Structural Adjustment Programmes on the African Continent

The theoretical foundations of IMF/World Bank reform policies

Henk Meilink

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African Studies Centre
P.O.Box 9555
2300RB Leiden
The Netherlands
Tel. +31 71 527 3372
Fax: + 31 71 527 33 44
E-mail: asc@fsw.leidenuniv.nl
Website : http//asc.leidenuniv.nl

Summary

Since the early 1980s the great majority of the sub-Saharan countries embarked on the implementation of IMF/World Bank designed 'structural adjustment programmes' (SAPs). Fundamental policy reforms had become necessary because African governments were confronted with untenable deficits in both the state budget and the balance of payment. The IMF applies a monetary approach to balance of payment problems in an attempt to restore macroeconomic stabilization and the World Bank tackles the 'distortions' in the price–formation processes of goods and services which had resulted in unproductive allocations of the available resources. Both the IMF and the World Bank have emphasized that faulty policies adopted by African governments in the past are at the base of Africa's persistent economic crisis.

This paper examines in detail the theoretical underpinnings of the SAPs. As far as the IMF is concerned, the paper concludes that its policies are based on a theoretical framework that goes back to an analysis of Polak carried out in 1957 which adopted a number of assumptions that are far removed from real economic conditions on the African continent. The IMF preoccupation with the internal demand side of the economy has made them blind to the other important cause behind the financial imbalances in African economies, namely the loss of import capacity and the related reduction in output resulting from external shocks such as those experienced in the 1970s. Also the IMF underestimates the existing fragmentation of markets and the severe inflexibilities in African economies that prevent the assumed presence of a flexible market-clearing system and perfect competition.

The World Bank policies are essentially based on the Revised Minimum Standard Model that can be traced back to the Harrod-Domar Model of the 1940's. Although recent extensions to the RMSM model have been formulated, a serious shortcoming of the model remains that the foreign-exchange inflows are assumed to be fully and automatically used in a productive manner in the recipient country's economy. This does not allow for such salient socioeconomic features as 'rent-seeking', consumeristic use of resources and outright plundering of state resources by the African political elite. Furthermore, it has become clear that even in countries where the political will exists to use capital resources in a productive manner, the numerous infrastructural and institutional conditions needed to ensure that capital performs effectively are insufficient or entirely absent. A final critical shortcoming of the RMSM model (and also of the IMF theoretical framework) is the absence of distributional concerns in the analytical framework.

It is evident that the main theoretical underpinnings of IMF and World Bank policies are still far from offering an adequate theoretical framework capable of capturing the essential features of the socioeconomic realities of Sub-Saharan Africa. At best, the models draw attention to some important links between macroeconomic aggregates and the possible trade-offs involved.

Introduction

The World Bank and the IMF's diagnosed the 'African crisis' as caused essentially by two major factors: the significance of macro financial imbalances and domestic supply constraints. Whereas most observers tend to agree that the crisis is the result of the combination of three factors namely, external shocks, a weak domestic economic structure and flawed government policies, the World Bank and the IMF have always emphasized the negative and crisis-inducing outcome of the type of policies that were pursued by African governments in the past. The supposed excess level of aggregate demand in the economy is linked in a causal manner to high levels of credit creation in the monetary system, while the supply constraints are related to distortions in the price-formation process of goods and services and the resulting inefficiencies in the allocation of available resources due to inappropriate policy intervention by African governments. Hence, the theoretical framework of the SAP remedy has three main components reflecting the World Bank/IMF diagnosis of the African crisis: macroeconomic stability, pricing reforms, and a redefined role for the African state.

The overall objective of SAPs is to switch resources from the public to the private sector and from nontradable consumption goods and imports towards exports and production goods. More funds in the hands of private producers in a competitive domestic market environment and a domestic price structure that provides incentives will lead to production-enhancing investments, higher levels of employment and output and ultimately a reduction of African poverty. Markets will emerge more or less spontaneously in response to the interaction of individuals driven by utility considerations, and prices, if undistorted, will 'clear the market' i.e. equalize aggregate demand and supply in the economy. Further-more, exposure to world competition supported by foreign capital inflows and efforts to increase the volume of exports are expected to provide the engines of renewed growth. These are the main tenets of the dominant neo-liberal orientation of the 1980s.

Seldom in the SAP debate does one encounter discussion about the theoretical underpinnings of IMF and World Bank policy propositions. In spite of the fact that structural adjustment programs are presented as a single package, the two institutions involved do not have a uniform analytical framework underlying their respective policy prescriptions. This paper delves deeper into the theoretical foundations of SAPs that drive practical policy recommendations. Section 1 discusses the theoretical background of IMF stabilization programs and appraises its relevance in the African context. Section 2 deals with the World Bank's theoretical 'baggage', and its significance for the African countries is assessed. Section 3 outlines how the IMF and World Bank policies come together in the

case of Structural Adjustment Programmes. The importance of the real exchange rate in the reform process for the analysis of both the Fund and the Bank is highlighted in Section 4.

1. Theoretical Underpinnings of IMF Stabilization Programs

The primary purpose of the establishment of the International Monetary Fund (IMF) in 1944 was to act as a platform for international monetary cooperation among countries, with the ultimate goal of establishing an orderly international system of exchange rates and support the achievement of full employment. The financial and monetary policies affecting the balance of payments of the member states were and continue to be the main focus of IMF activities. Countries experiencing (temporary) balance of payments difficulties can borrow money from the Fund enabling them to reestablish their financial position.[1] Gradually, however, the IMF has moved from its traditional role of short-term financial crisis remedy provider to having a wider and longer-term commitment to low-income countries.

In close cooperation with the World Bank, these countries were offered loans against the acceptance of an 'adjustment program' containing a set of policy reforms in different areas. To this end, the IMF introduced two forms of enlarged credit facilities, the Structural Adjustment Facility (SAFs) and the Enhanced Structural Adjustment Facility (ESAFs), intending to address the problems of poor (often African) countries. Stabilization is sought by concentrating on the demand side of the economy whereas in later phases the World Bank was expected to design structural supply-side or growth policies. Over the years, however, this division of tasks between the two institutions has blurred as it became increasingly obvious that supply-side issues were also critical in efforts to stabilize an economy. In a similar vein, the World Bank as a development bank has come to realize that sound financial and monetary policies are a sine qua non for promoting economic growth. Thus the two institutions have gradually moved closer together and in practice have combined their policies in a unified package of structural adjustment policies that is subject to negotiation with client countries. Nonetheless, IMF activities still revolve around typical financial and monetary issues such as the exchange rate, interest rates, credit, money supply, inflation, government expenditures and revenues, and balance of payment aggregates. The

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[1] The IMF draws its financial resources mainly from the quota subscriptions of member states that pay 25% of their contributions in international reserve assets and the remainder in their own currency. If a country needs to draw more than 25% of its quota, the IMF imposes policy conditionalities.

main goal of IMF operations remains the stabilization of 'unbalanced economies' i.e. economies displaying untenable macroeconomic imbalances.

Despite their wider involvement, IMF stabilization programs, although not uniform for all countries, are fairly standard and concentrate on a limited number of financial variables based on a monetary approach to balance of payment problems. A program's first requirement is to restore a reasonable equilibrium in the balance of payments and in the government budget. Secondly, IMF objectives are geared towards achieving acceptable levels of inflation during the adjustment process, an approach primarily focused on 'demand restraint'.

Intense debate continues on the merits and demerits of the IMF approach in tackling Africa's economic crisis, although ideological overtones have often tended to dominate these discussions. The IMF over the course of time has enjoyed little popularity among the many observers of these operations of the two Bretton Woods institutions. The following example illustrates a widely felt unease with regard to the IMF's approach of getting the monetary and fiscal imbalances right.

Colclough & Green (1988: 1) question whether "conventional ways of adjusting macroeconomic balances are remotely good enough if other human imbalances – such as high infant mortality rates, malnutrition, lack of access to basic health and educational services and absolute poverty – become more extended as a result?" By applying short-term stabilization policies, the IMF has been accused of only focusing on national and sectoral aggregates as variables to be influenced. The real actors, human beings, remain well nigh invisible in these programs and because the IMF initially completely disregarded the impact of their policies on the poor, the institute has been blamed for practicing "stabilization with an inhuman face" (Colclough & Green, 1988: 3). This mistrust of the IMF's technocratic financial approach was also voiced (although in a more moderate fashion) in another influential publication: *Adjustment with a Human Face: Protecting the Vulnerable and Promoting Growth* (Cornia *et al.* 1987).[2]

However, blaming the IMF for concentrating exclusively on a country's fiscal and monetary balance is neither fair nor helpful. The delegates of the 44 nations assembled at the little American village of Bretton Woods in July 1944 agreed that the IMF would take just that as its focus. It is evident that the state of monetary and fiscal balance is important in any economy, although admittedly their relationship with the basic human indicators mentioned above is often

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[2] It must be stressed that the authors of both publications fully agree that policy reforms were necessary. Their criticism concerns the ineffective and even harmful way in which policy instruments are being put to use.

indirect and may even seem invisible. To unravel the IMF's monetary approach to the African crisis, it is necessary to examine the basic economic theory on which IMF recommendations are based and then to assess as a next step the prescriptions announced by the IMF following these theoretical underpinnings to ensure they make sense in the prevailing African context. Furthermore, we need to elaborate on what exactly macroeconomists and policy-makers mean by `macro-balances'.

The Macroeconomic Framework and the Polak Model

Much of the economic theorizing adopted by the IMF finds its origins in the analytical model developed by J.J. Polak (1957), and as Tarp (1993: 56) has noted "the basic analytical framework of the IMF has hardly changed in the past three decades". Nevertheless in an article published in the late 1990s Polak holds the view that 'the model has retained its usefulness for policy purposes over time' (Polak, 1998: 395). The model can best be understood when placed against the background of a set of sector-based macroeconomic accounts (and their budget constraints) that enables a better insight into the fundamental structure of an economy. By definition, the economy consists of four sectors: the private sector, the government sector, the foreign sector and the domestic banking sector (which consists of only the central bank). These four accounts form part of a country's system of national accounts. They are theoretically defined in Appendix 1.[3] The general principle is that the value of production in the economy equals the value of incomes generated or, in other words, income in each sector from production plus net transfers must equal expenditures plus savings.[4]

When the four accounts are totaled, this yields the national income identity:

$$Y = (C+I) + X - Z$$

where Y is the national income (at market prices), C is the combined consumption of the government and private sectors, I is the investments of both sectors, and X and Z are exports and imports respectively. C+I indicates the amount of goods and services *absorbed* in the economy and comes from domestic production (Y) and the net balance of the external sector.

The four macro accounts help to identify the relevant variables at play in a country's macroeconomic framework and are also helpful tools in the discussion of the issues involved in structural adjustment programs. Their usefulness is illustrated by the two examples below.

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[3]   It is assumed that four sectors is the minimum required number in a consistent macroeconomic framework of analysis (cf. Tarp 1993: 30).

[4]   Savings plus borrowed money equals asset acquisition.

1. Using the national balance equation and rewriting it as

$$X - Z = Y - (C+I)$$

shows that if the trade balance (X-Z) turns negative (e.g. reflecting an external shock such as a fall in the international terms of trade), this shock and the associated trade balance deficit must be adjusted either by a rise in Y or a decrease in absorption (C+I).[5] As it is far more difficult to increase African production levels (Y) in the short term, policy measures initially focus on reducing absorption (C+I), i.e. aggregate demand in the economy. This demand-side stabilization is usually brought about by a combination of fiscal and monetary policies, largely within the domain of IMF activities. An important question here is whether to make cuts primarily in consumption (C) or in investments (I). Unfortunately in practice in African terms, cuts in investments are often preferred and the politically far more sensitive consumption aggregate is left largely unaltered. The equation clearly shows that the necessary lowering of demand (belt-tightening) can be limited if Y (production level) can be simultaneously increased. The required supply-side measures (largely the responsibility of the World Bank) aim to enhance growth in national production (including exports) and focus on a range of policies that make resources work more efficiently and/or create additional production capacity in the economy.

2. Another example of how these macro identities can be helpful in identifying relevant policy issues involves the government budget balance. There is good reason to focus on the government (or public) sector as it is widely believed that rapid increases in government fiscal deficits in African countries should be considered an important source of macroeconomic imbalance. It follows that the approach to successful stabilization necessitates a reduced fiscal deficit. Referring to the equation (1.4) in Appendix 1, representing the government budget restraint:

$$Sg - Ig = \Delta NFAg - \Delta NPBg - \Delta DCg$$

it becomes clear that a fiscal deficit (Sg-Ig = negative) can be financed in three ways: firstly by running down NFA (foreign assets) through decreasing international reserves, secondly by increasing NPB (attracting loans from the private sector), and finally by augmenting credit drawn from the monetary sector (ΔDC). If no additional loans from either the external or domestic private sector are available, which is often the case in Sub-Saharan Africa, the determining factor for the fiscal deficit becomes 'the third actor in the play', namely domestic credit from the central bank. If this policy instrument is used

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[5] Or alternatively by an adjustment in the capital balance, i.e. an additional inflow of loans/-grants.

to establish a ceiling for domestic credit (a favorite IMF policy priority), then African governments are forced to redress their fiscal deficit by directly increasing revenues (through higher fees for their public services) or decreasing the expenditures (Tarp 1993: 46).

Although this sector-based macroeconomic framework provides a useful tool for identifying variables subject to stabilization and adjustment policies, the equations used are all so-called 'identity equations' meaning that they are by definition all in balance ex post. Hence this framework of accounts does not provide information about how the macro-variables are related to each other or, in other words, what the causal interplay between variables is and how the adjustment process to a new equilibrium actually takes place. It should also be remembered that an 'accounting framework' implicitly assumes a 'linear, fixed -coefficient economy, implying that neither phenomena such as productivity growth and changes in the institutional setting nor substitution possibilities can be incorporated in the framework (Tarp 1993: 55). In order to develop a theory, one needs to explore the *behavioral* relationships between the macro-aggregates and subsequently formulate hypotheses. The framework needs to be brought to life.

The Polak Model

Polak's work of the 1950s has been very influential.[6] With his main interest in monetary issues, he focused on those monetary variables thought to be subject to policy manipulation within the overall IMF mandate of remedying balance of payment problems. Combining the monetary balance and the external balance, Polak suggested the existence of a relationship between ΔDC (changes in domestic credit) and ΔR (changes in international reserves). The latter could result from a decline in export receipts following a decline in international commodity prices (which is not uncommon in the African situation). In his monetary perspective of the workings of the economy, domestic credit was thought to be the key variable in policy-making.

Applying a number of stringent assumptions in his reasoning,[7] Polak examined how an increase in domestic credit works its way through the economy. Applying

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6 Here only the basic Polak model is described to reveal the main lines of thought behind the monetary approach.

7 The model is in nominal terms: it was assumed that Y = Py, that is nominal income Y equals real income y multiplied by the price level. Real income is exogenously determined. Thus changes in nominal income Y are the result of price-level changes. Furthermore, the demand for money and money velocity were assumed stable and the money supply is endogenously determined by the change in international reserves plus the change in domestic credit as expressed in the monetary balance (Equation 3.8). Savings and investments were not explicitly dealt with and all savings were assumed to be fully invested.

the monetary balance (Equation 1.8), domestic credit expansion increases the overall money supply and as Polak assumed that money supply equals money demand and that the credit expansion is fully spent by borrowers, this results in an equal rise in income (Y).[8] This increase in income, in turn, will induce a rise in imports and under the applied assumptions affect the balance of payments adversely. If the external balance (Equation 1.6.) is rewritten in the form: $\Delta R = X - Z + \Delta F$,[9] it becomes clear that rising imports ceteris paribus will cause a fall in international reserves (R).

The next step in this theorizing is that an increase in money supply (brought about by domestic credit expansion) is eventually completely offset by the change in international reserves through the workings of the 'multiplier mechanism'. Polak assumes that $Z = mY$, that imports make up a constant fraction of the national income Y. The multiplier formula indicates that the increase in imports resulting from a rise in Y, after a number of years will amount to $m\Delta DC + m\Delta DC(1-m) + m\Delta DC(1-m)^2 + m\Delta DC(1-m)^3$ etc. For time $= \infty$, the total increase in imports will equal the change in DC.

Taking the monetary balance equation of $\Delta M = \Delta R + \Delta DC$ (Equation 1.8.), the money supply will return to its initial level (before domestic credit expansion) because the increase in DC at the end of the day exactly equals the fall in international reserves R (Tarp 1993: 63) and under the adopted assumptions Y (national income) and Z (imports) will also return to their initial levels.

The main element of Polak's analysis now becomes clear: the only lasting result of the initial rise in domestic credit is an equal reduction of R, the amount of international reserves. The model boils down to the assumption of a direct relationship between domestic credit expansion and the induced negative change in international reserves ΔR (Khan *et al.* 1990: 159), and it points to the second effect of credit expansion, namely a rise in domestic prices (inflation). The only lasting effect of an increase in domestic credit expansion is a decrease (of equal magnitude) in international reserves and increased inflation.

This crucial finding was used in IMF policy-making to estimate the amount of domestic credit creation (or credit ceiling), which would correspond to a set amount of R, i.e. the desired position of the balance of payments (Lensink 1996: 61).

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8 This nominal increase of Y was brought about by a price increase, as real income was assumed constant.

9 Exports and the net non-trade-related foreign currency flows were assumed to be exogenously determined. If the latter is denoted ΔF, the external balance $\Delta R = X - Z - INP + NTR - \Delta NFA$ can be rewritten as $\Delta R = X - Z + \Delta F$ in which X and ΔF are the given variables.

It now becomes clear why so much importance is assigned to the 'domestic credit' variable as a core policy instrument in this monetary approach to balance of payments problems and why the IMF emphasizes a disciplined credit policy in its policy prescriptions. Credit contraction can result in an improvement in the balance of payments and reduced inflation (Khan *et al*. 1990: 161). In African countries, over-expanded credit is often reflected in excessive fiscal deficits (a large gap between government expenditures and revenues) which in turn causes inflation rates to soar. It is understandable that the IMF urges these governments to pursue a policy of credit constraint (or credit ceilings) and has made 'the credit crunch a center piece of the conventional stabilization program' (Thisen 1991: 129). The imposition of a government credit ceiling is related to credit available to the private sector. The IMF goal in this context is to avoid a 'crowding out' of the private sector by the government capturing the major share of available credit to finance its fiscal deficit.

In addition to the domestic credit variable, there is a second policy instrument, the nominal exchange rate (defined as the domestic currency price of a unit of foreign currency) that is used by the monetary policy-makers to improve the balance of payments. The theoretical reasoning revolves around the manipulation of import and export values, i.e. the trade balance part of the balance of payments. The assumptions made here are that the volume of imports depends on the relative price of imports in terms of domestic goods and similarly that the volume of exports depends on the price of foreign goods in terms of domestic goods. A devaluation of the domestic currency will lead to a reduction in imports (provided the demand for imports is sufficiently price responsive) and exports will increase (again if foreign demand is responsive to the relative price decrease). Implicitly it is assumed that the higher demand for imports following an *increase* in domestic prices is more than offset by the lower import-demand effect resulting from devaluation. The overall effect is expected to improve the trade balance (more exports combined with fewer imports), which translates into a growth of international reserves (ΔR) in the balance of payments (see Equation 1.7).[10] It now becomes clear why besides the policy instrument of credit constraint, a devaluation of the domestic currency is assigned such a high priority on the list of IMF suggested policy measures: it serves to improve the level of international reserves, the IMF's principal target variable. I will return to this subject in section 4 of this paper.

To summarize, according to IMF theoretical reasoning, a balance of payments deterioration is first and foremost caused by excessive domestic credit expansion.

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[10] A devaluation of the currency also reduces real wages and therefore the demand for consumer goods and non-tradables.

This variable is to be considered the 'villain in the play' (Tarp 1993: 53). Since much of this credit is captured by the government to finance its huge budget deficit, the IMF insists that governments reduce their deficits either through tax increases or cuts in their expenditure (usually the focus is on the public sector wage bill). Secondly, changing the exchange rate of the local currency is a further central policy instrument that allows the realization of the target set for the desired level of international reserves.

Relevance to the African Context
The IMF theoretical framework is a monetary model that has basically remained unchanged since Polak's analysis in 1957. Polak intentionally wanted to keep his model simple and concentrate on those variables that could be effectively manipulated through policy implementation. However, the price paid for this is high in the sense that a number of the assumptions are far removed from real economic conditions.

It was noted earlier that Polak brought life to the 'empty structure of the macro accounts' but this life is far from dynamic or flexible. It almost suffocates under the heavy load of numerous stringent and sometimes highly unrealistic assumptions. The most critical assumption driving the IMF/Polak reasoning is that external and domestic financial imbalances are first and foremost caused by an excessive expansion in money supply (through domestic credit growth) over money demand. Hence the policy prescription of demand contraction is seen as a remedy for the supposedly 'overheated economy'.

This is linked to the critical assumption that the rise in money supply is a product of the growth in foreign reserves plus the rise in private and public sector credit (cf. Equation 1.8). Together with the assumptions that money velocity is constant, the demand for money rises with money income and the money market is in flow equilibrium, it is clear that given these (unrealistic) assumptions the balance of payments will improve when private/public credit is restrained. However, the speed of money circulation in Sub-Saharan Africa is not constant and this contradicts one of the IMF's most central assumptions (Green 1986: 8-9). The IMF preoccupation with the internal demand side of the economy has made them blind to the other important cause behind the financial imbalances in African economies, namely the loss of import capacity and the related reduction in output and in export volumes resulting from external shocks such as those experienced in the 1980s. No distinction is made between internal and external causes of balance of payments problems. The IMF prescribes its medicine without taking into account the origin of deficits because of its rigid focus on alleged erroneous domestic policies. In particular the public sector is obsessively considered as the main cause of an overheated economy and the prime inhibitor of economic

recovery. However, fiscal deficits can also be triggered by adverse external shocks (for example, a decline in world commodity prices) and the associated higher deficits in the balance of payments following this 'terms of trade' deterioration. Thus the fiscal balance can deteriorate because of diminished export revenues, and it is not always only increased government spending that is the culprit.

One of the model's main drawbacks is that it is expressed in nominal domestic currency terms: it does not explain real variables and more specifically, it ignores the interaction of monetary variables with real variables. The model is static with production capacity assumed to be fixed, output variation ruled out and there is no room for phenomena such as uncertainties, risks or expectations. Furthermore a number of important variables are assumed to be exogenously determined: initial price levels, real GDP output, income, and interest rates. Real output changes are essentially determined outside the system. As for prices, the IMF underestimates the existing fragmentation of markets and the severe inflexibilities in African economies that prevent the assumed presence of a flexible market-clearing system and perfect competition. The relative price change brought about by a devaluation provides an example: increasing the nominal price of imports and decreasing it for exports is assumed to induce immediate responses, in other words elasticities are expected to be infinite. But in Africa the demand for imports may not automatically fall with increased prices since many imports are crucial as inputs in production processes. Thus demand elasticity tends to be low. And the supply response of exports may be much less than expected due to the many structural constraints in production (other than prices), which dampen the output response. If this is the case, the short-term effect of a devaluation is only a (very unwelcome) rise in inflation rates (Tarp 1993: 39).

2. Macro Theoretical Framework Underlying World Bank Adjustment Policies

In contrast to the IMF's attention to monetary variables, the World Bank focuses on the real variables determining the supply side of the economy. As a 'bank of reconstruction and development', its financing activities are geared towards the restoring and enhancing of production growth. This focus stems from the early years of its existence in the second half of the 1940s when its major operations concerned the reconstruction of post-war West European economies.

A central model underlying World Bank operations is the Revised Minimum Standard Model (RMSM) developed in the early 1970s. This theoretical framework was largely based on the so-called 'two-gap model' developed by Chenery and Strout in 1966, essentially a further development of the Harrod-

Domar Growth Model which initially served as 'a first building block in the World Bank approach to economic development' (Tarp 1993:82). The basic idea was that economies grow because of capital accumulation resulting from savings (retained consumption) out of real income. The more a country can save, the more can be invested in the production process and the higher the rate of output growth will be. Harrod (1939) and Domar (1946) developed a model which would enable policy-makers to determine the rate of output growth that could be realized on the basis of available domestic savings (subsequently transformed into investments). A simplified version of the model and equations is presented in Appendix 2.

The model of Harrod and Domar demonstrates that the growth of national production is determined by the savings rate (s) divided by the incremental capital-output ratio (k). The model was used in planning operations because the equation allows planners to determine how much output growth can be realized with the capital stock available (given the value of the technical capital-output ratio). As noted when policy-makers concluded that domestic savings were insufficient to achieve a targeted growth rate of output, savings had to be supplemented by additional capital to close the 'savings gap'. World Bank loans could then fulfill the role of closing this gap. As the model critically depends on the availability of capital and its productivity (the higher the productivity the fewer 'units of capital' needed to produce one more 'unit of output'), it is evident that planning economic growth essentially meant ensuring enough capital/savings which could be put to work in the economy.[11]

In the 1960s, the World Bank's analytical framework was extended with the 'two-gap model'. This emerged from the realization that if a country was to grow, not only the savings gap had to be closed but also the economy needed intermediate or capital goods that were indispensable in the growth process but were as yet not being produced within the country. They needed to be imported and foreign currency was required for this purpose. It follows that any lack of foreign exchange may act as a constraint on growth because necessary imports of capital goods cannot be fully financed. This is the second resource gap, commonly referred to as the foreign-exchange or trade gap. A position of insufficient foreign exchange may occur when the combined export earnings, international reserves and access to foreign loans/grants are limited. The distinction between the savings gap and the trade gap is useful because the two can be independent constraints. The trade gap indicates that a lack of strategic imported goods can frustrate the growth of domestic production, even if additional savings are made available domestically to close the savings gap. These two resource constraints – the savings gap and the trade gap – are essential building blocks in the Revised

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[11] It must be stressed that Harrod/Domar and the 'gap-models' assume full capacity utilization.

Minimum Standard Model applied by the World Bank.[12] The model was used to calculate the levels of investment, imports and foreign exchange required to achieve a certain targeted rate of production growth. The trade and savings gaps are determined by comparing the amount of the country's export earnings[13] with required foreign exchange and the domestic savings with the required level of investment respectively. The model can be set out by supplementing the Harrod/Domar framework with the following equations.[14]

$$Sr - Sa = \Delta F \quad \text{(savings gap)}$$

This confronts the required savings (Sr) needed to achieve a desired rate of production with the actual amount of domestic savings (Sa) and determines the amount of required foreign capital assistance (ΔF).

$$Z - X = \Delta F \quad \text{(trade gap)}$$

Z denotes the needed imports (to achieve the output growth rate) and X is the expected export earnings that will become available to finance those imports. If a country's capacity to import is less than that required, the difference (ΔF) must come from abroad. Evidently, in practice the highest gap is indicative of the country's need for foreign capital aid.

In conclusion, although modifications have been made in recent years, the RMSM model's core version continues to be an important theoretical departure point in the World Bank's macroeconomic planning exercises. The Harrod/Domar and the two-gap models have served as planning tools, enabling donor agencies to estimate the required capital aid. At the heart of the analysis is the idea that insufficient savings and shortfalls in foreign exchange are important resource constraints and are the structural bottlenecks preventing the full productive utilization of domestic production factors.

An Appraisal of the World Bank's theoretical base

The RMSM model can be criticized on several grounds. A major critique is that the impact of policy actions, in particular the consequences for the allocation of economic resources in the economy 'cannot be handled within the model' (Tarp 1993: 95). The model fails to provide information about the quantitative impact of

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[12] In recent years the World Bank has developed extensions of the RMSM model. These so-called RMSM-X and RMSM-XX models also incorporate monetary variables to respond to the need to streamline the World Bank and IMF structural adjustment programs (cf. Tarp 1993: 88 and Lensink 1996: 73).

[13] Exports are assumed to be determined exogenously.

[14] For the sake of clarity, only a simple version of the model is presented. In reality the World Bank uses a model containing some 430 variables!

policy measures due to the lack of behavioral relationships and the absence of relative prices in the (original) design of the model.

A serious shortcoming of the model is that the foreign-exchange inflows are assumed to be fully and automatically used in a productive manner in the recipient country's economy. External borrowing will, by definition, be transformed into productive investment and subsequently lead to increased production. This mechanistic type of assumption is surprising and unrealistic since it does not allow for such salient socioeconomic features as 'rent-seeking', consumeristic use of resources and outright plundering of state resources by the African political elite. In current debates these sociopolitical factors are often emphasized as offering an explanation for Africa's persistent crisis. In other words, the model completely ignores how external funds are being used in the receiving economy. Furthermore, it has become obvious that even in countries where the political will to use capital resources in a productive manner exists, the numerous infra-structural and institutional conditions needed to ensure that capital performs effectively are insufficient or entirely absent.

Although scarcity of capital funds is undoubtedly a real problem in Africa, this shortage by itself cannot explain the continent's lack of renewed economic growth. A final critical shortcoming of the RMSM model (and also of the IMF theoretical framework) is the absence of distributional concerns in the analytical framework. As the activities of the World Bank have gradually moved from 'project lending' to 'program financing' and demands for policy reforms have intensified, there is a definite need for serious attention to be paid to issues of distribution in policy design.

3. Structural Adjustment Programmes: Merging the IMF and World Bank Theoretical Frameworks

As the IMF and the World Bank present a common 'structural adjustment policy package' in their operations (often under the banner of growth-oriented adjustment), attempts have been made to merge the two separate analytical models into one conceptual framework. Tarp (1993) provides a detailed review and assessment of a prominent 'merged model' developed by Khan, Montiel and Haque (1990) that combines the real variables of the World Bank framework with the IMF financial/monetary variables model. There is little incentive to summarize the main lines of thought of the model because although some improvements on the simple IMF and World Bank models have been introduced, this attempt has so far yielded unsatisfactory results. The main reason for this is that 'their composite framework has been built around exactly the same kind of restrictive assumptions

as the RMSM and the financial programming model' (Tarp 1993: 117). Moreover, the effects of the 'suggested macroeconomic policies are subject to a large degree of uncertainty, making the operational value of the model largely irrelevant' (Tarp 1993: 110). A major shortcoming remains that the effects of a negative external economic shock still cannot be identified in the merged model. This is unacceptable in the context of Africa's open and vulnerable economies where negative external shocks play such a dominant role.

The exchange rate is a crucial policy variable affecting both the IMF objective of improving the balance of payments position as well as the World Bank's focus on increasing national output levels (World Bank, 1994). In the next section we take a closer look at the role of exchange rates in the reform process.

4. Importance of the (Real) Exchange Rate

The exchange rate[15] is a widely used policy instrument in the World Bank/IMF supported reform programs in Africa (Tarp 1993: 89). Even at the beginning of the 1980s, the World Bank's influential 'Berg Report'[16] explicitly emphasized that exchange-rate (and trade) policies were critical 'when it comes to the creation of an incentive production framework, especially in the uncommonly open economies of Africa' (World Bank 1981: 5). As a result of this extreme openness, African economies are vulnerable to changes in external prices and international demand patterns. Unfavourable external price movements, for example a deterioration in the country's external terms of trade caused by a sudden decline in export prices can create significant trade deficits in the balance of payments (external disequilibrium). The position of the balance of payments of most African countries has also worsened due to growing 'internal disequilibrium' caused by excessive aggregate domestic demand (including that for imports) in relation to domestic income/production levels. Or in terms of the 'macro identities framework' discussed earlier, the emergence of an internal imbalance caused by domestic absorption exceeded the level of national income.

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[15] In the literature, nominal exchange rates are defined in several ways depending on whether the exchange rate is interpreted as the price of foreign currency measured in local money units or alternatively as the value of the local currency measured in foreign currency terms (Leslie 1988: 11).

[16] Elliot Berg was the main author of this report. The 1981 publication was the first of a series of World Bank reports dealing with Africa's economic crisis. The analyses that followed in the 1980s did not substantially modify the original standpoint (see World Bank 1983, 1984 and 1986).

Overvalued Currencies

World Bank concern for an appropriate exchange-rate policy is largely a reaction to the allegedly damaging policy adopted by a large number of African countries of maintaining a system of overvalued exchange rates during much of the 1970s. However, it should be noted that the emergence of overvalued exchange rates was often not an intended policy objective of African governments (Cleaver 1984: 17) but resulted from the widely applied expansionary fiscal and monetary policies that generally led to inflation rates increasing faster than those of their principle foreign trading partners. In that case the *real* exchange rate is being appreciated. The industrial sector provides a good example. Here, as a result of the policy of promoting industrial growth, prices of domestically produced industrial goods were artificially raised relative to cheaper foreign manufactured goods as imports of these items were discouraged by protective measures such as high import duties and quotas. Thus domestic prices are higher at the official exchange rate than prices of foreign products, which results in an overvalued local currency vis-à-vis foreign currency.

The theoretical arguments against a continued overvalued[17] domestic currency (and the subsequent appreciation of the exchange rate) are that overvaluation makes imports artificially cheaper and causes exports to lose their external competitiveness. This tends to exacerbate the trade-balance deficit on the balance of payments. Furthermore, overvaluation is liable to undermine domestic production levels as local producers find it increasingly difficult to compete with cheap imports or to produce exportable goods profitably (Dornbusch *et al*. 1988: 81). The result is a loss of production and associated loss of employment, and lower fiscal revenues for the government. Employment of local labor is also discouraged as a result of the use of capital- and import-intensive production techniques in national production processes (stimulated by the availability of relatively cheap foreign exchange). Furthermore, as the demand for foreign exchange far exceeds supply, a system of overvaluation must necessarily be accompanied by a policy of quantitative restrictions on imports and foreign-exchange management controls (through licensing imports and access to foreign exchange). Invariably such administrative regulations lead to practices of evasion and corruption by government officials who are tempted to misuse their administrative power in granting licenses and approvals. Opportunities to make large profits are offered by engaging in smuggling and activities on the developing black or parallel market as the gap between the official and black-market exchange rates quickly widens. Overvaluation encourages the allocation of resources in rent-seeking and 'socially unproductive, but privately profitable, activities' (Lipumba 1991: 73). The end result is a reduced level of national

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[17] According to the World Bank, African governments 'have let real official exchange rates become overvalued because of higher inflation at home than abroad' (World Bank 1981: 24).

production. In political terms the practice of overvaluation was used by African governments to modify the internal terms of trade in favor of the urban-based advantaged classes through artificially raising costs for the rural population.

Devaluation

The World Bank and the IMF have persistently argued that by maintaining a system of overvalued currencies over a prolonged period, African governments have significantly contributed to the ongoing crisis. Hence a currency devaluation is strongly advocated since it is expected to constitute 'a powerful tool for restructuring relative prices and incentives' (World Bank 1981: 30).[18] From a competition point of view, an important objective of devaluation is to bring domestic prices more in line with those found on the world market.

How the exchange rate as a policy instrument can be used to remedy the incurred imbalances is commonly discussed within the framework of the 'dependent, open economy model' (Dornbusch *et al*. 1988) in which three types of commodities are central: import-substituting goods, exportables and products for the domestic market. The first two types of goods are commonly called tradable products. These goods enter international trade and their domestic prices are predominantly determined on world markets. For these goods, small open economies must be considered as 'price takers' in international trade. The third category of products, those for the domestic market, are on the other hand considered 'non-traded' products,[19] with their production serving the domestic market and their prices being determined largely by domestic supply and demand conditions (Dornbush *et al*.1988: 37). The distinction is based on whether or not it is profitable to trade the commodity internationally (given prevailing domestic and world market conditions).

The crucial goal of devaluation is now to change the *domestic* price relations between these three categories of goods, i.e. to increase the domestic price of tradable goods (both exportables and importables) relative to that of non-traded products. These price relationships are given crucial importance in the model due to the underlying assumption that the excess in domestic absorption (expenditures exceeding income levels) following years of fiscal and monetary expansionist policies must be particularly attributed to the excessive demand for non-tradables and imports. This excessive demand caused increases in prices and wages that, combined with a fixed nominal exchange rate, resulted in an overvalued real exchange rate. The combination of higher domestic costs and an overvalued real exchange rate has shifted incentives away from tradables towards non-tradables

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[18] Although this document dates from the early 1980s, the same argument has been repeatedly put forward in subsequent World Bank recommendations.

[19] In the literature the terms 'home goods' and 'non-traded goods' are used interchangeably.

and imports. The necessary relative price change can be effectuated in two ways: by depreciating the national currency and by reducing aggregate expenditures or 'absorption'.

A nominal devaluation will result in a decrease in the price of the country's exports in terms of foreign currency, domestic exporters will receive a higher price in local currency and imports will be priced higher in local currency terms. Cheaper exports for consumers abroad and more expensive imports for domestic consumers will expand the volume of exports and contract the volume of imports, thus improving the imbalance in the trade balance and enhancing the growth of the devaluating economy. It must be remembered that the success of the devaluation measures critically depends on two factors: the price responsiveness of tradables and the value of demand elasticities for exports and imports. If external demand for the country's exports is inelastic, devaluation by a certain percentage can cause a less than proportionate increase in the quantity of exports demanded, resulting in decreased net export earnings. On the import side, if the price elasticity for imports is inelastic then the percentage decline in the quantities demanded will be less than the percentage increase in the price of imports, which will lead to a rise in the net import bill. In such a case the country will only end up with increased inflation (Mistry 1994: 118-19) and a further worsening of its balance of payments.[20] It should also be noted that devaluation does not affect a country's external terms of trade. Given the 'small country' assumption in the 'open economy model', both export and import prices are given in dollar terms. Thus devaluation as a policy measure can only act by changing the internal price ratio of tradables and non-tradables.

Reduction in domestic demand brought about by the second type of reform policy (reduced absorption) causes a fall in demand for domestic products (alongside a fall in demand for traded goods) and a subsequent excess supply of home products on the domestic market (Scobie 1989: 22). This, in turn, will force down the prices of non-traded goods (assuming price flexibility)[21] and result in a downward adjustment in their supply by local producers. Equilibrium in the non-traded sector is thus restored.

In summary, the key role of the devaluation policy tool is to raise the domestic price of traded goods relative to home goods. This increases the relative profitability in the traded-goods sector which then leads to the desired shift in the domestic production structure from home goods to traded commodities. Domestic

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[20] In more technical terms, the so-called Marshall-Lerner condition must hold, i.e. the sum of the elasticities of demand for imports and exports is greater than one.

[21] The model further assumes that all resources are homogeneous, moving freely without constraint or cost between sectors.

producers will increase the supply of tradables (to be exported) while domestic consumers will reduce their demand for these goods (as the relative price of tradables rises), thus improving the distorted trade balance on the balance of payments. The second adjustment policy measure, expenditure (absorption) reduction, is expected to restore the internal imbalance by bringing aggregate internal demand more in line with domestic resource output. The resulting higher domestic levels of production of tradables in the country is assumed to exercise a mitigating effect on the decline of economic activity and employment in the non-tradable sector brought about by domestic demand restraint. Consequently the combined effect of these two types of adjustment policies (a lower level of absorption and exchange-rate depreciation)[22] is expected to repair the macro-imbalances.

The Real Exchange Rate
It should be emphasized that the outcome of a nominal currency devaluation in practice may be less effective than the theory might suggest. The reason is that as the prices of both imports and exportables (tradables) sold on the domestic market rise, overall inflation may be triggered provoking demands for wage rises to compensate for the associated inflationary impact and to maintain real purchasing power. If the government gives in to these demands, production costs will increase, making exportables again less profitable and consequently less competitive on the world market. In that case, the initial effect of a *nominal* devaluation will at the end of the day be eroded and the required change in relative domestic prices will not materialize (Leslie in Dornbusch *et al*. 1988: 11).

A change is therefore necessary in the *real* prices of traded commodities relative to non-traded products (Krugman in Dornbusch *et al*. 1988: 72). In other words, what matters is not so much the nominal but the *real exchange rate*.[23] This concept provides a better indication of the probability of domestic production

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[22] Expenditure-reducing policies such as fiscal and monetary policies affect the level of economic activities and change the national income and absorption aggregates. In contrast, exchange-rate adjustments can be labeled as 'expenditure-switching' policies. These are intended to alter the structure of economic activity leading to a changed composition of produced goods and different patterns of spending and foreign-exchange flows.

[23] A common definition of the real exchange rate is the ratio of the price of tradables to that of home goods (or non-tradables). Defined in this way, it measures the cost of domestically produced traded products in terms of non-traded goods (Lipumba 1991b: 53). This definition of the real exchange rate can be expressed in the following formula:

$$RER = (E_n.P_t) / (P_n)$$

Where RER is the real exchange rate, E(no) is the nominal exchange rate, P(t) is the price of the tradables and P(n) is the price of the non-tradables or home goods. The real exchange rate is sometimes confusingly expressed the other way around, as the ratio of non-tradables to tradables (see Dornbusch *et al*. 1988: 82 and Guillaumont in Chhibber 1991: 17).

shifting to tradables. A real currency depreciation would imply that the country had become cheaper vis-à-vis its trading partners.

But governments can only set the nominal rate. To reach the appropriate real exchange rate, one or a series of nominal devaluations is often carried out. This concerns the inflexibility of the upward price movement of non-tradables. Tradables prices are pegged to the exchange rate but in contrast the prices of non-tradables may not increase at all or do so by a percentage of the devaluation.(between 0% and 100%). If the rise of non-tradables is 0% then real depreciation has been fully achieved. If the price rise is 100%, the nominal devaluation has been completely eroded and relative prices will not change (see the afore-mentioned example of wage increases after a devaluation). In practice, the percentage will end up somewhere between 0 and 100, depending on the outcome of a political process of struggle over the distribution of income in the country under consideration. The nominal devaluation will therefore generally yield less than a 100-percent *real* depreciation (Canitrot 1993: 5).

The so-called real equilibrium exchange rate is the rate at which the objective of internal and external equilibrium in the economy is attained and growth of domestic output initiated (Lipumba 1991: 52). However, it is far from easy to arrive at the right real exchange rate because it is affected by a host of factors, some of which are beyond the direct control of government policy. In the literature these factors are often classified into two categories: i) internal policy-related variables – foreign trade regimes such as import tariffs, quotas and export taxes; foreign-exchange payment systems including exchange and capital controls; taxes and subsidies; wage policies and the composition of government expenditures; and ii) external determinants that are largely beyond domestic policy control. The latter include world market prices, setting the country's international terms of trade, capital flows including foreign-aid funds, and world market real interest rates (Lipumba 1991b: 54).

A detailed discussion of these dynamic interactions is beyond the scope of this analysis, but it is evident that the interplay of these factors may easily lead to an actual 'misalignment' of the RER. It is necessary to review continuously the exchange rate to establish whether the current rate is still the appropriate real exchange rate. A detailed understanding of the specifics of the political economy of the country concerned is a sine qua non. In the search for the correct real exchange rate, it is important to stress that for a *nominal* devaluation of the exchange rate to lead to an effective depreciation of the *real* exchange rate, the

concurrent implementation of a restrictive fiscal, monetary and wage policy is required.[24]

5. Conclusion

The IMF bases its policies on a theoretical framework that goes back to an analysis of Polak (1957) and is based on a number of assumptions that are far removed from real economic conditions on the African continent. The IMF preoccupation with the internal demand side of the economy has made them blind to the other important cause behind the financial imbalances in African economies, namely the loss of import capacity and the related reduction in output resulting from external shocks such as those experienced in the 1970s. In particular, the IMF underestimates the existing fragmentation of markets and the severe inflexibilities in African economies that prevent the assumed presence of a flexible market-clearing system and perfect competition.

The World Bank policies are essentially based on the Revised Minimum Standard Model that can be traced back to the Harrod-Domar Model of the 1940s. Although recent extensions to the RMSM model have been formulated, a serious shortcoming of the model remains that the foreign-exchange inflows are assumed to be fully and automatically used in a productive manner in the recipient country's economy. This does not allow for such salient socioeconomic features as 'rent-seeking', consumeristic use of resources and outright plundering of state resources by the African political elite. Furthermore, it has become clear that even in countries where the political will to use capital resources in a productive manner exists, the numerous infrastructural and institutional conditions needed to ensure that capital performs effectively are insufficient or entirely absent. A final critical shortcoming of the RMSM model (and also of the IMF theoretical framework) is the absence of distributional concerns in the analytical framework.

The World Bank and IMF have gradually moved closer together and in practice have combined their policies in a unified package of structural adjustment policies. The two institutions have diagnosed three main factors that should be addressed in order to tackle the African crisis: macroeconomic stability, pricing reforms, and a redefined role for the African state. The exchange rate is a crucial policy variable affecting both the IMF objective of improving the balance of payments position as well as the World Bank's focus on increasing national output levels and is a widely used policy instrument in the World Bank/IMF supported

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[24] For an attempt to compute the real exchange rate and to estimate its misalignment, see Elbadawi and Soto 1997: 74 ff.

reform programs in Africa. The World Bank and the IMF have persistently argued that by maintaining a system of overvalued currencies over a prolonged period, African governments have significantly contributed to the ongoing crisis. Hence a currency devaluation is strongly advocated with the important objective to bring domestic prices more in line with those found on the world market. However it should be emphasized that the outcome of a nominal currency devaluation in practice may be less effective than the theory might suggest and that what matters is not so much the nominal but the *real exchange rate*.

The so-called real equilibrium exchange rate is the rate at which the objective of internal and external equilibrium in the economy is attained and growth of domestic output initiated. Unfortunately, it is far from easy to arrive at the right real exchange rate because it is affected by a host of factors, some of which are beyond the direct control of government policy. In the search for the correct real exchange rate, it is important to stress that for a *nominal* devaluation of the exchange rate to lead to an effective depreciation of the *real* exchange rate, the combined and concurrent implementation of a restrictive fiscal, monetary and wage policy is required.

APPENDIX 1

The Macro-Economic Accounts central in Polak's (1957) model.

The four accounts form part of a country's system of national accounts and they are specified below. The accounts and their budget constraints are measured in nominal domestic currency terms.

The Private Sector

This sector receives income (Y) from a number of sources: profits, wages, and transfer and interest income from the government and external sectors. This income is used for consumption of goods and services (C), to pay taxes (T), and to pay interest on private debts (INP). The remainder consists of savings (S). Private income can thus be written as:

$$Y = C + T + INP + S \qquad (1.1)$$

These savings (S) plus borrowing in the form of increased credit from the banking system (i.e. the central bank) to the private sector (ΔDC) make up for the net accumulation of private assets that are held in the combined form of private investments (I), an increase in money (ΔM), net private borrowing to the government (ΔNPB) and net foreign assets (ΔNFA). Net private asset accumulation can be expressed as follows:

$$S + \Delta DC = I + \Delta M + \Delta NPB + \Delta NFA \qquad (1.2)$$

The budget constraint for the private sector can now be written as follows:

$$S - I = \Delta M + \Delta NPB + \Delta NFA - \Delta DC \qquad (1.3)$$

The Government (Public) Sector

The government budget constraint can be formulated in a similar fashion. Government revenues come from a number of sources: taxes minus subsidies, operating surpluses of government enterprises, and net transfers from the foreign sector. These revenues are used for the payment of government expenditures and savings (Sg). Government savings are supplemented with borrowed capital to increase public asset accumulation. Borrowing is done through domestic credit from the monetary system (ΔDCg) or through loans from the private sector (ΔNPBg). Government asset accumulation is in the form of public investments (Ig) and net foreign assets (NFAg). External loans are expressed in changes in NFA. The net government (or public) asset accumulation can be expressed as:

$$Sg + \Delta DCg + \Delta NPBg = Ig + \Delta NFAg \qquad (1.4)$$

Now the government's budget constraint can be defined as:

$$Sg - Ig = \Delta NFAg - \Delta NPBg - \Delta DCg \qquad (1.5)$$

The Foreign Sector

In this sector, the balance of payments records all of a country's transactions with the outside world: exports (X) and imports (Z) of goods and services (making up the current account), and the inflow of private investment and capital in the form

of loans or grants to the government minus net payments to the outside world (making up the capital account). The combined net balance of the current and capital accounts represents the balance of payments position. The external balance can be written as:

$$(X-Z) - (INP-NTR) = \Delta R + \Delta \qquad (1.6)$$

INP stands for interest payments and NTR denotes the net transfers to the domestic government. $\Delta R + \Delta NFA$ represent the change in international reserves plus the change in net foreign assets respectively. The equation can be rewritten as follows:

$$X - Z = (INP-NTR) + \Delta NFA + \Delta R \qquad (1.7)$$

It shows that if there is a deficit in the current account of the balance of payments ($X-Z$ = negative), this can be financed by a positive balance in the capital account of the balance of payments, i.e. if a situation emerges when net transfers exceed the paid interest (NTR>INP), or additional foreign borrowing occurs ($\Delta NFA<0$), or international reserves can be reduced ($\Delta R<0$).

The Domestic Banking Sector
The monetary sector fulfils an intermediary role. Its assets consist of the amount of credit to the private and public sectors (ΔDCp and ΔDCg) plus international reserves (ΔR), and its liabilities include money (M). The flow equilibrium in the money market is represented by the following equation:

$$\Delta M = \Delta DCp + \Delta DCg + \Delta R \qquad (1.8)$$

where ΔM denotes the flow demand of money and ($\Delta DCp+\Delta DCg+\Delta R$) the flow supply of money.

APPENDIX 2

The Harrod-Domar Growth Model

Harrod (1939) and Domar 1946) developed a model which would enable policy-makers to determine the rate of output growth that could be realized on the basis of available domestic savings (subsequently transformed into investments). The model demonstrates that the growth of national production is determined by the savings rate (s) divided by the incremental capital-output ratio (k).

The national identity is:

$$Y = C + S \tag{2.1}$$

It is assumed that savings is a fixed proportion of national income:

$$S = sY \tag{2.2}$$

and that all savings are invested:

$$S = I \tag{2.3}$$

Substituting I for S in Equation (2.1) gives:

$$Y = C + I \tag{2.4}$$

These investments add to the capital stock as follows:

$$I = \Delta K \tag{2.5}$$

Harrod and Domar assumed a constant relationship between added capital and the resultant growth in national production known as incremental capital to output ratio k:

$$k = \Delta K / \Delta Y \tag{2.6}$$

Combining the two equations (2.5) and (2.6) gives:

$$\Delta K = I = k.\Delta Y \tag{2.7}$$

Returning now to the basic identity and expressing consumption as a proportion of Y (i.e. C = cY) we obtain:

$$Y = cY + k.\Delta Y \tag{2.8}$$

$$\text{or } (1\text{-}c)Y = k.\Delta Y \tag{2.9}$$

(1-c) by definition represents the proportion of savings out of national income, which we denoted as s:

$$s.Y = k.\Delta Y \tag{2.10}$$

Finally we arrive at the end equation:

$$\mathbf{\Delta Y / Y = s / k} \tag{2.11}$$

References

Canitrot, A (1993) 'The Exchange Rate as an Instrument of Trade Policy', Unctad, Discussion Paper no. 71.

Chenery, Hollis, B. and Strout, A.M. (1966) 'Foreign Assistance and Economic Development', *American Economic Review*, vol. 56, no. 4.

Cleaver, K. (1984) 'The Impact of Price and Exchange Rate Policies on Agriculture in Sub-Saharan Africa', University of Nairobi, Institute for Development Studies, Discussion Paper no. 279.

Colclough, P. and Green, R.H. (1988) 'Do Stabilisation Policies Stabilise?' *IDS Bulletin,* vol. 19, no. 1.

Commander, S. (ed.) (1989) *Structural Adjustment & Agriculture Theory & Practice in Africa and Latin America*, ODI, James Currey, London.

Cornia, G., Jolly, R. and Stewart, F. (1987) *Adjustment with a Human Face, Protecting the Vulnerable and Promoting Growth* (vol. 1) and *Ten Country Cases* (vol. 2), Clarendon Press, Oxford.

Domar, E. (1946) 'Capital Expansion, Rate of Growth and Employment', *Econometrica*, vol. 14, pp. 137-47.

Dornbusch, R., Leslie, F. and Helmers, C. (1988) 'The Open Economy. Tools for Policymakers in Developing Countries', EDI Series in Economic Development, The World Bank & Oxford University Press.

Elbadawi, I.A. and. Soto, R. (1997) 'Real Exchange Rates and Macro Economic Adjustment in Sub-Saharan Africa and Other Developing Countries'. *Journal of African Economies*, vol. 6, no. 3, (AERC Supplement).

Green, R.H. (1986) 'The IMF and Stabilisation in Sub-Saharan Africa: A Critical Review', IDS Sussex Discussion Paper no. 216.

Harrod, R.(1939) 'An Essay in Dynamic Theory', *Economic Journal*, vol. 49, pp. 14-33

Jaeger, W. (1991) 'The Impact of Policy in African Agriculture', Technical Department of the World Bank, World Bank Working Paper no. 640.

Khan, M., Montie l.P. and Haque, N. (1990) 'Adjustment with Growth', *Journal of Development Economics,* vol. 32, pp. 155-79.

Lensink, R. (1996) *Structural Adjustment in Sub-Saharan Africa*, Longman, London and New York.

Lipumba, N.H.I. (1991a) 'Exchange Rate Policy in Tanzania', *Stabilization and Adjustment*, UNDP/SAATA United Nations Publications, New York.

Lipumba, N.H.I. (1991b) 'Determinants of the Appropriate Exchange Rate', *Aspects of Exchange Rate Determination*, UNDP/SAATA United Nations Publications, New York.

Mistry, P. (1994) 'Exchange Rate Adjustment: A Review of Developing Countries Experience', in W. van der Geest (ed.), *Negotiating Structural Adjustment in Africa*, James Currey, London and Heinemann, Portsmouth.

Norton, R. (1987) 'Agricultural Issues in Structural Adjustment Programs', FAO Economic and Social Development Paper no. 66, Rome.

Polak, J.J.(1957) 'Monetary Analysis of Income Formation and Payments Problems', *IMF Staff Papers,* vol. 6, no. 1, pp. 1-50.

Polak,J.J. (1998) 'The IMF monetary model at 40', in Economic Modelling ,Vol. 15,No. 3, pp.395-410

Scobie, G. (1989) 'Macro Economic Adjustment and the Poor: Towards a Research Policy', Cornell Food and Nutrition Policy Program, Monograph 1.

Tarp, F. (1993) *Stabilization and Structural Adjustment. Macroeconomic Frameworks for Analysing the Crisis in Sub-Saharan Africa*, Routledge, London and New York

Thisen, J. (1991) 'The Design of Structural Adjustment Programs: The African Alternative Framework', *African Development,* no. 1.

Tshibaka, T. (1993) 'Policy Imperatives for Agricultural Development in Africa in Sustainable Food Production in Sub-Saharan Africa', International Institute of Tropical Agriculture, Ibadan, Nigeria.

World Bank (1981) 'Accelerated Development in Sub-Saharan Africa: An Agenda for Action', ('Berg Report').

World Bank (1986) 'World Development Report 1986', Oxford University Press (for the World Bank), New York.

World Bank (1989) 'Africa's Adjustment and Growth in the 1980s', World Bank, Washington D.C.

World Bank (1994) 'Adjustment in Africa: Reforms, Results and the Road Ahead', Oxford University Press (for the World Bank).