked at from the point of view of current absorption, appears to be contractionary.

On the supply side, however, the effects of the devaluation frequently tend to move the productive sector in the opposite direction. If the prices of domestic factors of production rise less than proportionately to the domestic currency price of final output in the short run, devaluation will have a stimulative impact on aggregate supply. 1/ Thus both the aggregate demand and aggregate supply effects of a devaluation work toward reducing the excess demand in the economy and the current account deficit. Whether total output rises or falls during this process obviously depends on whether the contractionary effects on aggregate domestic demand are outweighed by the supply-stimulating aspects of this policy. This depends, among other things, on the relative sizes of the price elasticities of imports and exports, and on the relative shares of tradable and nontradable goods in total production. In general, output will decline if the trade elasticities are small and the structure of production is weighted more towards tradables than towards non-tradables. 2/

The arguments put forward to support the view that devaluation exerts an overall adverse effect on growth tend to rely on special assumptions that may be important in particular developing countries but which have been found not to be applicable in all cases. For example, Diaz-Alejandro (1965) assumes that devaluation redistributes income to groups that have a relatively low marginal propensity to consume, and that the consequent reduction in aggregate domestic demand has a depressing effect on domestic supply, which more than offsets the increase in the country's exports. Other writers postulate that the aggregate supply function is backward bending in the short run, either because distortions in the domestic credit market cause a credit crunch, or because there is overindexation and nominal wages rise more than proportionately to the change in the exchange rate. As argued by Krugman and Taylor (1978), devaluation could also increase the domestic-currency price of imported inputs, and if the demand for them is inelastic there would be a decline in total production. Finally, Cooper (1971), Dornbusch (1981), and Hanson (1983) have shown that, as a general rule, devaluation will be contractionary if the elasticities of import demand and export supply are low, or if the initial trade deficit is large.

Keeping in mind these possibilities, however, it would normally be expected that as long as devaluation succeeds in altering the real exchange rate by raising product prices in domestic currency relative to

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1/ For a discussion of the supply-side aspects of devaluation, see Nashashibi (1980) and Khan and Knight (1982).

2/ See Guitian (1976).

factor incomes, it should exert a stimulative effect to the extent that the short-run marginal cost curves of the relevant industries are upward sloping. Naturally, the longer a real exchange rate change persists, the larger are the gains to be achieved. In addition, if the wealth and distributional effects of devaluation stimulate savings and investment, there will also be a long-run gain in terms of an increase in potential output.

In general, whether a devaluation exerts a net expansionary or contractionary effect on domestic output and employment depends on the relative strengths of the demand and supply effects described above, and on the time period in question. It may be, for example, that in the short run the demand factors outweigh the supply factors, but that this is reversed in the medium and long term. Clearly these issues are very relevant to the use of exchange rate policies in adjustment programs, and there are two types of empirical evidence that can be brought to bear on the question. First, one can simply ascertain whether the price elasticities of imports and exports are in fact as low as some of the writers referred to above assume. The empirical estimates reported by Khan (1974), for example, indicate that the Marshall-Lerner conditions for devaluation to be successful in improving the trade balance were satisfied in 13 of the 15 developing countries included in his sample, (Khan (1974), Tables 1 and 2). This evidence at least contradicts the presumption that developing countries are generally characterized by low trade elasticities.

Second, there are studies that look directly at this issue within the framework of models that explicitly take into account both the demand and supply effects of devaluation. In Table 5, a representative set of these models is used to show the results of a 10 percent devaluation on the rate of growth of output in the first year. The dispersion of the estimates depends primarily on the underlying values of the supply-price elasticities, and generally the results reported in Table 5 indicate that the relative-price, or supply, effects outweigh the negative demand-side effects. As a result, output growth would be higher after a devaluation, rather than lower.

The main conclusion that follows from this analysis is that the direction and magnitude of the growth effects of exchange rate changes depend crucially on such issues as the extent and duration of the real exchange rate change, the structure of production, and the responses of trade flows to relative price changes. To the extent that devaluation affects the sectoral distribution of income, it may not be completely costless to some sectors. On the other hand, there is no strong empirical evidence supporting the proposition that devaluation necessarily reduces the growth of real output, even in the short term.

If devaluation is precluded as a policy measure on the grounds of potential output costs, then it is valid to ask what alternatives could be used to restore the international competitiveness of the economy, and

Table 5. Effects of a 10 Percent Devaluation on the Growth of Real GDP 1/

Study	Country	Effects on Growth of Real GDP 2/
Gylfason and Schmid (1982)	Brazil	-0.5
	India	1.1
	Pakistan	4.2
	Philippines	4.5
	Turkey	3.4
Nugent and Glezakos (1982)	16 Latin American countries	0.4
Khan and Knight (1982)	29 developing countries	-0.5
Branson (1983)	Kenya	-0.9 to -1.4 3/
Taylor and Rosensweig (1984)	Thailand	1.0 to 3.3 4/

1/ Over a period of one year.
2/ In percentage points.
3/ Depending on the degree of wage indexation; the lower value corresponds to zero indexation while the higher one to the case of full indexation.
4/ Corresponding to assumed low and high export price elasticities, respectively.

improve the external payments position. One obvious possibility is to compensate with other policies in the package, and if the time period of adjustment is limited, this may involve relatively tighter demand management than would be necessary if devaluation was a feasible option. A second possibility, which has been proposed by certain critics of the policy of devaluation in developing countries, would be to impose some type of controls on imports, and provide subsidies to exports. As mentioned previously, controls can be successful in the short run in certain circumstances, but there is substantial evidence now that countries that have adopted outward-looking development strategies have fared relatively better in terms of economic growth, employment, and economic efficiency. 1/ These outward-oriented strategies have typically been characterized, inter alia, by the provision of incentives for export production, the encouragement of import competition for domestically produced goods, and the use of the exchange rate and other related policies to maintain the real exchange rate at a level consistent with the objectives of external balance and export promotion. Therefore, the use of controls to achieve balance of payments objectives appears much less attractive once account is taken of the likely longer-term effects on growth and efficiency. 2/

IV. Evidence on the Growth Effects of Policy Packages

An alternative empirical approach to the problem of assessing the effects of Fund programs is that adopted in what are termed "cross-country" studies of stand-by and extended arrangements. These studies essentially focus on the effectiveness of the entire policy package, rather than concentrating exclusively on one or a few policies, as was done in the empirical studies discussed in the previous section. Studies of this type have been undertaken periodically within the Fund as part of the general evaluation of the experience with programs, 3/ and recently also by writers outside the Fund looking at various aspects of Fund-supported stabilization programs. 4/ This section first briefly describes the methodology adopted by these cross-country studies, and then summarizes the evidence that they provide on the growth issue.

1/ See, for example, Bhagwati and Srinivasan (1979), Balassa (1980), and Krueger et al. (1981).

2/ A more detailed discussion of the issue of devaluation versus exchange and trade controls is contained in "Exchange Rate Policies in Developing Countries," (SM/82/8, 1/11/82).

3/ For example, Reichman and Stillson (1978), Donovan (1981), (1982), and Kelly (1982).

4/ See, for example, Connors (1979), Killick (1984), and Gylfason (1983).

1. Methodology

Since it is very difficult, both theoretically and empirically, to link all the various policy measures contained in a typical Fund program to the ultimate targets of balance of payments, inflation, and growth, the cross-country approach of assessing the overall effects does appear to have certain advantages. Basically, in this framework the precise nature of the underlying economic relationships is not made explicit, and attention is directed solely at determining whether Fund programs have been "effective" in some sense in achieving the broad objectives for which they were formulated. While this would seem on the face of it to be a sensible and pragmatic approach, the issue of judging the effectiveness of stabilization programs turns out to be much less straightforward than it at first appears. 1/ In general, one would wish to determine the effectiveness of programs by comparing the actual behavior of certain key macroeconomic variables in the program country with the outcomes that would have been observed in the absence of the program, i.e., to estimate the "counterfactual". This criterion could be further extended to cover comparisons between actual outcomes and those that would have been achieved under some alternative set of policy measures.

Unfortunately, as pointed out in Section II, criteria based on the determination of the counterfactual involve a great deal of subjectivity, and are exceedingly difficult to employ in practice. 2/ Consequently, the typical cross-country study compares the behavior of one or more important macroeconomic variables (the current account, the overall balance of payments, inflation, or the growth rate of real GDP) in the period just prior to the implementation of the program with their behavior after the program was introduced. This "before-after" approach, while basically objective, is nevertheless inadequate as an estimator of the independent effects of programs. Specifically, this approach requires a strict ceteris paribus assumption; namely, that all other non-program-related determinants of macroeconomic outcomes are unchanged--a condition that is very unlikely to be satisfied in any realistic situation. It is obvious that if non-program factors affecting the outcomes change between the period before the program and the period during or after it, this before-after method will tend to yield misleading results. A further difficulty in applying the before-after approach is that it does not distinguish between sustainable and unsustainable growth. For example, a program may be undertaken following a sharp increase in aggregate domestic demand, stimulated by an overly

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1/ See Guitian (1981).

2/ Guitian (1981), for example, refers to this type of comparison as being a conjectural, or judgmental, standard of measurement of the effects of programs.

expansionary fiscal policy, that has induced an unsustainable spurt in the growth rate. In this case a Fund program that simply restored real growth to its sustainable long-run path would be erroneously recorded as imposing an adverse "low-growth" cost on the program country. The recognition of this problem has led some writers to supplement the before-after calculations for program countries with a similar comparison for a reference group or "control group" of non-program countries. 1/ This control group method implicitly assumes that the performance of the program countries would have been the same as that of the reference group of non-program countries in the absence of a program, so that any differences between the two are due to the program. Even though the bias in program estimates created by ignoring non-program determinants of macroeconomic outcomes is reduced, other potentially serious errors are introduced to the extent that program countries turn out to differ systematically from the control group. Since it is likely that countries coming to the Fund are in a significantly worse economic situation than other developing countries, the problem associated with using control groups is a very real one.

Problems such as these have led to considerable doubts about the usefulness of the cross-country approach. Of course, similar criticisms can be made of studies dealing with individual policies, but in this case these problems can be taken care of, at least in principle, by performing controlled experiments of alternative policy scenarios under differing external conditions. Thus, the advantages of cross-country studies in being able to deal with the overall packages have to be set against the drawback that such studies may well not be able to give a fair picture of the effectiveness of programs. A further disadvantage of the cross-country approach is that it is not able to distinguish between different types of programs (for example, those that put more stress on demand management than on supply-side measures); nor is it able to isolate the effects of specific policy measures. While some studies have attempted to make such distinctions [Donovan (1981), Kelly (1982)], in fact the results show only the effects of the total package and not those of individual policies.

2. Empirical evidence

Keeping in mind the above-mentioned caveats, it is nevertheless interesting to see what empirical evidence is provided by selected cross-country studies on the relationship between Fund programs and the growth rate. It turns out that the broad conclusions of these studies are more consistent than those of the time-series studies reviewed earlier in this paper.

1/ For example, Donovan (1982) and Gylfason (1983).

One of the first studies undertaken within the Fund using this type of approach was that of Reichmann and Stillson (1978), who examined the impact of about 70 stand-by arrangements implemented over the ten-year period 1963-72. Reichmann and Stillson utilized the before-after criterion by examining the growth rates of real GDP for one-year periods before and after each program and concluded that, on balance, Fund programs exerted no perceptible adverse effects on growth rates as compared with the period immediately preceding their implementation. In certain cases, growth did decline after the inception of the program relative to the previous year's rate of growth, but this was matched by a number of instances where the growth rate rose.

It can be, and has been, argued that one-year comparisons are really not appropriate, since the effects of programs could be spread out over a number of years. The evidence provided in the study by Kelly (1982), although focusing on the specific issue of fiscal adjustment in Fund programs, has a bearing on this timing issue. Kelly (1982) compared the three-year average of the rates of growth beginning with the program year with the three-year average prior to that year. For the 48 upper-credit tranche stand-by arrangements implemented over the period 1971-79 that were examined, there were 25 cases where a decline in the average growth rate occurred, but in the remaining 23 there was in fact an increase. The conclusions reached by Reichmann and Stillson (1978) apparently held up for a later period, and were also independent of the length of the period chosen for the comparison.

Donovan (1981), (1982), has extended the analysis by performing the before-after tests as well as using a control group comparison to attempt to capture the non-program effects on the rates of growth. In both studies, the control group was defined as all non-oil developing countries (including the program countries), and the basic argument was that in the absence of a program the program countries' experiences would have been similar to those of non-oil developing countries as a group. In the first of the two studies, covering 12 programs over the period 1970-76, Donovan (1981) concluded on the basis of both criteria for judging effectiveness that there was no evidence, on average, of Fund programs being associated with any systematic downward bias in growth rates. The second of the two studies, which extended the period through 1980 and increased the number of stand-by and extended arrangements to 75, supported the earlier conclusion. Briefly, Donovan (1982) found not only that in the short run (one year) the growth performances of countries with programs was similar to that of all non-oil developing countries but, more importantly, that when three-year averages of the data were used, the relative performance of program countries was in fact better.

There are also problems with the specific criteria employed by Donovan (1981), (1982). For example, the program countries and the control group are clearly not independent when the latter includes the former. Furthermore, it has been argued that Fund programs can have an effect on non-program countries, and thus the latter cannot serve as a satisfactory

control group. Nevertheless, it is interesting to observe that both the before-after and control group tests yielded the same qualitative conclusions.

While the cross-country approach has become identified with assessments of programs by the Fund itself, a number of such studies have also been undertaken outside the institution. For example, the Overseas Development Institute (ODI) study referred to in Killick (1984), investigated the effects of 38 programs implemented between 1974 and 1979, and using variants of the before-after tests, found that growth rates were largely unaffected. These results confirmed the conclusion reached by Connors (1979) in an examination of growth rates one year before and after the adoption of programs in 17 countries during 1973-77, that Fund programs had neither a negative nor a positive effect on growth. In another study, Gylfason (1983) went beyond previous efforts in this area and specified a model outlining the transmission mechanism between the policy instruments, principally credit policy, and the ultimate targets. However, the actual statistical tests, which covered 32 stand-by arrangements during 1977-79, took the same form as the other studies and obtained the same conclusion that the adverse growth effects, if any, were very small. Finally, additional cross-country evidence that has some bearing on the issue of stabilization programs and growth is contained in Harberger and Edwards (1982). These authors examined the experiences of countries undertaking disinflation policies, which specifically implied reducing the rate of inflation from 50 percent or higher to half that rate over a period of seven years. For the nine cases of substantial disinflation that they studied, Harberger and Edwards (1982) found only very limited support for the notion of a trade off between stabilization and growth. In three cases the growth rate was lower under the disinflation policy, as compared to the rate experienced during the preceding inflation. In the other six cases, the rate of growth of real GDP turned out to be higher by an average of about three percentage points.

In summary, most cross-country studies show an absence of overwhelming negative effects, and in fact indicate that in a substantial number of instances the growth performance turned out to be better in the course of an adjustment program than it had been prior to its implementation. There is some apparent inconsistency between the results described in this section and those emerging from the time-series studies, particularly the ones dealing with specific demand-management measures, that were examined in Section III. The latter indicate that certain policies of the type normally included in Fund programs may in fact exert a negative impact on growth, while the cross-country studies do not show any clear pattern. An attempt is made in the next section to reconcile the differing conclusions reached by the two types of studies.

V. Simulations of the Growth Effects of Programs

There are several reasons why it is possible for the cross-country and time-series studies to appear to yield conflicting results for the effects of Fund programs on economic growth. First, the conflict may simply be due to differences in the methodology and empirical criteria utilized by the two types of studies. The time-series studies, for example, are based on formal statistical tests, while the cross-country studies rely on a less formal and more judgmental approach to determining the effects of programs. Comparing the results across studies that employ different criteria for testing the effects of policies can, as such, be quite difficult. Second, there is the issue of the time period over which the effects on growth are measured. While the time-series evidence in Section III is restricted to comparisons over a one-year period, the cross-country studies often look at longer (three-year) periods. This difference in time horizons for the tests could also explain part of the inconsistency that arises.

Third, and this is perhaps the most important factor, while the time-series studies are concerned with assessing a single policy, and mainly a demand-oriented policy, the cross-country studies examine the effects of the whole package of policies implemented in the course of a Fund program. Whereas demand-management policies by themselves may cause the rate of growth of output to decline, other policies, particularly those stressing supply-side aspects, could work towards improving the growth picture. Furthermore, the adoption of a Fund-supported program may alter expectations, so that the effects on the ultimate objectives cannot be precisely determined *a priori*. Expectations factors are inherently non-quantifiable, and thus cannot be easily incorporated into the time-series framework. These time-series studies also do not reflect the positive growth effects of increased inflows of capital that may result both directly and indirectly from the implementation of a Fund-supported adjustment program, unless they focus explicitly on this question. Since the cross-country studies concentrate solely on comparing the outcome of programs (with the historical pattern or with some control group performance), and attribute all changes that occur to the program, they automatically incorporate the effects of all factors, including expectations and increased external finance, that have a bearing on the outcomes.

Clearly, it would be very useful if the main advantages of the two approaches could be combined in some way. In other words, it would be worthwhile to incorporate a range of policies into the analysis, while at the same time abstracting from the non-program exogenous factors that impact on growth. One way to do so would be to expand the models underlying the time-series studies to handle a variety of both demand-side and supply-side measures, and use the resulting model to perform controlled experiments corresponding to alternative policy combinations. This type of simulation exercise might help to reconcile the observed inconsistency between results, and could also provide certain insights on the main issue of the growth effects of Fund programs.

For this purpose, however, it is necessary to have at hand a structural model that incorporates the relations between a variety of policies and certain macroeconomic variables including, in particular, the level or rate of growth of output. There is generally no single model that is able to cover the whole range of policy measures contained in a typical Fund program, although there are some small-scale models available that incorporate certain of the major policy instruments. One such model, developed by Khan and Knight (1981), satisfies the requirement of being able to handle several policies simultaneously, particularly those involving the control of aggregate demand and the exchange rate; and of assessing their effects on the main macroeconomic variables--growth, inflation, and the balance of payments. Furthermore, the parameters embedded in this model, which were estimated from a sample of 29 developing countries, are broadly consistent with those obtained in the studies cited in Section III. For present purposes, a slightly expanded version of this model, including certain explicit supply-side aspects, is used. With this model the effects of different combinations of policies on growth can be studied by performing hypothetical simulation experiments.

The simulation experiments conducted here are, of course, purely illustrative; they are not intended to reflect all the complexities of program situations. Formal models of any type are clearly not able to analyze all of the questions relating to Fund programs, and in particular they do not capture the complex ways in which policy variables and the ultimate objectives may be related. The model used here is highly aggregative, and thus focuses only on what are considered to be the most important macroeconomic relationships. Also, while expectations are included, they are treated in a very simple fashion. Finally, although the parameters of the model reflect empirical estimates, the changes in policy and the combination of policies studied here are entirely arbitrary. These various reservations should be kept in mind when considering the simulation results.

The simulations conducted with this model start with the assumption that the authorities wish to achieve an (arbitrarily defined) increase in the stock of international reserves in a period of one year. To hit this target it is possible to utilize demand management policies alone, or some combination of demand-side and supply-side measures. Since the time horizon is restricted to one year, supply-side measures alone cannot be used, as they tend to operate with a significant lag. This lag in the effect of supply-side policies is built explicitly into the model.

Specifically, the simulations trace out the effects on the growth of real GDP of the following: 1/

1/ The simulation experiments are similar to those contained in Khan and Knight (1981), (1982).

a. A set of demand-management policies, defined as a once-and-for-all 10 percentage point reduction in the rates of growth of nominal domestic credit and nominal government expenditures, and a 10 percent devaluation. 1/ Since prices do not adjust immediately in the model, these policies translate into real changes in the short run.

b. The above demand-management policies, combined with a set of supply-side policies that would raise the rate of growth of capacity output by 0.5 percentage points per year over a period of four years. In the context of the model this requires an increase in the investment-income ratio of about 2-3 percentage points per year for the same four-year period. 2/ No attempt, however, has been made to specify exactly the measures that would produce this result; as discussed in Section III.2, the increase in the investment-income ratio would have to be achieved by a combination of supply-side measures geared to the productive structure of the country under consideration. 3/

The results of the simulations are presented in Figure 1. Assume that the economy is initially growing at some arbitrary constant rate (equal to 5 percent per year), and that a stabilization program is introduced in the third period (year). 4/ If the policy package consisted solely of demand-side measures (Simulation a), there would be a decline in the rate of growth at the beginning of the program, as the tighter credit and fiscal policies reduced aggregate demand. The expansionary effect of devaluation is not sufficient to offset these developments, and altogether the growth rate in this simulation falls by about 1.5 percentage points in the first year, but then starts to rise as inflation declines, raising real domestic credit and real government expenditures. The general improvement persists for about two years and eventually the growth rate approaches its original level. The international reserves target is achieved with a pure demand-oriented policy package, but at the price of a transitory drop in the growth rate.

1/ While, as mentioned previously, devaluation has both demand-side and supply-side features, for expositional convenience it is treated here as a demand-management policy.

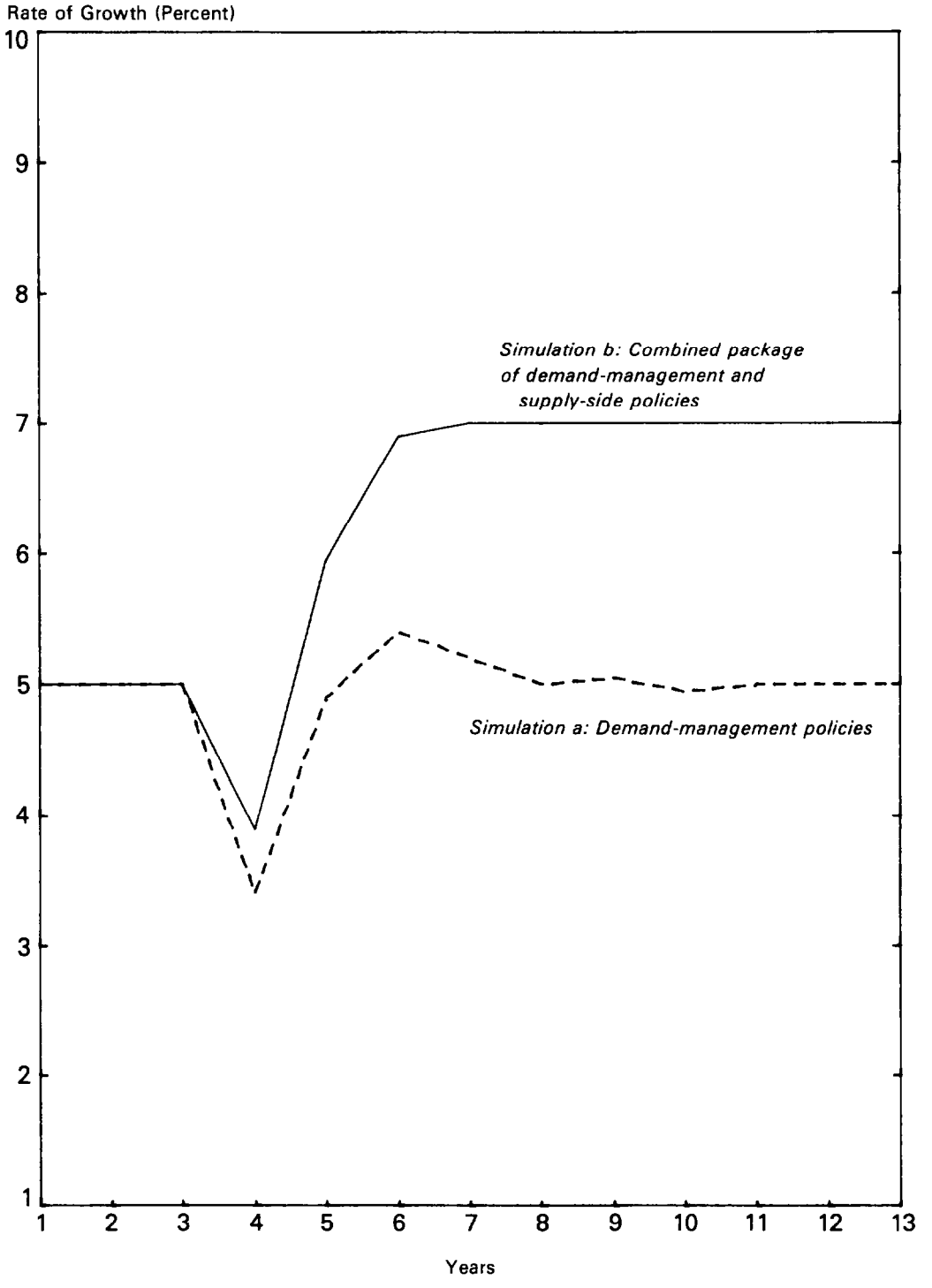
2/ This calculation is made using an aggregate production function estimated by Blejer and Khan (1984) for 24 developing countries. See also Table 4 in Section III.

3/ Basically this would involve an increase in domestic financial savings brought about through raising domestic interest rates, and an expansion in the flow of real bank credit to the private sector.

4/ For simplicity it has been assumed that the initial growth rate is constant. The analysis would not be changed if instead the initial conditions involved a declining (or increasing) rate of growth of output.

FIGURE 1

EFFECT ON GROWTH RATE OF DEMAND-MANAGEMENT AND SUPPLY-SIDE POLICIES



The output costs could be reduced significantly if appropriate supply-side measures were introduced simultaneously with the demand-management package. Assuming that these supply-side policies raise investment, and thereby the economy's trend growth rate of capacity output (in the present illustration by 0.5 percentage points per year), the actual growth rate would also start to rise. 1/ The combined package of demand- and supply-oriented policies (Simulation b) would still result in a decline in the growth rate in the first period, but now the negative impact of the demand-management policies is partially offset by the positive effect of the increase in the growth of capacity. Since the supply-side policies are assumed to raise the growth rate permanently by raising capacity growth, the overall package succeeds in putting the economy on a higher secular growth path.

Despite being only illustrative, these simulation experiments yield three important insights relating to the issue of the effects of Fund programs, as well as for reconciling the conflicting evidence produced by the time-series and cross-country studies. First, the combined effect of several policies implemented simultaneously turns out to be different from the case when such policies are enacted individually. Second, it is clear that suitable supply-side policies can help to offset, at least partially, any adverse short-run growth effects of stabilization that may result from demand restraint. Since the time-series studies look mainly at demand-side policies, it is understandable why they reach the conclusion that certain policies included in Fund programs have a significantly negative short-run impact on the growth rate. It can be argued that the reason why cross-country studies are more ambiguous on this issue is that they implicitly incorporate supply-side policies into the analysis. Third, it is clear that in judging the effects of programs, care has to be exercised with regard to the time period in question. In the present example, if one makes only one-year comparisons, then the results in Figure 1 would imply that the stabilization program had significant costs, irrespective of the types of policies it contained. In contrast, if the period of comparison were extended to, say, three years the conclusion would be quite different.

VI. Conclusions

The view that Fund-supported adjustment programs impose significant economic costs, particularly in terms of reduced growth and employment, has been strongly voiced in some quarters. Consequently, critics of the Fund have argued that more attention should be directed towards developing alternative, less costly, approaches to stabilization. The purpose of this study has been to survey the available empirical literature in order to determine what light could be thrown on the direction and magnitude of the short-run effects of Fund programs on the level and growth of output.

1/ In this model there is one-for-one relationship between actual and capacity growth, so that any increase in the latter is matched by an equivalent increase in the actual growth rate.

In reviewing the literature, one is immediately struck by the relative paucity of empirical studies that directly examine the relationship between Fund programs and economic growth. This is quite surprising in the light of the controversy that has surrounded this issue. The principal task of this paper was to put together the evidence from the few studies that have directly examined the effects of Fund programs, and combine it with indirect evidence from empirical studies that consider the relationship between policies of the type usually associated with Fund programs and short-run variations in the rate of economic growth. This approach, while obviously not ideal, nonetheless allows one to draw some useful inferences from the available material.

The main patterns to emerge from the present survey can be briefly summarized. First, the studies reviewed generally indicated that, while the size of the effect varied, tighter monetary and credit policies would result in a fall in the growth rate in the first year after they were implemented. Furthermore, if monetary and credit restraint took the form of a reduction in the flow of credit to the private sector, the empirical evidence showed that private capital formation and possibly the long-run rate of growth, would be adversely affected. Second, there were no studies showing any clear empirical relation between growth and fiscal policy. It is the case that there are close institutional links between monetary and fiscal policies in developing countries and thus, once monetary policy variables are taken into account, the various studies have found it difficult to measure the independent role of fiscal policy. Third, there is some evidence that supply-side policies, particularly policies to increase producer prices and the domestic interest rates, have favorable effects on production and savings. For example, price elasticities of supply of agricultural commodities tend to be higher than normally assumed, so that increases in prices would have a favorable effect on the production of primary goods. The effect of variations in real interest on savings is, however, quite small, implying that it would take fairly sizable increases in interest rates to exert a significant impact on the savings rate. Fourth, a number of studies find existence of a close relationship between the growth rate and capital formation. Therefore, policies directed at increasing investment and improving its efficiency will tend to have a beneficial effect on long-run development. Finally, such empirical evidence as is currently available is consistent with the view that devaluation would, on balance, exert an expansionary rather than contractionary effect on domestic output, even in the short run. This result clearly has an important bearing on the use of exchange rate policy in developing countries.

One explanation of the view that Fund programs systematically reduce growth is perhaps the misconception that programs are designed solely to reduce aggregate demand through the use of contractionary monetary and fiscal policies. Since there is some empirical evidence indicating

that such policies have a temporary adverse effect on growth, it is concluded that Fund programs must therefore be deflationary. As discussed in this survey, this interpretation of the policy content of Fund programs is far too narrow, and account has to be taken of the other growth-inducing measures contained in Fund programs. This aspect is brought out clearly in the results of cross-country studies measuring the effects of Fund packages that combine the whole range of demand-management and supply-side policies. These studies found the rate of growth to have declined in a number of countries during the course of a program, but this was matched by a number of cases where the growth rate in fact rose. It appears that once the influence of all the relevant policies on the growth rate is recognized, there is no clear presumption that Fund-supported adjustment programs are necessarily inimical to growth.

In conclusion, this paper has shown the serious limitations of existing empirical analysis relating to Fund-supported adjustment programs and economic growth. To evaluate the criticism that Fund programs are unnecessarily deflationary would require more systematic studies of the empirical evidence that is available. Such studies would have to be in the nature of a case-by-case approach, taking the whole range of Fund policies into consideration rather than focusing on individual elements of programs, and supplemented by some type of modelling and simulation analysis so as to handle the issues that arise in comparing the set of policies included in a Fund program with a hypothetical alternative package of measures, or comparing the effects of a Fund program with the outcome that would occur in the absence of a program. In the course of conducting such an exercise a number of important questions would have to be addressed. In particular, it would be necessary to ask what was the nature and extent of the disequilibrium that led up to the adoption of the program. Was the growth rate already starting to decline, or was it being maintained at a perhaps unsustainable level? What would the growth rate have been in the absence of the financial resources directly provided and indirectly generated by the Fund? Is the fall in the growth rate a short-run phenomenon, and what are the likely medium-term growth effects of a Fund-supported adjustment program? In this context it has to be recognized that a Fund program may lead to lower growth in the first year, but can pave the way to a recovery in succeeding years. Would an alternative feasible set of policies that differed from Fund programs in either the emphasis placed on certain instruments, or in the choice of instruments, or both, have achieved the same objectives at lesser cost? Have the judgments exercised in the setting of objectives been, on average, unnecessarily severe? As this paper has stressed, such questions are very difficult, and there is no guarantee that the approach suggested here will readily yield answers that have immediate operational relevance for the Fund. Nevertheless, if the ultimate issue of the impact of Fund-supported adjustment programs on economic growth is to be resolved, further efforts to deal with these questions are needed.

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