

STRUCTURAL ADJUSTMENT AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES:
A CRITIQUE OF SELECTED ANALYTICAL APPROACHES

by

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Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfilment of the requirements of the M.A. Degree
ECO 7997

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Ottawa, Ontario
December, 1995

ACKNOWLEDGEMENTS

I take this opportunity to express my sincere gratitude to Professor R.G. Bodkin and Professor Gilles Grenier of the Department of Economics for their advice, assistance and the many kindnesses extended to me during various stages of my academic pursuit at the University of Ottawa. I am thankful to Professor André Plourde for not only being my supervisor but also for his patient reading of earlier versions of this paper. Last, but not least, I am deeply indebted to my children, Pia and Aaron, and to my wife for their understanding and support.

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1. INTRODUCTION

In the development literature there are many theoretical approaches dealing with the question of adjustment and growth in developing countries. Of these, the IMF and the World Bank approaches have been discussed widely in the development literature because:

- (i) they were implemented in many developing countries at one time or another over the past three decades; and
- (ii) the underlying models were instrumental in decisions leading to the extension of financial assistance to developing countries.

Moreover, recent attempts (Chand 1989, Khan and Montiel 1989, Khan et al. 1990) to produce an integrated model of adjustment and growth have focused on the IMF's financial programming model and the Bank's Revised Minimum Standard Model - a variant of the well-known two-gap model. This paper therefore examines the analytical frameworks that formed the basis for the activities of the IMF and the World Bank in developing countries. It also discusses the recent attempts to integrate the Fund's and the Bank's models to produce an integrated model of adjustment and growth.

Over the past three decades, most developing countries experienced the implementation of IMF-type financial programming to correct problems with the balance of payments and price instability. They also adopted various socio-economic development projects sponsored by the World Bank to promote growth and structural change. Apparently, there was not much coordination

between the IMF and the World Bank programs until the late 1970s. Since the IMF is entrusted with the responsibility of providing financial assistance to member countries to deal with short-term problems with the balance of payments and inflation, the problems associated with the generation of economic growth were considered to be beyond the scope of the IMF approach. The mandate of the World Bank was to promote medium- and long-term growth. Therefore, short-term demand management issues were not a consideration in the Bank's approach.

The IMF approach to economic stabilization, generally referred to as "financial programming", was largely based on oral tradition in its early stages. However, as argued in IMF (1987), the analytical framework of the programs implemented in the late 1950s and the 1960s was articulated and formalized in a number of papers, principally by Polak (1957) and Robichek (1967). Despite many subsequent modifications, the theoretical mainstay of all Fund-supported programs still rests on the pioneer work noted above. The financial programming, built upon the monetary approach to the balance of payments, links balance of payments problems to domestic credit expansion. Thus the standard policy package included limits on domestic credit expansion, restraint of government current expenditures and transfers, flexible pricing, exchange rate devaluation, etc. The experience of many countries, however, gave credence to the assertion that IMF programs generated undesirable effects on output, employment and factor income (Dell and Lawrence 1980, Khan and Knight 1981, and Cline and Weintraub

1981).

In response to criticisms directed at the IMF financial programming, another breed of macroeconomic analytical approach, known as the structural adjustment programs (SAPs), was introduced in the late 1970s. SAPs were financially supported by the IMF and the World Bank, and combined the usual stabilization measures based on the financial programming model with supply-side measures designed to promote economic growth by improving resource allocation in the economy. It should be noted, however, that the theoretical underpinnings of SAPs rested with the IMF's financial programming, and did not explicitly incorporate any component of the World Bank's model to be discussed later. In fact, it can be argued that the structural adjustment program model is simply an offshoot of the IMF's financial programming. For these reasons, even though structural adjustment programs were jointly sponsored by the IMF and the World Bank, they are identified here with the IMF approach to adjustment and growth. The main features of the structural adjustment program model, of which financial programming is the core, are discussed in section 2 of the paper.

The World Bank has been using a variant of the two-gap model known as the Revised Minimum Standard Model to make economic projections in developing countries. This model is also used to assess the external financial requirements of a developing country. Using a simple production function, the model projects the target economic growth over a given time-horizon. It then assesses the domestic savings potential by utilizing a savings function. The gap

between the required amount of investment and domestic savings forms the basis for external financial requirements. Since the Bank is primarily concerned with the real side of economy, the monetary side is not present in the model. The Revised Minimum Standard Model of the World Bank is presented in section 3.

The structural adjustment programs implemented in many developing countries ended in failure or, at best, in partial success. Indeed, many countries outside of East Asia recorded dismal growth experiences in the late 1980s and early 1990s. Thus the focus has now shifted to the maintenance and reactivation of long-term growth potential. Consequently, economists and policy makers in developing countries are interested in understanding the interaction among stabilization, adjustment and growth. At a theoretical level, researchers are looking at the possibility of developing a model of adjustment and growth. This new approach, known as the growth-oriented adjustment model, has drawn the attention of policy makers and academic alike (Reinhart 1991). In section 4, I discuss recent attempts made by economists to merge the IMF and the World Bank models.

The remainder of the paper is organized as follows: three models are presented from section 2 through 4. Each section includes an outline of the model, an assessment and conclusions. In section 2 the model of structural adjustment is discussed. Section 3 deals with the Revised Minimum Standard Model. The merged model of adjustment and growth is examined in section 4. Finally, section 5 summarizes the main conclusions and findings of the

paper.

2. THE IMF APPROACH: FOCUS ON STABILIZATION AND ADJUSTMENT

2.1 Outline of the IMF Approach

The International Monetary Fund is entrusted with the responsibility of providing advice to developing countries on macroeconomic policy issues. This undertaking is further strengthened by its mandate to extend financial support to countries that carry out stabilization programs. As an international funding agency, the IMF expects a member country that seeks financial support to meet certain criteria to ensure the orderly repayment of loans over a specified time frame. These criteria, known as "conditions", are based on a set of quantitative performance indicators. The framework that is used to set out quantitative targets is known as "financial programming". Thus, the need to define quantitative targets for operational purposes and monitoring of stabilization programs led to the development of the so-called IMF model.

The financial programming model traces its origin to Polak's work of 1957. Despite elegant improvements and modifications by many authors, the fundamentals of Polak's methodology still form the basis for the design of IMF-supported adjustment programs. This led Taylor (1987, p.33) to call Polak's paper "one of the most important pieces of macroeconomics done after Keynes." The financial programming approach is designed to achieve price stability and a specific balance of payments objectives in the short run. Basically, it is assumed that the implementation of the

model will correct any existing short-run disequilibrium of the economy.

As discussed in section 1, over the past two decades the IMF's approach to macroeconomic management in developing countries has shifted from short-run demand management strategy to what is now known as the structural adjustment program (SAP). Theoretically, SAPs combine stabilization objectives with supply-side reforms aimed at enhancing the productive capacity of the economy through market forces. Thus SAPs incorporate two crucial ingredients, namely: demand-side measures, based on the financial programming model, and supply-side reforms. The following sub-sections are devoted to the discussion of these two topics.

2.1.1 Theoretical Aspects of Financial Programming

Financial programming is built on a framework that links the financial sector with the balance of payments. In particular, using a set of accounting identities, the program sets the target for the balance of payments and the domestic price level for a given period. A combination of domestic credit, fiscal instruments, and the exchange rate are used to achieve the objectives of the program. The IMF's financial programming is based on the fundamentals of the monetary approach to the balance payments. The monetarist view of short-run disequilibrium of an economy is that inflation and its companion, balance of payments problems, are usually caused by expansions of aggregate demand that exceed the economy's short-run supply capacity. The strategy to bring the

economy back to the equilibrium path is, therefore, to formulate a framework in which aggregate demand is restrained within the means of the economy. This is the fundamental proposition of the IMF financial programming approach. Thus, in simple terms, the exercise of financial programming is to link the balance of payments problems of an economy to inflation, which, in turn, traces its roots to domestic credit expansion. Hence the programming attempts to set targets for domestic credit growth that are consistent with the desired objectives relating to the balance of payments and the domestic rate of inflation. The discussion in this section is based mainly on an IMF occasional paper published in 1987.¹

The following are the main assumptions upon which the financial programming model rests:

- (a) the small open economy representation is appropriate;
- (b) productive capacity is fixed in the short run;
- (c) real income is exogenously determined;
- (d) a fixed exchange rate regime prevails in the economy;
- (e) purchasing power parity, or the law of one price, holds; and
- (f) the demand for money or the income velocity of money is stable.

The assumption of fixed productive capacity implies that real output is determined exogenously. With assumptions (b) and

¹ The theoretical developments of the IMF approach are discussed in many works including IMF (1977), Crockett (1981), Khan and Knight (1981; 1982), and Khan (1987). However, IMF (1987) is considered an authoritative exposition of the monetarist approach to SAPs.

Table 2.1

Key Equations of the Financial Programming Model

$$Y = C + I + G + (X - Z) \quad (2.1)$$

$$B = Y - DA \quad (2.2)$$

$$dM^S = dR + (dDC_p + dDC_g) \quad (2.3)$$

$$dM^D = \nu (dY) \quad \text{and} \quad Y = Py \quad (2.4)$$

$$M^D = M^S = M \quad \text{or} \quad [dM^D = dM^S = dM] \quad (2.5)$$

$$G - T = dDC_g + dF_g \quad (2.6)$$

$$dR = B + (dF_p + dF_g) \quad (2.7)$$

$$Y = Y_{t-1} + dY \quad (2.8)$$

Definitions of the variables are as follows: Y is national income, C and I stand for private consumption and investment, respectively. DC denotes domestic credit. X and Z represent exports and imports of goods and services. M symbolizes money and the superscripts S and D are used to differentiate the supply of and the demand for money. R stands for the foreign asset holdings of the banking system, and F represents the net foreign indebtedness of (non-bank) residents which includes foreign aid, foreign direct investment, etc. Furthermore, G and T are assigned to government expenditure and taxes, respectively. ν is the inverse of the income velocity of money demand. The subscripts g and p indicate the public and the private sectors. Domestic absorption is $DA = C+I+G$, and the current account of the balance of payments is defined as $B = X - Z$. d is the first difference operator. The variables denoted by upper case letters are in nominal terms. Lower case letters represent real variables. y is real national income. Unless otherwise stated, all variables are contemporaneous. Money supply, demand for money, foreign asset holding, nominal income, and the domestic price level are endogenous variables; the rest are exogenous variables.

(e), the model postulates price formation in the neoclassical fashion, in which the quantity theory of money holds. The standard financial programming model consists of seven accounting identities

and two or three behavioral equations, depending on the special application of the model to be highlighted. The major building blocks of the model are given in Table 2.1. The starting point of the model is the familiar Keynesian national income-expenditure identity given by equation (2.1). The link between domestic absorption and the balance of payments is shown in equation (2.2). Equations (2.3) through (2.5) represent the monetary side of the model including a behavioral equation for the demand for money (2.4). The government budget constraint is given by equation (2.6). Equation (2.7) depicts the balance sheet identity of the banking system, and finally nominal income is defined in equation (2.8).

By combining equations (2.3) and (2.5), it is possible to derive the following expression representing the change in the foreign asset holdings of the banking system:

$$dR = dM^D - (dDC_g + dDC_p) \quad (2.9).$$

According to equation (2.9), the net change in foreign asset holdings (dR) is the difference between the change in the stock of money (dM^D) at equilibrium and the change in private (dDC_p) and public (dDC_g) domestic credit.

Equation (2.9) underlines a very important aspect of financial programming. With the assumptions of fixed productive capacity, a small open economy, and the law of one price, "the demand for money is effectively independent of changes in domestic credit; any increases in domestic credit above the desired increase in money

demand will be offset by a decrease in net foreign assets on a one-to-one basis" (IMF 1987, p.13). As one might recall, this proposition is known in the literature as the 'Chicago version' of the monetary approach to the balance of payments.

One of the important building blocks of this model is the equation for the demand for money. In essence, as will be shown later, the entire exercise of setting targets for policy variables depends crucially upon the forecast of the demand for money. A common practice is to specify a demand for money function that includes such variables as real income, the price level, and the opportunity cost of holding money, which, in turn, is determined by such factors as the rate of interest and the expected rate of inflation, among others. It is assumed here that the demand for money is stable.

The model establishes a close relationship between domestic absorption and the domestic credit level. Therefore, a financial programmer will establish this relationship by substituting first equation (2.7) and then (2.2) in (2.9) to get the following expression:

$$DA - (Y + dF_p + dF_g) = dDC_p + dDC_g - dM^D \quad (2.10).$$

According to the above equation, domestic absorption (DA) exceeds domestic output (Y) plus the change in foreign borrowings ($dF_p + dF_g$) only when the change in domestic credit ($dDC_p + dDC_g$) exceeds the change in the stock of money (dM^D) at equilibrium. In other

words, there is a positive relationship between the expansion of domestic absorption and the domestic credit level. Domestic credit has two components - public and private. The amount of credit demanded by the public sector depends on the amount of budget deficits. This relationship is established by combining equations (2.10) and (2.6) to produce:

$$DA - (Y + dF_p) = (G - T) + dDC_p - dM^D \quad (2.11).$$

Domestic absorption, according to equation (2.11), exceeds the sum of the supply of domestic resources and net private foreign borrowings when the sum of budget deficits (G-T) and the changes in private credit exceeds changes in the stock of money at equilibrium. In this model, a way to control the expansion of domestic credit is to curtail government expenditure, and thereby reduce the gap of (G-T). Note that the financial programming approach does not consider the effects of its policies on either income distribution or on the growth of real output in the long run. The prime objective of the exercise is to bring the economy back to an equilibrium path in the short run.

A brief note on the mechanics of financial programming is warranted. With the assumption of a stable demand for money function and its independence from domestic credit, the balance of payments position, according to equation (2.9), is entirely determined by the size of domestic credit. The first step involved in designing a "program" is thus to set a target for the change

in the balance of payments (i.e., dR) over a period of time. Once this is accomplished, the next step is to determine the total amount of money demanded. This involves forecasting nominal income and prices. With this information, the change in demand for money (dM^*) can be projected using equation (2.4). These estimates allow one to obtain the target domestic credit which is consistent with the desired objectives of the balance of payments as given below:

$$dR^* = \nu * dY^* - dDC^* \quad (2.12)$$

where * denotes either target or forecast values of the respective variables and $dDC = dDC_g + dDC_p$. Alternatively, given the forecast for the demand for money and the desired balance of payments, one can also determine the level of domestic credit consistent with the objectives of financial programming as follows:

$$dDC^* = \nu * dY^* - dR^* \quad (2.13).$$

As is evident from the foregoing discussion, the whole exercise of financial programming thus far involves simple manipulations of balance sheet identities with only one behavioral equation, namely the demand for money. According to equation (2.13), the size of the policy instrument (i.e., domestic credit) depends crucially on the forecasted amount of money demanded. An under-forecasting of the demand for money may lead to an excessive credit squeeze. Thus, forecasting the demand for money using a

simple equation is an important consideration in the design of a program for a developing country. It is argued that "there is considerable support for the view that the demand for money is empirically related to well defined economic variables" in developing countries (IMF 1987, p.14). This claim is supported by the works of Aghevely and Short (1979), Crockett and Evans (1980), and Khan (1980), among others.

This simple model can be extended in many ways to illustrate the arguments made by monetarists; one such extension is the incorporation of an external sector that includes a behavioral equation for the demand for imports, for example.

Thus far it has been assumed that financial programming is neutral in terms of the structure of the balance of payments. This is not necessarily true. Improvements in the balance of payments may take place via the current account or the capital account or both. Even within the current account, a positive change in the balance of payments can be achieved by a combination of increases in exports and decreases in imports. One way to understand the sources of improvements is to decompose the components of the balance of payments and analyze the items separately. In the simplest case, however, the non-neutrality of the structure of the balance of payments can be explained by introducing a behavioral equation for the demand for imports:

$$Z = \beta Y \quad 0 < \beta < 1 \quad (2.14)$$

where β is the marginal propensity to import. Equation (2.14) assumes that imports are a constant proportion of income. In a more complicated model, one can introduce relative price effects, effects of changes in the exchange rate, etc. in the import demand function. From equation (2.7), it follows that the external reserve position is determined by exports, imports, and net external non-bank financial flows. Projections of exports are typically made on the basis of the real incomes of trading partners.

In order to determine non-bank capital inflows, it is necessary to define the sustainable level of foreign debt that is consistent with the economy's debt servicing capacity. For a desired external reserve position, given the forecasts of X and dF , the programmer can determine the permissible level of imports ($Z^* = \beta Y^*$) that is consistent with the balance of payments objectives:

$$-\beta Y^* = dR - (X^* + dF^*) \quad (2.15)$$

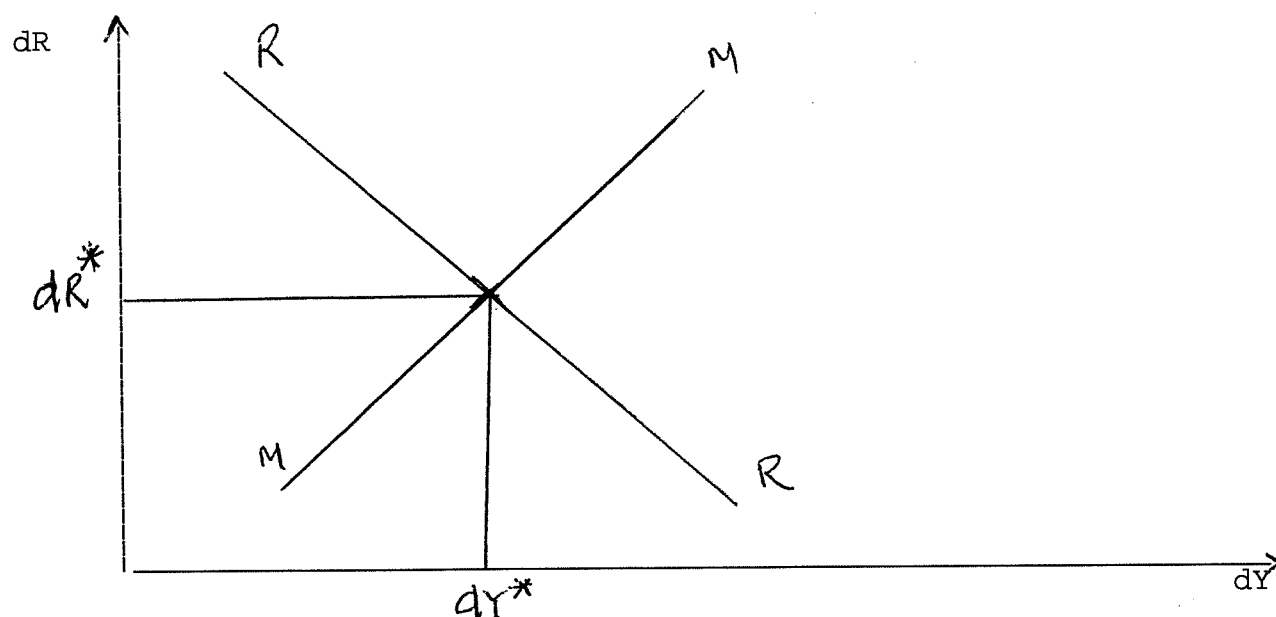
where $dF = dF_p + dF_g$. Using equation (2.14), the programmer can project import demand for the economy during the program period. If the projected imports are greater than the level consistent with the balance of payments objective given by (2.15), then adjustments have to be made to bring projected imports in line with their permissible level. The exchange rate, which is presumed to act as a catalyst to bring about an equilibrium between projected and permissible levels of imports, can be used as an instrument to help achieve external equilibrium.

The interaction between the money market equilibrium and the balance of payments is illustrated in Figure 1. Equation (2.13), representing the money market equilibrium condition, is depicted by the positively sloped MM curve. Using equation (2.15), one can derive the balance of payments identity as:

$$dR = X - \beta(Y_{t-1} + dY) + dF \quad (2.16)$$

where $Y_{t-1} + dY = Y_t$ and $dF = dF_p + dF_g$.

Figure 1: Determination of the Balance of Payments and Income



The negatively sloped RR curve represents the balance of payments identity given by (2.16). At the point of intersection, E, the equilibrium values of the balance of payments and the change in

nominal income are established. In this model an increase in domestic credit, for example, will shift the MM curve down to the right, causing nominal income to rise and the balance of payments to deteriorate. On the other hand, an increase in foreign capital inflows will move the RR curve up to the right. The outcome would be an improvement in the balance of payments and an increase in nominal income. It should be noted that any improvement in the balance of payments achieved by using the credit instrument can also be achieved by increases in non-bank capital inflows (IMF 1987).

In a nutshell, the prime objective of the financial programming is to improve the balance of payments while bringing inflation under control. Therefore, it involves first setting the target for dR and then projecting the demand for money, imports, export earnings, and net capital inflows. Finally, it is necessary to determine the amount of credit that is consistent with the program's objectives. From the above discussion, it is apparent that domestic credit, along with the exchange rate, is used to achieve short-run equilibrium in the economy.

2.1.2 Supply-Side Policies

The supply-side measures, which are incorporated in traditional SAPs, are supposed to address the two specific objectives given below:

- (1) to expand the existing level of domestic output by improving efficiency in the use of various inputs; and

(2) to enhance the overall productive capacity of the economy in the long run.

Both of these objectives, it is argued, can be achieved, in the presence of a stable economic environment, by improved resource allocation and appropriate incentives given to economic agents. The major obstacles to the efficient use of scarce resources tend to come from various forms of distortions that exist in the market place in developing countries (Agarwal 1983). Table 2.2 given on the next page summarizes the main forms of distortions and the tools that, it is argued, generate them in LDCs.

Distortions stem from both external and internal sources. Overall, they drive a wedge between prices and marginal costs. Appropriate policy measures are aimed at eliminating these wedges, and typically take the form of adopting trade liberalization and exchange rate reforms, freeing the domestic market from various forms of controls, and reforming the financial sector. Theoretical support and empirical evidence for trade and exchange rate reforms are extensively dealt with by many authors including Krueger (1978), Balassa (1978), Lal and Rajapatirana (1987). Moreover, on the domestic front, evidence suggests that increasing producer prices tends to stimulate output, particularly in the long run (Bond 1983). The theoretical discussion on the supply-side reforms are limited to two pertinent issues, namely interest rate reforms, and exchange rate policies. The arguments presented here are found in Khan (1982; 1987) and IMF (1983).

Table 2.2

Various Forms of Distortions Prevalent in Developing Countries

<u>External Sector</u>	<u>Sources</u>
Exchange Rate	Overvaluation (sometime dual exchange rate)
Exports/Imports	Export taxes, export/import control, import quotas, and tariffs, subsidy, etc.
 <u>Internal Sector</u>	
Producer Prices	Maximum price for export crops set by government monopolies. Indirect taxes on producers.
Consumer prices	Retail prices controlled by laws, import duties on selected commodities, etc.
Commodity Prices	Mainly farm products purchased at guaranteed minimum prices
Wages	Minimum wage laws
Interest rates	Low and controlled interest rates
Subsidies	Input subsidies given to specific domestic industries to encourage production
Taxes	Taxes are imposed to raise the prices above open-market level. Objective: discourage the use of certain inputs such as capital intensive goods or protect certain domestic industries.

Source: Agarwal (1983)

Interest Rate Reforms:

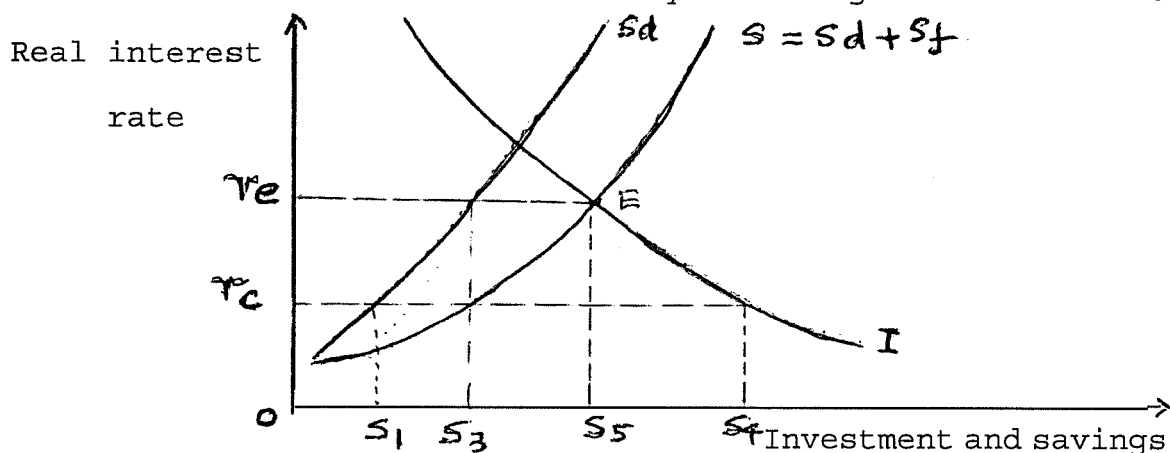
Capacity expansion of an economy largely depends on the size of investment and its composition, and on the quality of the capital stock being added (Krueger 1986). One of the major constraints of the development process is the lack of capital in developing countries. The well-known two-gap model of growth, to be explained in section 3, postulates that domestic and foreign savings operate as constraints on economic growth in developing countries. Access to foreign financial markets by developing countries for long-term investment is limited; the availability of financing through multilateral institutions and bilateral sources is also limited. In this context, enhancing the level of domestic savings is of vital importance. Moreover, evidence suggests that financial reform measures, such as interest rate reforms, would have the potential of increasing not only domestic savings, but also the supply of foreign savings (IMF 1986; Fry 1980; McDonald 1983). Therefore, policy measures designed to promote economic growth should be geared toward enhancing domestic savings.

Domestic savings consist of public sector savings and private sector savings. Prudent fiscal management is the key to improving public sector savings. As noted earlier, private sector savings can be encouraged by reforming interest rate policies and the institutional set up of an economy. Khan (1983, p. 829) argues that "interest rate policies influence not only short-run changes in spending, inflation, and external finance, but also longer-term accumulation of financial assets and, the level and composition of

investment".

The figure given on the next page is used to explain the anticipated effects of financial reforms on the supply capacity of the economy. The total real savings available to an economy consist of domestic savings (S_d) and foreign savings (S_f). Given that real income is assumed constant, real investment expenditures (i) are inversely related to the real cost of capital (r), i.e., the interest rate. As for savings, a controversial assumption is made, namely that private sector savings function is positively related to the interest rate. In Figure 2, the vertical axis represents the real return on savings and the real cost of capital. The horizontal axis measures investment and savings. The real rate of interest in developing countries is assumed to be affected by two factors: (a) domestic inflation and (b) ceilings on interest rates. Let's posit that due to domestic inflation and existing ceilings on interest rates, the real interest rate is now r_c . At this rate, the total supply of savings (i.e., domestic plus foreign savings) available is OS_3 . The demand for investment is OS_4 . Thus there is an excess demand for investment of S_3S_4 . If the rate of interest is lifted, market forces will establish the equilibrium rate at r_e , at which the quantity of domestic savings supplied will increase from OS_1 to OS_3 and the total supply of savings, OS_5 , will be just equal to investment demand. Note that foreign savings increased by $[S_3S_5 - S_1S_3]$ following the removal of the interest rate ceiling.

Figure 2: Effects of Interest-Rate Policy on Savings and Investment



Therefore, this model suggests that the abolition of ceilings on interest rates will produce: (i) an increase in the domestic level of savings; (ii) an increase in both total savings and investment; (iii) a rise in the real interest rate; and finally, (iv) an increase in the private sector current account deficit (foreign savings). This increase in fact represents an increased domestic investment financed by foreign capital inflows. Thus, the rosy picture painted by financial reforms is that it will increase investment and thereby enhance the supply capacity of the economy.

Exchange Rate Policies:

Let us consider the effects of a devaluation, as postulated by the monetarist approach, on the economy. Exchange rate changes, as argued by Guitan (1976), affect both domestic absorption and domestic supply. The exchange rate is used as an expenditure-reducing or expenditure-switching policy instrument. For instance, a devaluation of the domestic currency will increase the local

currency prices of tradable relative to non-tradable goods. An increase in domestic prices will have two effects: (i) the value of the private sector financial assets will decline; and (ii) real factor incomes will fall. As a consequence, overall domestic absorption will be reduced. This is known as an expenditure-reducing policy. Therefore, this policy is consistent with the stabilization objectives.

The expenditure-switching effect of an exchange rate change, on the other hand, operates principally through altering the incentives that are offered with regard to the domestic supply of exports and import substitutes. For example, the increase in the domestic price of tradables will lead to increased domestic output, provided that the rate of increase in domestic factor prices is less than the rate of increase in the price of tradables expressed in terms of the local currency. Exchange rate policies, in this case, act as a catalyst to promote export-led output expansion, and thereby expedite structural changes in the economy. Therefore, exchange rate policies incorporate elements of both stabilization and structural adjustment measures.

2.2 Assessment

As an operational tool based on quantifiable performance criteria, financial programming still plays a dominant role in policy formulation and implementation of Fund-supported programs in developing countries. The theoretical underpinnings of financial programming are found in the monetary approach to the balance of

payments. Accompanying supply-side reforms measures are typically rooted in the neoclassical tradition. Thus, the overall theoretical properties of the structural adjustment programs appear to be compatible with these two major components. Nonetheless, as an analytical framework, the supply-side measures in SAPs are not based on a "model" with explicit equations explaining the relationship among the variables. As a result, from an empirical point of view, the financial programming model and the supply-side measures lack cohesiveness as a single model of structural adjustment. For instance, the financial programming model establishes certain targets to be achieved over a given time, whereas the supply-side measures do not explicitly identify the desired levels of target variables, nor do they set a specific time frame to achieve these objectives. Michalopoulos (1987) acknowledges that, because of the support of the World Bank for structural adjustment programs, the adjustment process is allowed to be stretched out and reliance on demand management by the IMF is minimized. In other words, one can argue that in the absence of the Bank's support, SAPs would simply become another form of stabilization program.

Even among the monetarist camp, authors like Jose Maria (1984) and Williamson (1984) strongly argue that the structural adjustment programs implemented, for example in Argentina in the early 1980s, contained an extreme version of the monetarist approach. In other words, there is a perception that SAPs and stabilization programs are one and the same. This perception is vividly illustrated in a

symposium sponsored by the Bank (details given in footnote 2) at which researchers examined the behaviour of the usual macroeconomic variables such as the price level, money supply, domestic credit, international reserves, nominal exchange rate, real interest rates, etc., in the countries under discussion. Surprisingly, the effects of the supply-side measures received little attention in the entire discourse.

In reality, it can be argued that an SAP simply combines short-run demand management policies with the standard approach to economic growth and development. In other words, two closely associated, yet not fully linked, analytical approaches are merged in a loose fashion to form the so-called model of structural adjustment. The feedback between financial programming and the supply side of the economy is not clearly established. Therefore, the model does not quantify how the productive capacity of an economy is affected over time. In particular, the model assumes that there is full employment and that real output is determined exogenously. As such, any policy measure, including reductions in domestic credit designed to achieve short-run stability of the economy, is assumed to have little or no impact on economic growth.

On the empirical front, structural adjustment was the subject of many criticisms, including 'overkill' of the economy. Since SAPs were topical issues in the 1980s and early 1990s, the literature on the subject has been burgeoning.² Many contributions focused on

² A symposium sponsored by the World Bank was exclusively devoted to address the question of the applicability of the monetarist approach to SAPs in the Southern Cone. The proceedings

the experience of the Southern Cone. The general consensus is that SAPs implemented in many developing countries did not succeed. As a development strategy, the major weakness of the model is that it fails to address the short-run problems of stabilization and adjustment simultaneously with the long-run problem of capacity growth.

2.3 Conclusion

The structural adjustment program was considered to be an improvement over the stabilization programs that dominated the IMF approach to macroeconomic management in developing countries in 1950s and 1960s. It attempted to combine short-run economic stability and balance of payments objectives with the economic environment considered to be conducive to long-run growth. In particular, the financial side of the program, structured on key accounting identities, links improvements in the balance of payments to reductions in domestic credit. Therefore, it quantifies the balance of payments target over a specified period and recommends the use of domestic credit tools to achieve the

of the symposium, published by the World Bank, include two major papers: one on Argentina by Jose Maria and another on Argentina, Chile and Uruguay by Sjaasted, and commentaries by a number of other economists. See Barletta, Bleger and Landau (1984). The experience of the Southern Cone was again revisited in a special issue of the journal World Development in 1985. This issue reported the essence of a research project sponsored by the World Bank titled "Liberalization with Stabilization in the Southern Cone". The issue contains six major papers on country-specific experiences. A special feature of the research was that it looked at both micro and macro aspects of adjustment programs. For details, see World Development, special issue, volume 13, no. 8, August 1985.

objective. On the other hand, the supply-side measures, based on neoclassical foundations, are designed (i) to promote efficient and better utilization of scarce productive resources; and (ii) to stimulate the growth of productive capacity. Supply-side policy measures typically include, among other things, the dismantling of various forms of controls including price controls, exchange rate and financial reforms, revitalization of market forces, etc. The SAPs implemented in developing countries are supported financially by both the World Bank and the IMF. Under the auspices of these structural adjustment programs, the short-run macroeconomic stability promoted by the IMF is combined with the medium and long-term growth objectives of the Bank. The key weaknesses of the model underlying this approach, include the assumption of full employment, that of a constant velocity of money, and the law of one price, as well as the absence of a formal applied model of adjustment and growth. As a result, the model fails to recognize the impact of short-run policies on medium and long-term economic growth and structural change. As discussed in section 4, recent attempts to produce an integrated model of adjustment and growth have focused primarily on removing this particular shortcoming and establishing the links between short-term demand management policies and medium and long-term growth problems.

3. THE WORLD BANK APPROACH: A MODEL OF GROWTH

3.1 Outline of the Model

Unlike the IMF, the World Bank has long been interested in the medium-term growth prospects of developing countries. The mandate of the Bank facilitates financing socio-economic projects designed to bring about structural changes and expansion of the productive capacity in developing countries to promote growth and development over the medium term. From this point of view, the Bank has been concerned with estimating the level of financial resources required to achieve a given rate of growth over a specified period of time. An assessment of the availability of domestic financial resources would in turn allow the Bank to determine the amount of external financing needed to realize the growth objectives. In other words, the Bank's approach, to a great extent, is based on the well-known two-gap model of growth in which the availability of external financing operates as a constraint to growth. The Bank has been using a simple model similar to the two-gap model known as the **Revised Minimum Standard Model** (RMSM) to make macroeconomic projections and determine the level of external financial needs. RMSM is simply a model of capacity growth that focuses on the relationships among domestic savings, foreign capital inflows, investment and economic growth.

The simple version of RMSM is based on the following assumptions:

- (a) prices are assumed constant; all variables are expressed in

real terms.

- (b) there exists a stable relationship between domestic savings and disposable income;
- (c) imports are assumed to be a stable and predictable function of GDP;
- (d) exports are exogenously determined in units of foreign currency; and
- (e) the incremental capital-output ratio (ICOR - ρ) is assumed to be constant over time.

The main building blocks of RMSM are captured in the equations given below. Note again that all variables are expressed in real terms.

national income identity:

$$y - c - i - g - x + z = 0 \quad (3.1).$$

output-investment relationship:

$$dy = 1/\rho dk \quad (3.2).$$

or

$$dk = \rho y - \rho Y_{t-1}$$

private savings function:

$$s_p = \alpha(y - t) \quad 0 < \alpha < 1 \quad (3.3).$$

import function:

$$z = \beta y \qquad 0 < \beta < 1 \qquad (3.4).$$

The national income identity can be written in the following form as well:

$$i = (y - t - c) + (t - g) + (z - x) \qquad (3.5).$$

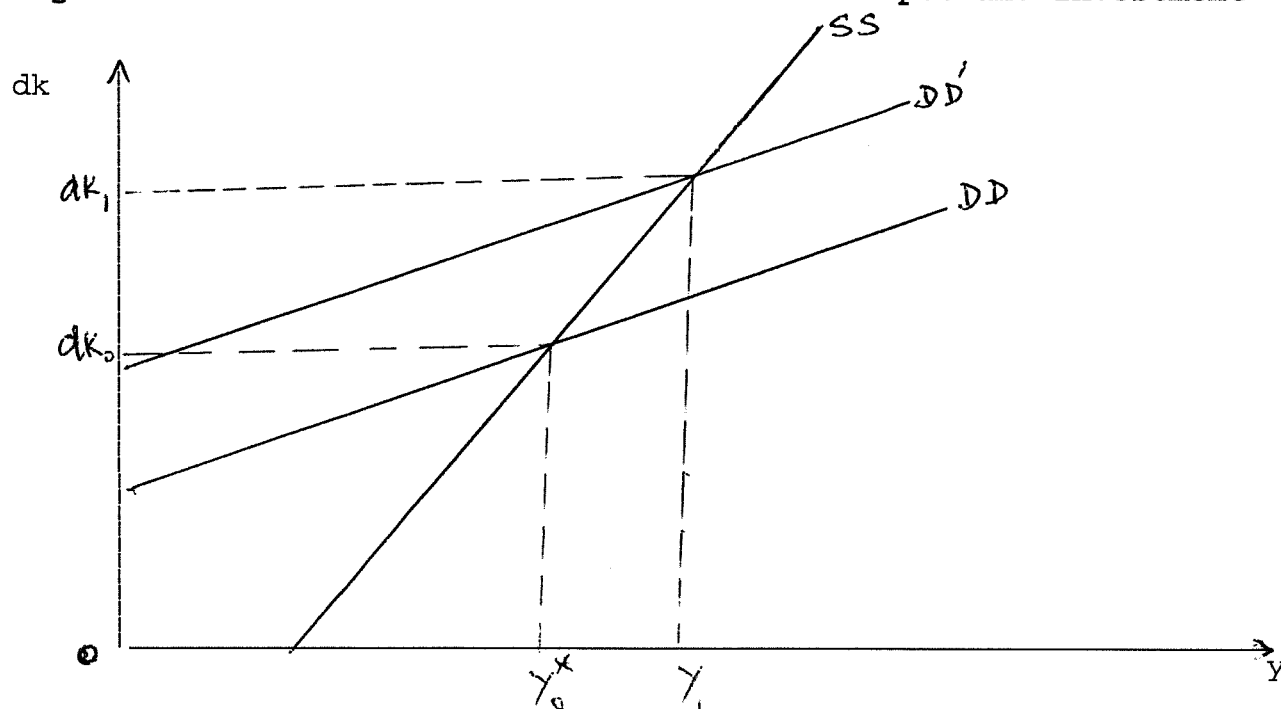
Equation (3.5) gives the condition that gross domestic investment is the sum of private ($y - t - c$), public ($t - g$) and foreign ($z - x$) savings. Substituting equations (3.3) and (3.4) for savings and imports respectively into equation (3.5), one can derive the expression for the savings - investment equality (i.e., $i = dk$):

$$dk = (\alpha + \beta) * y + (1 - \alpha) * t - g - x \qquad (3.6).$$

This is an alternative formulation of the national income identity given in equation (3.1), in which government expenditure (g) includes the purchase of goods and services only. Equations (3.2) and (3.6) can now be simultaneously solved for output and investment for given values of α and β . Figure 3 illustrates the simultaneous determination of output and investment of RMSM. Equation (3.2) captures the output-investment relationship in the curve denoted by SS in Figure 3, with a positive slope given by ICOR (ρ). The links between investment and its various components

given in equation (3.6) are represented by the DD curve. The marginal propensities to save and import ($\alpha + \beta$) determine the positive slope of this curve. Based on empirical evidence (Khan et al. 1990), it is suggested that the value for ICOR (between 4 and 7) is bigger than the combined value of savings and import propensities, and therefore, that the SS curve is steeper than the DD curve. The equilibrium values of output and investment are determined at the point of intersection (E) between the DD and SS curves. Given that ICOR is constant, the authorities can increase output by shifting the DD curve upward as shown by DD', i.e., by raising public-sector savings, by raising taxes, or by cutting government purchases of goods and services. The assumption embodied in the model is that these resources would then be used to increase the stock of capital.

Figure 3: The RMSM Model: Determination of Output and Investment



Note that t , g , and x are exogenous variables in the model. From equation (3.6), for given levels of domestic savings and exports, one can easily determine the amount of foreign savings that are necessary to achieve a desired level of economic growth.

The output target and the balance of payments target can also be determined only if public policy makers exercise a certain degree of control over net capital inflows. If not, net capital inflows must be assumed to be perfectly elastic. This point can be explained with the aid of equation (2.15) given in section 2. For example, interpreting equation (2.15) as real values, one can derive the following expression:

$$df = dr^* - \bar{x} + \beta(y_{t-1} + dy^*) \quad (3.7)$$

where \bar{x} is exports (given exogenously), dy^* and dr^* are the target growth and external reserve position, respectively. df in this context is the amount of external borrowings consistent with the objectives of growth and the balance of payments. If, on the other hand, there is some limit to foreign capital inflows, then equation (3.7) will become a constraint on output determination. As observed earlier, this conclusion is similar to the two-gap growth model noted above. In this context RMSM can be used to explore various growth scenarios for alternative levels of external financing. For example, for a given level of dr^* from equation (3.7), one can compute the various levels of foreign capital inflows required to achieve different levels of growth.

3.2 Assessment

An assessment of the RMSM model must be made in the appropriate historical context. The financial programming model of the Fund and the Bank's RMSM were used independently at various points in time to carry out stabilization programs and socio-economic development projects in developing countries. Therefore, the assessment of RMSM carried out in this section is made in conjunction with the financial programming.

The main analytical feature of RMSM is that it focuses on the key link between the availability of financing (both domestic and external) and capacity growth. Whalley (1984) argues that because of its simplicity RMSM is considered to be the most widely-used tool within the Bank for making macroeconomic projections for policy analysis in developing countries. He also argues that a clear and widely accepted alternative model has yet to emerge.

One of the major analytical weaknesses of the model, however, is the assumption of a stable price level. It implies that there is no macroeconomic disequilibrium in the short run and that the price level is determined exogenously. This assumption is perhaps justified on the ground that the Bank focuses on medium-term growth. Nevertheless, the experience of many developing countries indicate that without macroeconomic stability, even a well-conceived plan of economic growth might not achieve its intended objectives satisfactorily (IMF 1986). Moreover, RMSM fails to recognize the fact that the policy measures designed to bring about stabilization in the short run might thwart the Bank's

objective of capacity growth in the medium term.

The Bank's model was primarily concerned with the links between external financing and economic growth. As a consequence, the model did not pay adequate attention to such factors as various forms of distortions in the economy that led to the ineffective utilization of productive resources in developing countries.

3.3 Conclusion

Since the Bank's mandate is to promote structural change and growth over the medium term, the Revised Minimum Standard Model was designed to assess the financial needs of developing countries to achieve the goals stated above. It is assumed in RMSM that the price level is exogenously given. In contrast, the IMF's model assumed that real output is pre-determined; it did not incorporate the dynamics of the short-run problems of stabilization and adjustment with the long-run problem of capacity growth. As a result, the interaction between short-run stabilization and capacity growth via investment became irrelevant in the model. Since both the IMF's and the World Bank's models were formulated to achieve different goals under a different set of circumstances, the complementarities between the two approaches have not been investigated until recently. In the ensuing section, I discuss the attempts made to merge the Fund's and the Bank's approaches to produce an integrated model of stabilization and growth.

4. MERGING ADJUSTMENT AND ECONOMIC GROWTH

4.1 Outline of the Merged Model

As outlined in sections 2 and 3, the generation of capacity growth in RMSM and the issue of stabilization and adjustment in the financial programming model have typically been considered in isolation. As noted elsewhere, SAPs sponsored by the IMF and the World Bank have often been criticized on the ground that they inflicted unwarranted harm to economic growth in many developing countries. As Michalopoulos (1987, p.21) has argued, SAPs were perceived as being based on the notion that: "a short-run slow down in output growth was almost a pre-requisite for successful stabilization ...". There appears to have been, however, a substantial shift of emphasis in the traditional approach to SAPs in the recent past. The concept of growth-oriented adjustment has recently received considerable attention from policy makers and academics alike. In particular, attempts are being made to present an integrated structural adjustment model that incorporates price stability, a viable balance of payments, and sustainable economic growth as target variables. In the pursuit of developing an alternative model of adjustment and growth, researchers have attempted to merge the IMF's approach and the Bank's approach to develop a model of adjustment and growth (Khan, Montiel and Haque 1990). Before presenting the main features of the merged model in section (4.1.2), let us review some of the pertinent literature on the subject of adjustment and growth in section (4.1.1).

4.1.1 Adjustment and Growth

The notion of growth-oriented adjustment programs achieved a considerable elevation when the IMF and the World Bank sponsored a symposium on the subject in 1987 (Corbo, Goldstein and Khan 1987). It was followed by another international discussion on 'Adjustment and Growth: The Asian Experience' in 1988 (Streeten 1988). These two forums underlined the need for an integrated approach to structural adjustment in developing economies, and highlighted the divergence of views as to how to design a program for adjustment and growth. At the same time, the Group of Twenty Four (1987) suggested, at a more policy-oriented level, that the design of adjustment programs must take into account the objective of economic growth. In other words, it postulated that economic growth should not be a victim of structural adjustment, but rather that the latter should be an explicit objective of the process itself.

Research in this area has been directed toward developing a model of economic growth and development. One of the major weaknesses of the standard SAP model (as reviewed in section 2.1.2, for example) is that it takes real economic growth as given. On the other hand, as noted in section 3, RMSM assumes that the price level is determined outside the model. Thus, any attempt to present an alternative model must relax these assumptions and incorporate real economic growth along with the price level and the balance of payments as endogenous variables. Khan and Knight (1985), for instance, presented a model that linked capacity

output with objectives for the balance of payments and inflation. In this work, the authors developed a simple model and used it to perform some simulations to demonstrate the effects of various policies on the growth of output. This was followed by another paper by Khan, Montiel and Haque (1986) that explicitly linked the analytical approaches of the World Bank and the IMF. In some respects, it could be considered a key element that paved the way for the subsequent development of their model of adjustment and growth. As of now, at least three published works can be identified with growth-oriented adjustment models. These are: Chand (1989), Khan and Montiel (1989), and Khan, Montiel, and Haque (1990). In addition, Reinhart (1991) has attempted to trace empirical regularities for the model presented in Khan and Montiel (1989). In essence, these authors have tried to establish a link between real economic growth and the domestic credit level and, thereby, to incorporate real economic growth as an endogenous variable in the model. Hence, as opposed to the assumption of existing SAP models where real economic growth is treated as being given, in the new approach it is being determined within the model. Therefore, when a programmer attempts to design a policy package aimed at bringing about equilibrium of the economy, he will be bound to look at the likely effects of such policies on economic growth as well. Thus, the new approach can be viewed as an acknowledgement of the failure of existing SAPs, and as a genuine attempt to address such problems as 'overkill' of the economy. By incorporating the growth component in the overall

design of adjustment programs, the new approach attempts to address an important criticism (the potential for SAP-induced output reductions) made by structuralists.³

The growth-oriented models introduced in Chand (1989), Khan and Montiel (1989) and Khan, Montiel and Haque (1990) are structured very much on monetarist-neoclassical foundations. Indeed, Chand's paper is a straightforward extension of the standard financial programming model. There are two parts to his model: the financial component and the growth component. The financial programming side resembles equations (2.1) through (2.9), presented in section 2.1.1. There, he establishes a positive relationship between the change in nominal income and the level of domestic credit. In the growth part of the model, the availability of investment is linked to the growth potential of the economy through a growth equation, which is based on the incremental capital-output ratio (ICOR). Chand's contention is that nominal income, along with capital inflows and the external reserve position, determine the level of investment. Once nominal income and the desired external reserve position are identified within the financial programming framework, then it is possible to compute the amount of investment available in the economy. The availability of investment sets limits for capacity growth, as is the case in the Harrod-Domar model, for example.

One of the major weaknesses of this model is that it does not

³ For detailed discussions of the structuralists' critique of the IMF approach, see Taylor (1987, 1988, and 1989).

explicitly explain price formation and its links to nominal income. An increase in nominal income may not necessarily increase real savings in the face of inflation. Thus, the model presents little insight into domestic savings behaviour. Furthermore, the financial side and the real side of the economy are somewhat compartmentalized and, therefore, the interactions between real output growth and price level changes are not been examined clearly.

The models presented in Khan and Montiel (1989), and Khan, Montiel and Haque (1990) are essentially the same in spirit and content. These authors have removed some of the shortcomings found in Chand, in that they allowed the price level and real output to interact. Here as well, there are two major building blocks in the model. The first one is the monetary side, which is very similar to the one used in the IMF's stabilization programs. The second one is the real sector, also called a "growth block", that is borrowed from the World Bank's growth model, introduced in section 3. However, only in Khan, Montiel and Haque (1990) are the Fund's financial programming model and the Bank's Revised Minimum Standard Model explicitly integrated to form a model of adjustment and growth. In particular, the authors acknowledge that there is a close link between short-term demand management policies and long-term growth issues. They also understand that there exists a complementary relationship between the Fund's model and the Bank's approach. The issue then is how to merge the financial side with the growth side. To accomplish this task, a linkage needs to be

established between the growth of productive capacity via investment, and the short-term objectives of the balance of payments and price stability. The merged model presented in section 4.1.2 attempts to accomplish just that. It links the growth component of RMSM and the monetary component of the financial programming model to produce a merged model where, it is argued, the objectives of the balance of payments, prices and economic growth are determined simultaneously.

4.1.2 The Merged Model

In this section we present the salient features of the merged model. As observed earlier, the IMF's model and RMSM have, in one way or another, been applied to developing economies at various points in time. However, the complementarities of these two approaches have been properly acknowledged within an analytical framework only recently in the work of Khan, Montiel and Haque (1990).

The merged model consists of two main blocks, namely, the growth block and the monetary block. The growth block is derived from the Bank's RMSM, whereas the monetary block stems from the Fund's model. The external sector, which is common to both approaches, closes the merged model. The resulting framework outlines a small open developing economy that maintains a fixed exchange rate. It is assumed that the private sector owns all factors of production and that the public sector is not engaged in any investment activities. Equations (4.1) through (4.6) define the

basic identities of the model and the budget constraints of the private and public sectors. With the exception of the variables denoted by lower-case letters, which are real, all other variables are expressed in nominal terms. Definitions of the variables are the same as in section (2.1.1). Descriptions of the new variables are given as appropriate.

The private sector budget constraints:

$$Y - T - C - S_p \equiv 0 \quad (4.1).$$

According to equation (4.1), nominal income (Y) is apportioned among private-sector savings (S_p), private sector consumption (C) and taxes (T). Private sector savings are used to finance private-sector investment (dK), accumulate domestic financial asset (dM^D), and pay back foreign borrowings (dF_p) and domestic banking credit (dDC_p). Therefore, the allocation of private savings obeys the following constraint:

$$S_p \equiv dK + dM^D - dF_p - dDC_p \quad (4.2).$$

The government budget constraint:

$$T - G \equiv - dF_g - dDC_g$$

or, expressed alternatively:

$$0 \equiv T - G + dF_g + dDC_g \quad (4.3).$$

According to equation (4.3), public sector savings ($T - G$) are used to pay back foreign borrowings (dF_g) and to settle borrowings from the banking system (dDC_g).

The balance sheet identity of the Central Bank:

It is assumed for simplicity that the Central Bank functions as a financial intermediary and therefore, that its own liabilities (i.e, the stock of money, M^s) are equal to the assets held in the form of international reserves (R) and domestic credit ($DC_p + DC_g$):

$$M^s \equiv R + DC_p + DC_g$$

or

$$dM^s \equiv dR + dDC_p + dDC_g \quad (4.4).$$

The balance of payments identity:

$$dR \equiv X - Z + (dF_p + dF_g) \quad (4.5).$$

Equation (4.5) simply states that the change in the official reserve position (dR) depends on the current account surplus or deficit ($X - Z$) and the change in foreign borrowings by the private sector (dF_p) and the government (dF_g).

The national income identity:

Finally, equation (4.6) is nothing but the simple national income identity:

$$Y = C + I + G + (X - Z) \quad (4.6).$$

The growth block

There are two key behavioral equations in the block, namely, a production function and a savings function. Both are derived from RMSM.

The production function:

The production function is based on the well-known incremental capital-output ratio (ICOR) concept. As noted at the outset, ICOR denoted by (ρ) , is assumed to be constant:

$$dy = (1/\rho) * dK / (1 + dP) \quad (4.7)$$

According to equation (4.7), the change in real output depends on the change in the real stock of capital and the size of the incremental capital-output ratio. Note that the level of real investment is obtained by deflating nominal investment (dK) by the aggregate price level (P).

The private savings function:

Private savings are assumed to be a function of disposable income; the average and the marginal propensities (α) are the same and assumed to be stable:

$$S_p = \alpha (Y - T) \qquad 0 < \alpha < 1 \qquad (4.8).$$

The monetary block

There are three key relationships in the monetary block. The starting point is the flow of supply of money given by the balance sheet identity of the Central Bank:

$$dM^S \equiv dR + dDC_p + dDC_g \qquad (4.4).$$

The second relationship is the demand for money based on the assumption of a constant velocity:

$$dM^D = \nu * dY \qquad (4.9).$$

The last relationship in the block is the money market equilibrium condition:

$$dM^D = dM^S \qquad (4.10).$$

The change in the aggregate price level is given by:

$$dP = (1 - \theta)dP_D + \theta de \quad (4.11)$$

where P is the general price level, P_D stands for domestic prices and e is the exchange rate - the domestic currency price of a unit of foreign currency. θ is the value assigned to import prices in the overall price index. The introduction of equation (4.11) for the price level change allows the incorporation of the exchange rate as a policy tool in the model. By invoking the purchasing power parity assumption (it is assumed that initially $P = P_D = eP_f = 1$) and by assuming that the foreign price level is constant (i.e., $dP_f = 0$), the authors can replace the change in import prices with the change in the exchange rate (de) in the equation.

Finally, changes in nominal GDP are defined as follows:

$$dY = P_{t-1} dy + dP Y_{t-1} \quad (4.12).$$

The external sector

The key equation in the external sector is the balance of payments identity:

$$dR \equiv X - Z + (dF_p + dF_g) \quad (4.5).$$

Imports depend on income and relative prices:

$$Z = Z_{t-1} + [\beta dy + (Z_{t-1} - \Phi)de + \Phi dP_D] \quad (4.13).$$

Exports are assumed to depend on the relative prices of foreign goods in terms of domestic goods:

$$X = X_{t-1} + [(X_{t-1} + \omega)de - \omega dP_D] \quad (4.14)$$

where the coefficients (Φ) and (ω) are designed to capture the relative price effects on imports and exports, respectively.

Substituting the definition of money demand (4.9), and the savings function (4.8) into the private budget constraint (4.2), the following expression for the change in the nominal capital stock can be derived:

$$dK = \alpha(Y - T) - \nu*dY + dF_p + dDC_p \quad (4.15).$$

The amount of nominal investment (dK), according to equation (4.15), is equal to the sum of private savings plus changes in private domestic credit plus net private foreign borrowings, minus changes in the demand for money. Combining equations (4.15), (4.7) and incorporating the government budget constraint (4.3) to obtain a representation of the economy as a whole, the expression for the growth block can be derived as a function of prices, the exogenous variables and the parameters of the behavioral equations:

$$\begin{aligned} dy = 1/\rho [(\alpha - \nu)dY + \alpha(Y_{t-1} - T) + (T - G) + dF \\ + dDC] / (1 + dP) \end{aligned} \quad (4.16)$$

where $dDC = dDC_p + dDC_g$ and $dF = dF_p + dF_g$. The right-hand side of equation (4.16) shows the amount of resources available for investment in the economy. Note that domestic banking credit is one of the sources of financing available for investment in the economy. Using the change in nominal income given by equation (4.12), the change in the aggregate price level given by equation (4.11), and ignoring second-order effects, one can establish the following relationship between changes in the domestic price level and changes in output; provided dP is small and $P_{t-1} = 1$.

$$dP_D = [-I + \{\rho - (\alpha - \nu)\} dy] / [(\alpha - \nu)(1 - \theta) Y_{t-1}] \quad (4.17)$$

where $I = (1 - \alpha)T - G + \alpha Y_{t-1} + dF + dDC + (\alpha - \nu)Y_{t-1} \theta$ de. Equation (4.17), in a sense, is the reduced-form equation of the growth block in price-output space.

The derivation of the equation for the monetary block follows the typical solution method of the financial programming. Using the demand for money (4.9), the supply of money (4.4) and the money market equilibrium condition (4.10), and making use of the equations for nominal income change (4.12) and the change in the aggregate price level (4.11), the following equation is obtained:

$$dR = \nu dy + \nu [(1 - \theta)dP_D + \theta de] Y_{t-1} - dDC \quad (4.18).$$

Equation (4.18) is nothing but an alternative representation of equation (2.12) given in section 2.1.1. In other words, the

equation links the external reserve position to the changes in the demand for money and domestic credit.

The balance of payments identity (4.5), along with the import (4.13) and export (4.14) functions, are used to close the model. The resulting expression establishes a link between domestic prices and output:

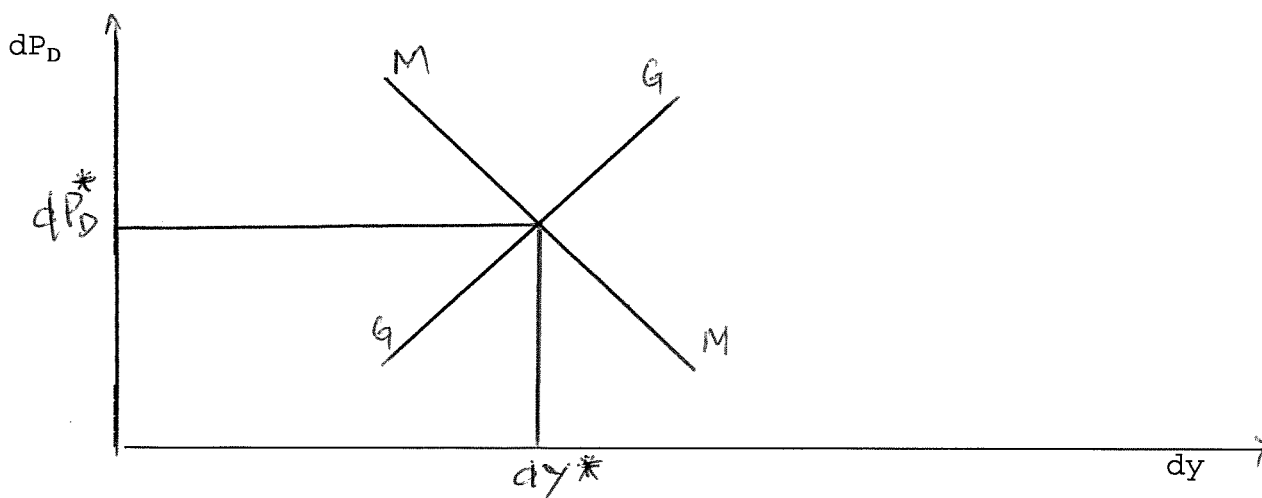
$$dP_D = [\Omega - (\beta + \nu) dy] / [(1-\theta)\nu y_{t-1} + (\Phi + \omega)] \quad (4.19)$$

where $\Omega = [X_{t-1} - Z_{t-1} + (\Phi + \omega) - \theta \nu y_{t-1}]de + dF + dDC + X_{t-1} - Z_{t-1}$

Equation (4.19) provides a reduced-form expression for the monetary block in price-output space.

There are two equations, (4.17) and (4.19), and two unknowns (dy and dP_D). The interaction of these equations determine output and prices for given values of the parameters of the system and the exogenous variables. Figure 4 illustrates how the changes in

Figure 4: The Merged Model: Determination of Output and Prices



output and prices are determined in the merged model. The GG curve representing the growth block is given by equation (4.17). The slope of the curve is given by $[\rho - (\alpha - \nu)] / (\alpha - \nu)(1 - \theta)Y_{t-1}$. Since a typical value for ICOR (ρ) is in the range of 4 to 7, the numerator of the above expression is positive. Whether the slope is positive or negative depends on the sign of $(\alpha - \nu)$, i.e. the difference between the marginal propensities to save (α) and hoard money (ν). Assuming that $(\alpha - \nu) > 0$, the GG curve is positively sloped.

The MM curve is given by equation (4.19), which depicts the monetary block. Its slope is given by $\{-(\beta + \nu) / [(1 - \theta)\nu Y_{t-1} + (\Phi + \omega)]\}$; the value of which is negative for $\theta < 1$. At the point of intersection, B, equilibrium values of output and the price level are established. The model also suggests that once output and domestic prices are determined, the solution for the programming model can be obtained recursively.

4.2 Assessment

As Agénor and Montiel (1996, p.421) argue, the central macroeconomic policy challenge faced by many developing countries is how to achieve stabilization and adjustment while minimizing the loss of output. The merged model appears to address these issues in an analytical framework. The model endogenizes the objectives of price, the balance of payments and economic growth in an integrated framework of adjustment and growth. Attempts are made in the model to show that the key policy instrument usually employed to achieve stabilization objectives, namely domestic credit, may have direct

consequences on capacity growth in the economy. In particular, the model establishes a positive relationship between output and domestic credit via investment.

The authors of the merged model acknowledge that the model retains many of the limitations of the two components. In particular, it assumes that prices adjust continuously to bring about money market equilibrium, thus eliminating the prospects for short-run dynamic behaviour of prices through, for example, lags in adjustment in prices to monetary disequilibrium. Furthermore, because of the assumption of full employment, no provision is made for the effect of less-than-full capacity utilization in the economy. These shortcomings could be addressed in a more elaborate model.

There are, however, some fundamental weaknesses embodied in the model. The balance of payments identity is a cornerstone of this model; it is used to close the system. The authors argue that changes in output, the domestic price level and the balance of payments are determined simultaneously (Khan et al. 1990, p.175) in the model. According to equation (4.16), changes in domestic credit (dDC) and foreign capital inflows (dF) are both positively related to changes in output. However, in a simultaneous solution mode where (dR) is determined endogenously, it is apparent from equations (4.4), (4.5) and (4.10) that dDC and dF are no longer independent from each other. If domestic credit were to be used as a policy instrument, given equation (4.4), foreign capital inflows

would become endogenous in equation (4.5)⁴. Therefore, any change in domestic credit will have a corresponding offsetting change in foreign capital inflows. For example, an increase in domestic credit in equation (4.4a) is cancelled by a corresponding decrease in foreign capital inflows in equation (4.5a), thus leaving dy unaffected in equation (4.16). In this case, the important message of the model, i.e., the existence of a positive link between output and domestic credit via investment, may not be realized.

It can also be argued, that the expression for investment derived in equation (4.15) can also be obtained by simply manipulating the national accounting identity along with the balance sheet and the balance of payments identities. Thus, the authors of the merged model simply present the existing relationship in a different form. Defining $(I + G + X = S + T + Z)$, one can use equation (4.5) to replace foreign savings $(Z - X)$. Substituting equation (4.4) for dR in the resulting expression, one can get an identical investment equation as (4.15).

4.3 Conclusion

In this section, I have presented the attempts made by researchers to develop an integrated model of adjustment and growth by making use of models developed by the IMF and the World Bank.

⁴ Equations (4.4) and (4.5) can be rearranged as follows:

$$dR = dM^s - dDC \quad (4.4a)$$

$$dF = Z - X + dR \quad (4.5a)$$

The major focus of the model was to establish the links between the balance of payments, the price level and output. The IMF's financial programming laid the foundation for the financial side of the model, whereas the Bank's Revised Minimum Standard Model paved the way for the growth block. The authors of the merged model have argued that the objectives of the balance of payments, the price level and output are determined simultaneously. Moreover, it is claimed that the model established a positive relationship between output and domestic credit via investment.

The need for such an integrated approach for adjustment and growth in developing countries cannot be stressed strongly enough. The disappointing medium-term growth experience of developing countries in the 1980s and early 1990s has drawn the attention of policymakers to maintain and reactivate the economy's growth momentum in the long run (Agénor and Montiel 1996). In this context, any attempt to produce an integrated model of adjustment and growth cannot be less enthusiastically welcomed. Therefore, the attempts made by Khan and others to merge the Fund's and the Bank's approaches can be considered as a first step towards the realization of that objective.

Unfortunately, the merged model presented by the authors still contains some weaknesses. True enough, there are common grounds between the Fund's and the Bank's approaches that deserve careful evaluation. Nonetheless, the task of forging a merged model of adjustment and growth that retains the fundamental properties of the financial programming and the Revised Minimum Standard Model is

far from over. It is illustrated in this section that if domestic credit were to be used as a policy instrument, given the balance of payments and the balance sheet identities, foreign capital inflows would become an endogenous variable in the model. Therefore, it can be argued that in a simultaneous solution mode domestic credit may not have the intended positive impact on output via investment. Given these limitations of the model, one may wonder whether the approach adopted by the authors to merge the financial programming and RMSM is the right one. Future research must focus not so much on how to merge these models, but rather on how to incorporate the objectives of stabilization with medium and long-term growth problems in a simple model.

5. SUMMARY AND CONCLUSIONS

In this paper, I have attempted to present the major analytical approaches dealing with the question of adjustment and growth in developing countries. In particular, I have discussed the financial programming model of the IMF and the Revised Minimum Standard Model of the World Bank that were implemented in many developing countries over the past three decades. The theoretical tools underlying the structural adjustment programs sponsored jointly by the IMF and the World Bank and widely carried out in developing countries in the 1970s and 1980s have also been examined. Limitations and/or failures of these approaches have warranted the need for a better model of adjustment and growth. This had led to the theoretical exploration of the so-called growth-oriented adjustment model. One such attempt was to merge the Fund's financial programming and the Bank's Revised Minimum Standard Model to produce a model of adjustment and growth. This paper has discussed the salient features of this new approach.

The financial programming model implemented by the IMF was designed to achieve a viable balance of payments position and price stability over the short term. These objectives are known as adjustment and stabilization. The model built upon the monetary approach to the balance of payments and rested on selected accounting identities that established a positive relationship between the adverse external reserve position and the expansion of domestic credit. It recommended the use of domestic credit, among other things, to achieve adjustment and stabilization objectives.

Since the model focused on the monetary side of the economy, the impact of its policy prescriptions on real output and employment was not considered.

The Bank's Revised Minimum Standard Model (RMSM) is a variation of the well-known two-gap model of growth. The major components of the model include a simple production function, a savings function, an import function and an investment identity. The model has been used by the World Bank to make macroeconomic projections in developing countries and to assess external financial requirements. Since the model was designed to highlight capacity growth and structural change in developing countries, short-run macroeconomic management issues such as price stability fall outside its realm.

The structural adjustment programs sponsored by the IMF and the World Bank can be viewed as an extension of the IMF model. They incorporated the adjustment and stabilization objectives based on the financial programming and structural change measures designed to achieve better utilization and more efficient allocation of resources. The model differed from its predecessor - financial programming - in two significant ways: (a) SAPs were financially supported by the Fund and the Bank; and (b) the time-horizon of model was extended to the medium term. The stabilization policy package adhered to the typical financial programming prescriptions. The supply-side measures included the removal of various forms of controls, the revitalization of market forces and of the private sector, the liberalization of the external sector, etc.

As noted in section 3, the structural adjustment programs implemented in developing countries failed to achieve their intended objectives, i.e., improvement in the balance of payments, price stability, economic growth, structural change in the economy, etc. Because of this dismal performance of SAPs, policy makers in developing countries are interested in understanding the interaction among stabilization, adjustment and growth. In particular, the availability of an analytical framework that incorporates the objectives of short-term macroeconomic management with the long-term capacity growth would be of great interest to them. To this end, the merged model presented in section 4 is considered an attempt to link the objectives of the balance of payments and price stability with capacity growth in an analytical framework. The authors of the model combined the IMF's financial programming model and the World Bank's RMSM to produce a model of adjustment and growth. The financial programming represented the monetary side of the model whereas a variation of the RMSM formed the basis for the real side. The model was built around the notion that the balance of payments, prices and economic growth were determined simultaneously. One of the important features of the model, however, is that there is a positive link between domestic credit via investment and the change in output.

Based on the assessment and conclusions of each of the models presented in this paper, I would like to make the following observations:

1. The main analytical feature of RMSM is its focus on the key

link between the availability of financing (both internal and external) and capacity growth. However, one of the major analytical weaknesses of the model is the assumption of a stable price level. As such, the model fails to recognize the fact that the policy measures designed to bring about stabilization in the short run might thwart the Bank's objective of capacity growth in the long run. Furthermore, since RMSM was primarily concerned with linkages between economic growth and the availability of external financing, it did not pay adequate attention to such factors as various forms of distortions that were responsible for inefficiency in the economy.

2. For some time, structural adjustment programs were considered an improvement over stabilization programs. As an operational tool, the financial programming still plays an important role in the implementation of the IMF's programs. From a practical point of view, however, structural adjustment programs appear to lack cohesiveness between the two major model components, namely the financial programming mode and the supply-side measures. The feedback between the financial programming and the supply side of the economy is not clearly established. Thus, the model does not quantify how the productive capacity is affected over time as a consequence of various policy measures recommended by the program. In particular, the model assumes that there exists full

employment and that real output is determined exogenously. As a result, it fails to recognize the impact of short-run demand management measures, such as a reduction in domestic credit, on economic growth. Empirical evidence suggests that because of the dominant role played by the financial programming in SAPs, the implementation of such a program often led to a situation of 'overkill' in many developing countries.

3. The merged model presented in section 4 can be considered as a first step in dealing with the problems associated with the development of an integrated model of adjustment and growth. The model highlights both the strengths and weaknesses of merging the Fund's and the Bank's approaches. The authors of the model argued that its fundamental message is that the balance of payments, prices and output must be determined simultaneously. It also established a positive link between domestic credit and output. As I have argued earlier, however, this property depends on the assumptions involved in closing the model. Indeed, some specific assumptions can give rise to a situation where changes in domestic credit exactly offset any changes in foreign capital inflows, thus leaving changes in output unaffected.

The need for a model of adjustment and growth cannot be stressed enough. As indicated elsewhere in the paper, the disappointing growth performance of many developing countries has

created the need for a model that has the ability to address the short-run problems of stabilization and adjustment simultaneously with the long-run problems of capacity growth. Therefore, future research in this area must focus on how to link the real sector of the economy with the monetary side in a meaningful manner. In other words, the links among domestic credit, output, prices and the balance of payments must be clearly established. Furthermore, the question of capacity utilization, the impact of informal financial markets in the overall functioning of the economy, and the inter-relationship between wage and price determination must also be examined.

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