

**Orthodox and Heterodox Policy for Growth
for Africa South of the Sahara**

By

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Introduction*

While the Asian and Latin American countries enjoyed rising per capita incomes during the 1970s, the sub-Saharan countries stagnated and in numerous cases average incomes declined. In the 1980s most Asian countries continued to enjoy economic growth in excess of population increase, while virtually all Latin America plunged into debt-provoked depressions. However, by the early 1990s the consensus of experts was that Latin America had recovered, with a few distressing exceptions and with a notable reverse caused by the Mexican financial crisis in late 1994. For the sub-Saharan region recovery has been heralded but yet to arrive. Governments of the region entered into stabilisation and structural adjustment programmes of the International Monetary Fund and the World Bank early and often (see Mosley & Weeks 1993); the outcomes were disappointing. As a result, the debate over appropriate policy for the region has two characteristics either absent or of less prominence in other regions. First, the debate over appropriate policy typically focuses upon the role and behaviour of the two multilaterals. One form that this takes is the allegation that the two multilaterals have imposed a particular (and by implication, inappropriate) policy package on the region. Because of this, a World Bank report on adjustment lending placed heavy stress upon assigning 'ownership' of adjustment programmes to the contracting governments (World Bank 1992, p. 21 & Chapter 12).

Second, the extremely mixed growth performances of countries in the Sub-Sahara opting for IMF and World Bank programmes contrasts with the recovery of some 'adjusting' countries in other regions. Since Costa Rica, for example, recovered impressively, the debate as to whether structural adjustment helped or hindered is largely academic. Adjustment failures, on the other hand, call forth accusations of culpability. Especially in cases of countries that the multilaterals once heralded as success stories, failure is all the more spectacular and controversial. There are many such negative 'turnarounds' in the sub-Saharan region. The combination of these two characteristics of the region, the high profile of the multilaterals and the extremely mixed adjustment outcomes, made for a bitter and protracted policy debate, in which the contributions become increasingly stylised and predictable, even recycled.

Economic Characteristics of the Region

The central focus of economic policy in the sub-Saharan region should be to formulate policies to alleviate poverty and foster development, in which the gains from growth are equitably distributed. 'Employment generation' and 'labour market policies' are short-hand terms to summarise such a focus. One must use these terms cautiously in the context of sub-Saharan countries. While there are a few countries in Asia whose labour forces have a smaller portion of *formal* sector wage labour, in no other region of the world is this category of as unimportant as in the sub-Saharan region. In 1990 less than thirty percent of the region's population lived in urban areas and seventy percent of the labour force earned all or part of its livelihood from agriculture (World Bank 1992, p. 278). While there is considerable wage employment in agriculture, this is largely of a seasonal nature. Further, much of rural wage employment is enmeshed in labour relations

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that are not easily incorporated into the neoclassical concept of a labour market, tied to indebtedness and other non-wage obligations.

One indication of the relatively and absolutely small size of formal sector wage employment in most countries of the region is the lack of reliable estimates for this segment of the labour force.¹ Demographic statistics in general are extremely unreliable,² reflecting in part the administrative weakness of the state apparatus. The sub-Saharan countries are societies of small-scale agriculturists in rural areas,³ and traders and petty commodity and service producers in towns and cities.⁴ Therefore, 'generating (formal sector) employment' is a part, but a quantitatively small part of the problem of generating livelihoods, raising producer productivity, and reducing poverty in the region (van der Geest 1994).

If formal sector wage earners in the region ever represented a relatively privileged elite in terms of standard of living, this was invalidated by rural-urban income trends in the late 1970s and 1980s (Jamal & Weeks 1993; and Mazumdar 1994). Increasingly throughout the 1980s, economic decline and stagnation enrolled urban wage earners in increasing numbers into the ranks of the poor. Generating formal sector wage employment at earnings levels above subsistence must constitute part of social policy in the region, though this would address a minority part of the poverty problem. For the foreseeable future, the formal sector wage labour force is too small in most countries of the region for its expansion to effect a substantial relative transfer of labour from low-productivity and low-income rural and urban activities. Growth, and growth of agriculture in particular, would be the necessary condition for a solution to the employment and livelihoods problem. In order to raise the incomes of the rural and urban poor, growth alone is not enough: attention to the composition and distribution of growth is the necessary condition for poverty reduction. One should not leap to the simple view that agricultural growth is best fostered by overwhelmingly directing resources to the sector itself. Agricultural growth is part of a more general process of development, in which the various sectors interact. The task of policymaking is to devise a strategy in which agricultural policy and industrial policy are complementary, and the investments in each sector reinforcing.

Trickle-Down South of the Sahara

¹The ILO *Yearbook of Labour Statistics* includes seventeen of the 46 sub-Saharan countries in its table giving the general level of employment (Table 3A). Excluded are several of the large countries: Nigeria (most populous), Ethiopia (second most populous), Zaire (third), Sudan (fourth), Uganda (seventh), and Mozambique (eighth), Cameroon (eleventh), and Tanzania (fifth). Of the ten most populous countries, only Ghana, Kenya, and Cote d'Ivoire are found in the table.

² Perhaps most of all in Nigeria, which is the most populous country in the region. It is uncontroversial to say that the country has never had a reliable census, and that population estimates (much less age and gender characteristics of the labour force) are no more than educated guesses. Closely related to this, Nigeria's statistics on non-traded agricultural products are among the most unreliable in the region (Mosley 1992).

³ Jamal provides estimates of the share of wage labour in the agricultural labour force for seven sub-Saharan countries. The average for the seven is just over five percent, with Tanzania the highest at 11.8 (Jamal 1993). If one defines wage labour broadly to include those receiving wage payments but tied to employers by non-monetary obligations, the percentage would be higher.

⁴ A review of the literature on urban employment in Africa is found in van der Geest and Wignaraja (1996), that draws heavily on Lauchaud (1994).

From the late 1970s there began a shift in the bilateral and multilateral approach to development from an emphasis upon distributional concerns to an almost exclusive focus upon growth. The strategy for growth was as one long-familiar in economics: liberalisation of markets and restriction of state interventions with the purpose of fostering greater openness to international commodity and capital markets. This strategy has been encapsulated inaccurately by the vague and contradictory term 'export-led growth'.⁵ As the 1980s progressed and many perceived that the liberalisation strategy generated considerable social costs, pressure accumulated for the inclusion of distributional and poverty considerations within the policy packages of the multilateral organisations.⁶ The response of the major lending agencies proved marginal: the liberalisation strategy was not altered in any significant way, but augmented by recommendations for 'targeting' the poor⁷ and *a priori* arguments alleging that 'freer' markets would benefit the poor. This approach derives from the long-standing 'trickle-down' philosophy: growth as such, unadulterated by attempts to drive a wedge of equality between the primary and secondary distributions of income, will pass its benefits through the population *via* unregulated markets; those left out in the process can be reached by welfare programmes ('targeting') of limited scope.

While 'targeting' may have had some success in the middle-income countries (Castaneda 1992), both critics and defenders of the liberalisation strategy now agree that it is largely irrelevant for the sub-Saharan region (World Bank 1994, Chap. 4). All but a few sub-Saharan countries lack effective systems for delivery of welfare programmes either to urban or rural areas (Cramer & Weeks 1997). The case for the liberalisation version of the trickle-down approach rests solely upon *a priori* arguments and sweeping empirical generalisations. The argument begins with the uncontested observation that the majority of the poor in the sub-Saharan region live in rural areas.⁸ To this is added that the poor in rural areas derive their incomes largely from agriculture, either from their own farms or as labourers on farms. While this is also correct, it excludes the rural non-farm poor, whose numbers have increased over the 1980s. The next step in the argument is to conclude that increases in agricultural incomes will directly help the poor who farm (though not necessarily the non-farming poor). If one then assumes that state

⁵The term is vague because it does not specify what is meant by the word 'led', and its usage as loose as it is ubiquitous. Contraction arises when the term is applied within a treatment of the gains from trade using the standard assumption of full employment equilibrium. At full employment and free trade, resources are efficiently allocated, so no sector of the economy can be said to 'lead' (or 'follow'). If full employment is not assumed, then the case for trade liberalisation loses its theoretical clarity. This point is pursued below. An excellent and balanced assessment of export-oriented strategies is found in Griffin (1989, Chapter 4).

⁶The pressure from UNICEF via its 'adjustment with a human face' approach proved extremely influential in this regard.

⁷The recommendation that targeted programmes for the poor might alleviate many if not all of the costs of transition to a liberalised regime can be found in numerous World Bank reports. Besley and Kanbur (in Balasubramanyam & Lall 1991) attempt to give analytical respectability to targeting.

⁸The possibility of a substantial number of urban poor affected by adjustment is usually ignored or dismissed as unimportant:

Within the urban population, there is no clear-cut evidence suggesting that the poor have suffered disproportionately more...The poor have mostly suffered from the indirect effect of contraction in the formal sectors (World Bank 1992, p. 9).

interventions have depressed farm incomes, the inference is drawn that liberalisation of markets, by raising farm incomes generally, will help the poor specifically.⁹

There is now general recognition that this line of argument reaches an unjustified conclusion.¹⁰ Critics pointed out that the argument lacked both logical coherence and empirical support. The major problems with the argument are two: a) it is not possible *a priori* to predict relative price movements in response to liberalisation except at the most general level (e.g. tradables versus non-tradables); and b) whether the poor benefit from relative increases in agricultural prices (should they occur) depends on factors which vary across countries, such as whether the rural poor are net food producers or consumers, and whether their income is primarily from tradable or non-tradable agricultural products. Available empirical evidence suggests that the poor in sub-Saharan countries do not for the most part produce tradables. This is almost certainly the case for workers in the urban informal sector, whose activities are primarily services. The same applies for rural non-farm activities, which involve transport, commerce and repair. Evidence suggests that international traded commodities account for a minority of the income of the farming poor.¹¹ Indeed, the effect of trade liberalisation on the farming poor can be negative. While one must be careful with generalisations, it would seem that in many countries the marketed produce of poor farm families is primarily foodstuffs (Jamal 1988). To the extent that these are tradable they are importables. Distorted world grain markets can result in cheap imports substituting for home production supplied by the poor. If liberalisation programmes are combined with demand-reducing fiscal and monetary measures, marketed output can fall due to a constriction of consumer demand.¹²

Some would argue that the possible negative effects of liberalisation might be offset by the indirect benefits to the rural poor in their role as farm labourers, derivative from the increase in income of better-off farm households through a rise in the demand for labour to produce export crops. This is trickle-down with a vengeance: relative price changes may directly hurt the poor (they do not 'trickle-down'), but *via* the actions of those that gain the poor may enjoy indirect benefits. A recent World Bank report concedes that the importance of this mechanism is open to question.¹³ If food prices as well as export prices rise and the poor are net buyers of food, it is difficult to construct a general equilibrium outcome in which the poor emerge better off from the process. There is also a theoretical problem with the two-stage trickle-down process. If devaluations shift relative prices in favour of tradables, it must be the case that those producing non-

⁹This line of discourse can be found in virtually every World Bank report that focuses upon or refers in passing to the impact of structural adjustment on agriculture in the sub-Saharan region. See, for example, World Bank 1989 (p. 3-4) and 1992 (Chap. 4). To give a typical quotation: 'The agricultural reforms that many governments have adopted...increased the earnings of small farmers -- who make up about 80 percent of the population of Sub-Saharan Africa and include most of the poorest people' (World Bank 1989).

¹⁰Two World Bank professionals offer evidence in support of this allegation (Demery & Squire 1996).

¹¹For example, a detailed analysis of the 1984/85 agricultural survey of Sierra Leone supports the above conclusion. Simulations of an increase in the price of food crops reduces the real income of the smallest landholders, which are net food buyers. A ten percent increase in the price of internationally tradable crops affected these holds hardly at all (less than one percent, Weeks 1993).

¹²The dynamics of this process are treated in Jamal and Weeks (1993) & Weeks (1993).

¹³'...[I]mprovements in price or other incentives that lead the better-off rural households to increase their demand for labour or purchase more locally produced goods also helps the incomes of the poor, though it may take output markets several years to adjust.' (World Bank 1992, p. 4-5)

tradables lose relatively no matter what are the indirect demand effects on prices and incomes might be.

In many and perhaps a majority of sub-Saharan countries, a relative price shift from non-tradables to tradables at best has a weak positive effect on the poor, at the cost of a more unequal distribution of agricultural income.¹⁴ At worst, the result depresses the incomes of the poor. If trade liberalisation results in a more efficient allocation of resources, in many sub-Saharan countries this occurs in a context of a probable trade-off between efficiency and poverty reduction. The previous view, that protectionism taxed agriculture and free trade benefited it, derived from three false assumptions: that all agricultural output was tradable (indeed, exportable), that inequality in the distribution of land was not important, and that any downward trend in border prices of agricultural products could be ignored as unimportant.

Orthodox Adjustment Policies

To highlight the major issues in the debate over adjustment policies, it is useful to state the position of the World Bank on the application of the major instruments of macroeconomic policy:¹⁵

1. *a restrictive fiscal policy* which seeks to reduce overall public sector deficits towards zero;
2. *a tight monetary policy* which restricts money growth to close to the rate of economic growth and places emphasis upon the role of interest rates in stimulating saving; and
3. *free convertibility of the exchange rate* through a non-interventionist 'float'.
(World Bank 1992, 1994)

The outcomes that these policies are supposed to foster are low inflation, increased saving and investment, and a competitive exchange rate. These outcomes, in turn, are alleged to generate a satisfactory and sustainable rate of economic growth. The policies and outcomes are summarised in Table 1. One possible internal contradiction can be noted in this policy perspective. On the one hand, fiscal austerity has as one of its goals the reduction of the 'crowding out' phenomenon; i.e., the alleged tendency for private investment to be reduced as a result of government expenditure creating upward pressure on interest rates. This argument implies that fiscal austerity is beneficial by its downward effect on real interest rates. At the same time, a goal of monetary policy is foster interest rates that would increase saving in the economy. Real interest rates cannot both rise and fall. In practice the orthodox approach places emphasis upon the need to increase real interest rates in the early stages of adjustment, since adjustment is frequently follows a period of rather high inflation and negative real rates. While this emphasis may be sensible and pragmatic, it is not obviously consistent with an increase in investment during adjustment. Indeed, a universal finding of empirical studies is that stabilisation and structural adjustment are associated with declines in investment (see Mosley & Weeks 1993 and Mosley, Subasat & Weeks 1995, where the evidence is summarised).

¹⁴This is also the conclusion of the World Bank:

The rural population, most of whom are poor...has benefited more when adjustment has led to increases in tradable crop incomes or agricultural incomes in general and relatively less when the gains were concentrated on exportable crops. (World Bank, 1992, p. 9, emphasis added)

¹⁵ A more nuanced approach is found in Khan (1987).

Thus, adjustment programmes have as their purpose several outcomes: 1) a faster rate of growth of national income, 2) lower inflation, 3) increased 'open-ness', and 4) an improved investment performance. Before considering these in a formal model, it is useful to review performance, shown in Figures 1 – 4. Each figure presents the deviation of the relevant variable from its mean for the period, with each value calculated from the cross-country average for the year in question.¹⁶ If we take 1981 as separating pre-adjustment from adjustment years,¹⁷ the average rate of growth before this date was four percent per annum and 2.3 percent subsequently (see Figure 1). For the fifteen years, 1982-1996, growth was below its long-term average for ten of the years, and above it for only four. If one takes the World Bank's preferred dating for the adjustment era, 1985 onwards (World Bank & UNDP 1989), performance is much the same (seven years out of ten with below-average growth rates). Whether the above-average growth rates in 1995 and 1996 would be sustained, or be temporary as in 1988, remains to be seen. The evidence is at best ambiguous on whether the spread of adjustment programmes in the Sub-Saharan region stimulated recovery.

With regard to inflation (Figure 2), the evidence is clear: the adjustment period has been associated with a substantial and statistically significant increase in inflation across countries. Whether this represents a problem which requires solution is in part a question of theoretical perspective; however, it is contrary to the explicit goal of adjustment programmes. During the adjustment period there has been little evidence of a sustained increase in export performance, as measured by the share of exports in GDP. From 1982 through 1993, the export share across countries was at or below its long-term mean for every year. The last two years, 1994 and 1995, brought increases, which may or may not be sustained. Also ambiguous has been the movement in the investment share. After a continuous rise in the 1970s, the investment share declined sharply, to below its long-term mean, reaching its lowest point in 1983. Subsequently, the ratio rose, but stayed close to the mean before declining again after 1990. As for exports, 1994 brought a recovery, followed by a decline in 1995.

On balance, the movements in these key variables suggest that adjustment programmes at best have been associated with limited improvement in economic performance,¹⁸ with a possible recovery in the second half of the 1990s. In the absence of evidence of adjustment generating sustained improvement, it is relevant to consider alternative policies for growth and poverty reduction.

¹⁶ Average deviations are calculated on the basis of a regression equation. A linear regression was estimated in which the independent variables were dummy variables for each year (with 1962 omitted). The predicted values were then generated for each year and the average calculated. The average value is subtracted from each predicted value to obtain the percentage point deviations. This method is an analysis of variance, which implicitly tests for the significance of the difference in means within cells (years) and among cells (across years).

¹⁷ This is defended as the pivotal date in Mosley and Weeks (1993).

¹⁸ Work for the World Bank by Elbadawi supports this conclusion (Elbadawi 1992 and Elbadawi, Ghura & Uwugaren 1992).

Table 1: The WB-IMF Orthodox Policy Perspective

Type of Policy	Policy Characteristics	Instrument	Desired Outcome	Goal
Fiscal	low deficit	expenditure reduction frequently preferred to tax increases	low inflation, increased private investment (smaller public sector)	stimulate investment (including FDI)
Monetary	slow money growth, positive interest rates (in practice above the rate of economic growth)	deficit reduction (since deficits are usually monetised), administratively set interest rates	low inflation	stimulate saving
Exchange rate	convertible, deregulated foreign exchange market	deregulation	competitive exchange rate, balance of payments equilibrium	stimulate exports & 'efficient' import substitution
				<u>To yield:</u> rapid, sustained growth

Figure 1:

Sub-Saharan Africa: Deviations from the Cross-Country Average of GDP Growth, 1963-1996

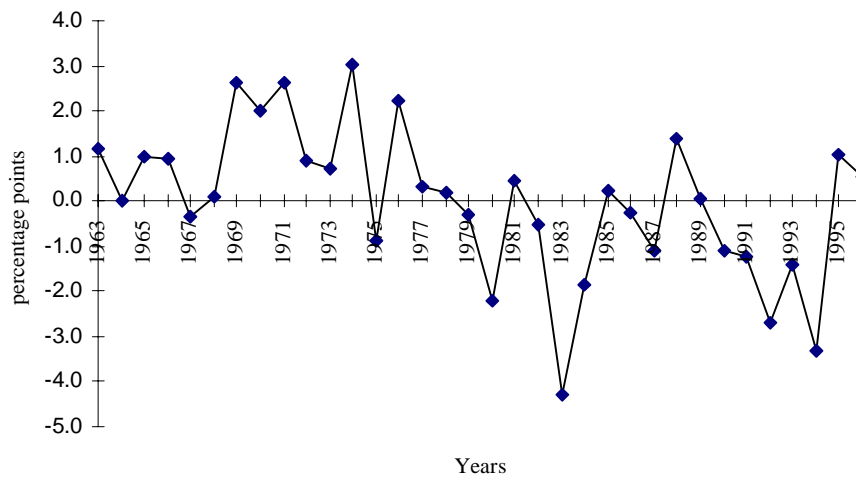


Figure 2:

Sub-Saharan Africa: Deviations from the Cross-Country Average for Inflation, 1963-1995

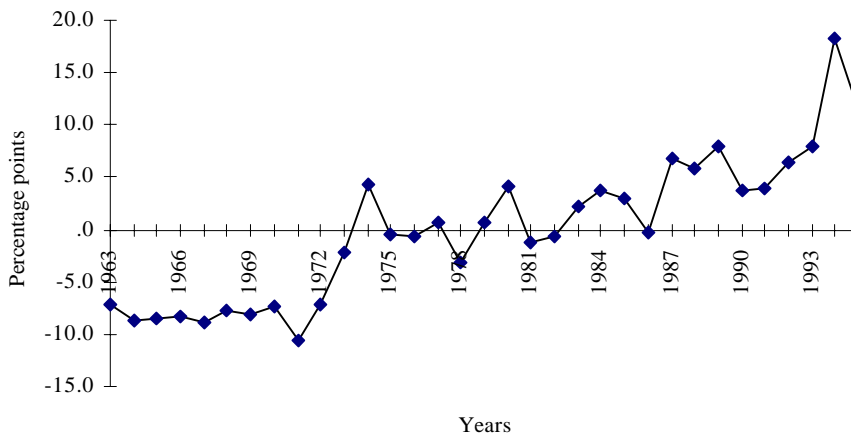


Figure 3:

Sub-Saharan Africa: Deviations from the Cross-Country Average for the Export share (X/GDP), 1963-1995

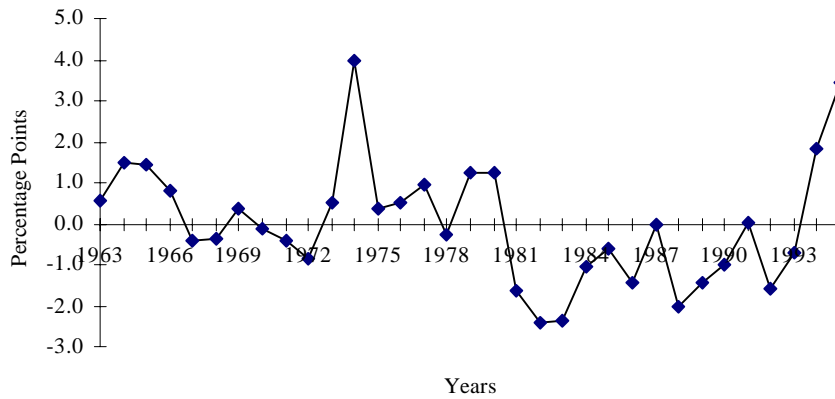
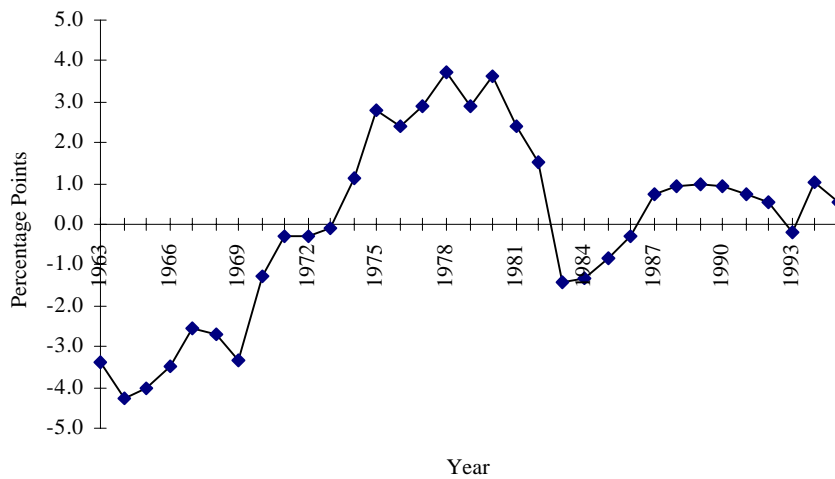


Figure 4:

Sub-Saharan Africa: Deviations from the Cross-Country Average for the Investment Share (I/GDP), 1963-1995



Empirical Evidence on Macroeconomic Policies

The debate over what would be the appropriate macroeconomic strategy for sub-Saharan countries can be clarified by use of a growth model. The equations are estimated across countries and over time.¹⁹ From the perspective of the orthodox approach, growth is derivative from relative prices, which, if they approach to the general equilibrium set that implies optimal allocative efficiency, foster the rate of growth implied by an economy's productive potential. On the other hand, the heterodox approach stresses quantity adjustments: relative prices are important, but most markets in sub-Saharan countries do not operate efficiently. Therefore, 1) unregulated markets are unlikely to generate the 'appropriate' price signals (prices conforming to allocative efficiency), and 2) should the signals be 'appropriate', structural obstacles can prevent private agents from responding to them. For example, it may or may not be that a 'floating' exchange rate would move to a level implying a sustainable balance of payments; if it did so, rigidities in credit, product, and input markets might prevent the quantity responses required for sustainability.

These two perspectives can be investigated by use of a model based upon the Harrod-Domar framework in which the aggregate rate of growth is determined primarily by the rate of investment. If y_w is the warranted (potential) rate of growth, then:

$$(1) \quad y_w = \alpha\beta,$$

where α is the output-capital ratio ($\Delta Y/\Delta K$) and β is the investment rate (I/Y).

The actual investment rate is determined by the desired or target rate:

$$(2) \quad \beta_{(t)} = \beta_{(t-1)} + \gamma[\beta_{(t)}^* - \beta_{(t-1)}]$$

(3)

In this formulation, producers select the desired investment rate, then make a partial adjustment to bring the rate in the previous period to the desired level (if γ is unity, the adjustment is complete in each period). The desired rate is the output-weighted average of private and public sector producers, with the former basing their target on profitability calculations, and the latter on a policy-identified rate of growth. To specify the desired rate of investment, it is assumed that in both sectors increases in the capital stock are import dependent and, therefore, influenced by the availability of foreign exchange, with this approximated by the rate of growth of exports. The rate of growth of exports can be decomposed into the rate of growth of volume (x) and the terms of trade (TT). It is also assumed that inflation has a negative effect on private investment, by discouraging projects with a long gestation period. Thus,

$$\beta_{(t)}^* = \beta_{(t)}^*(x_t, TT_t, p_t)$$

Substituting, the actual rate of growth, y_t , determined by the ex-post investment rate, is:

$$(3a) \quad y_t = \alpha \{ \beta_{(t-1)} + \gamma [\beta_{(t)}^*(x_t, TT_t, p_t) - \beta_{(t-1)}] \}$$

This can be simplified to:

$$(3b) \quad y_t = \alpha \{ [1 - \gamma] \beta_{(t-1)} + \gamma [\beta_{(t)}^*(x_t, TT_t)] \}$$

¹⁹ With forty-three countries and thirty-five years (1961-1995) there are potentially 1500 observations. However, there are many incomplete observations, especially for equations involving the real interest rate.

In the orthodox approach, the quantity adjustments (β and x) and the inflation rate result from changes in relative prices and the rate of money expansion. These are substituted for the quantities they allegedly determine to achieve a ‘reduced form’ equation. To make the model conform more closely to that estimated in a World Bank report on adjustment policies in Africa, the fiscal deficit as a portion of GDP is included as an argument (World Bank 1994, pp. 222). The justification for inclusion is the ‘crowding out’ mechanism: allegedly, increases in the public sector deficit reduce private sector investment. Therefore,

$$(4) \quad y_t = \alpha \{ [1 - \gamma] [\beta_{(t-1)}] + \gamma [\beta_{(t)}^* (e_t, r_t, \text{Df/GDP}, m_t)] \}$$

The variables e_t , r_t , Df/GDP , and m_t are the real exchange rate, the real rate of interest, the fiscal deficit, and the growth of the money supply. For the last variable, a World Bank report uses the rate of growth of the money supply in excess of the rate of growth of output (which it is fashionable to call ‘seignorage’, World Bank 1994, pp. 260-261). Table 2 reports the result of the orthodox specification, estimated using ordinary least squares, across sub-Saharan countries for 1960-1995, with incomplete observations omitted. The performance of the model is unimpressive, not because of the low correlation coefficient, but because of the insignificance of the allegedly explanatory variables. Using the standard ten percent rule,²⁰ only ‘seignorage’ is significant (and of the predicted sign). This variable should be viewed with some suspicion, because it is a composite variable derivative from the simple quantity theory of money. Despite its use in a World Bank report along with the other price variables, its inclusion over-determines the equation. Thus, it is not surprising that the others are non-significant.²¹

A heterodox perspective does not conclude that the non-significant variables necessarily imply that the hypothesised causal links are invalid. They may be invalid, but it is also possible that their links to the quantity variables (e.g., the investment share) are so tenuous and inelastic that the correlations are lost by the conversion to ‘reduced form’. To evaluate the possibility of lost causality, equation 3b is estimated directly, in modified form. A specifically heterodox mechanism is specified: the possibility that the economies might be growth-constrained by restrictive monetary and fiscal policy. Many critics of orthodox stabilisation and adjustment have argued that theory predicts that the emphasis of these programmes on reduction of fiscal deficits and monetary restraint is excessive, constraining economies from their potential growth. This hypothesis is difficult to test empirically outside of a general-equilibrium simulation model. The approach here is to take the real interest rate, lagged one period, as a proxy for demand

²⁰ A variable is judged to be ‘significantly different from zero’ if it has a T-statistic that implies that its probability of being zero is ten percent or less.

²¹ Consider the basic quantity equation:

$$PY = vM$$

where p , y , v and M are the price level, real output, the velocity of money, and the nominal money supply.

If one takes the total derivative, one obtains (all symbols rates of change):

$$p = v + m - y$$

If the velocity of money is constant, then seignorage ($m - y$) is equal to the rate of inflation. Within the orthodox theoretical framework, the rate of inflation should be highly correlated with the real interest rate. If the fiscal deficit is financed through money creation, inflation and the deficit should be correlated. As show below, both appear to be the case for the Sub-Saharan region. Therefore, the equation is inappropriately specified.

compression. It is assumed that the nominal interest rate is an administered price (by Central Banks), used to constrain credit growth. Lower aggregate demand, in turn, depresses the desired rate of investment of the private sector.²² Equation 3a can be rewritten as:

$$(5) \quad y_t = \alpha \{ [1 - \gamma][\beta_{(t-1)}] + \gamma \{ r(r_{t-1})[\beta_{(t)}^*(x_t, TT_t)] \}$$

(6)

The results of the heterodox estimation are given in Table 3, which indicate a considerably better outcome than for the orthodox model. The improvement is not due to the correlation coefficient (which is almost the same as in Table 2), but to the performance of the explanatory variables, all of which are significant and of the predicted sign. The results prompt three important points of interpretation. First, growth appears to be directly quantity constrained, by the rate of growth of exports and the terms of trade (which determine imports).²³ Second, the economies can be interpreted as demand constrained, as approximated by the lagged interest rate.²⁴ Therefore, a pragmatic macroeconomic policy is required, that keeps real interest rates moderate without provoking excessive inflation. The erstwhile Golden Rule of real interest rates should guide policy: short term real interest rates should be managed such that the long run rate is close to the rate of growth of per capita income. This point is developed below.

Of the four variables in the heterodox model, two are subject to direct policy influence, the real interest rate (via the nominal interest rate) and the rate of investment (via public sector investment). These move in reaction to other influences. To construct a model useful for policy assessment, the next step is to expand the model to include all the basic macro relationships: investment, saving, imports, exports, inflation, and the real interest rate.

For the investment equation, a modified accelerator model is used. Consistent with the growth equation, investment is assumed to respond to changes in output in the previous period, constrained by current import availability. It is further assumed that inflation has a negative effect on the private sector element of investment, by fostering a short-term preference for non-productive investments with a rapid turnover.

$$(7) \quad (I/Y)_t = i(y_{t-1}, N/Y_t, p_t)$$

Saving as a portion of GDP is specified as a function of prevailing interest rates, the rate of income growth, and foreign assistance. It is anticipated that the impact of the interest rate will be relatively weak. A large part of saving in sub-Saharan countries is non-monetised and implicit in the act of investment, such as improvement of agricultural

²² In this specification, the interest rate does not impact directly on investment (modelled below) as a relative price, but through aggregate demand on expectation of future sales.

²³ Note that the low coefficient does not imply a low elasticity. The coefficient is not the direct elasticity of GDP growth with respect to export growth, because of the intervention of the adjustment coefficient (γ) and the specified mechanism of constrained demand ($r(r_{t-1})$).

²⁴ For example, if the adjustment coefficient were .9, it is implied that a ten percent increase in the real interest rate would lower the growth rate by one percent. While this may seem a small effect, it can prove quite substantial. In 1995 the real Central Bank rate in Mozambique was approximately eleven percent in 1995, and rose to thirty-seven percent in 1996, an increase of 236 percent. The coefficient on the real interest rate in Table 6 implies that had the real interest rate remained at eleven percent, GDP growth for 1996 would have been eight percent instead of 6.5 percent (see Weeks 1998).

land by smallholders. The rate of growth of GDP is included as an argument because of the low absolute level of per capita income in the sub-Saharan countries. Thus, a function non-homogeneous with respect to the level of income is assumed. The inclusion of external assistance is to test for the possibility that aid decreases saving by reducing the pressure for governments to increase public sector revenues (a hypothesis which is confirmed).

$$(8) \quad (S/Y)_t = s((y_{t-1}, r_t, A/Y_t))$$

The share of imports and exports in GDP are assumed to be functions of the real exchange rate (measured such that an increase reflects devaluation). It is further assumed that the import share increases with the rate of growth, and, holding the exchange rate constant, exports rise with an improvement in the terms of trade.

$$(8) \quad (N/Y)_t = n(y_{t-1}, rer_t)$$

$$(9) \quad (X/Y)_t = x((rer_{t-1}, TT_t))$$

Inflation is specified as implied by the quantity theory of money: $PY = vM$, with a two period adjustment to changes in both output and the money supply. From the total derivative of the quantity equation, with all variables in rates of change, one obtains:²⁵

$$(10) \quad p_t = p(y_t, y_{t-1}, m_t, m_{t-1})$$

Finally, the real interest rate, in the absence of administrative intervention, is a function of the fiscal deficit before external grants and changes in the money supply (with the deficit defined as negative when expenditure exceeds revenue).

$$(11) \quad r_t = r([Df/GDP]_t, m_{t-1})$$

The model is summarised in Table 4, where shaded boxes indicate the variables used in the simulation exercise below. The coefficients and test statistics are given in Table 5. In addition to the heterodox specifications, other variables were tested for their impact. When these were significant, the relevant cell is bordered, but not shaded. The implications of the model can be summarised as follows. Growth of GDP is quantity-driven (by investment and exports) and demand constrained (implied by the negative coefficient on the interest rate). Further, growth receives a one-off boost from an improvement in the terms of trade. Investment is also quantity-driven, not determined by relative prices (the interest term is non-significant). The most important influence on investment is the rate of growth itself (lagged), as the accelerator theory predicts. Two factors have a negative impact on investment: inflation (affecting expectations) and external assistance. As with saving, there appears to be a trade-off between the motivation to invest and external assistance. This might be explained by the shift in much donor assistance from project aid to balance of payments support. The important result for the external sector is that both imports and exports are relatively inelastic with respect to the real exchange rate: a devaluation of in the real exchange rate of one

²⁵ If the velocity of money is constant, then the constant term should be non-significant. If money is neutral and over the two periods adjustment is complete, the sum of the output coefficients should be minus unity and the sum of the money supply coefficients plus unity.

hundred percent would decrease the import share by ten percent, and increase the export share by only five percent.

Inflation conforms to the quantity equation, but money is not neutral. The predicted coefficients for changes in output and the money supply are minus one and plus one, respectively. When the coefficients for years t and $t-1$ are combined, the elasticity of inflation with respect to output is minus .68, and with respect to the money supply .73. This implies that at full capacity ($y = 0$), a ten percent increase in the money supply increases inflation by just over seven percent. An alternative specification, in which the fiscal deficit is used in place of changes in the money supply (which assumes the deficit is monetised) yields an inferior result on the basis of theoretical criteria.²⁶ This judgement is supported by a simple regression that shows the deficit and money growth not to be significantly correlated. The non-neutrality of money is manifested in the real interest rate. Were money neutral, the real interest rate should not be correlated with changes in the nominal stock of money. The positive coefficient on the deficit supports the orthodox view that increased government borrowing pushes up interest rates. However, since investment is not significantly correlated with the real interest rate, 'crowding out' is not implied.

To pursue policy implications, we first consider elasticities between growth and the trade balance, on the one hand, and key prices and quantities, on the other. Because investment is a function of changes in GDP, the model maintains a constant rate of growth only for a value of zero. Thus, one cannot calculate equilibrium elasticities as such, from one stable growth rate to another. In place of this, Table 6 presents elasticities after the lagged variables have imparted their impact, on the macroeconomic condition that the internal and external balances are equal ($[X-M] = [I - S]$). In what follows, we assume a ten percent increase in each variable in turn. As expected, a *ceteris paribus* increase in the money supply raises the rate of growth, via a decrease in the real interest rate, by a meagre one percent, and it also causes a minor increase in the trade deficit. By contrast, an increase in the investment share (e.g., via more public sector investment) increases growth by a matching ten percent. With regard to relative prices, a rise in the real interest rate reduces growth by slightly over one percent, reflecting demand compression.

One of most important implications of the model for policy purposes is that a real devaluation is contractionary, by two percent for ten-percent devaluation. While devaluation increases the export share in GDP (imparting a growth stimulus through the rate of growth of exports), this is more than cancelled by its depressing effect on imports. The reduction in imports lowers the investment share, thus the GDP growth rate.²⁷ At the same time, devaluation has a strong effect on improving the trade balance (by seven percent). The effect of a change in the fiscal deficit, implied by an increase in government investment, on growth is virtually nil. The terms of trade, over which the government has no control, have a strong growth-enhancing effect. A ten percent improvement results in a twenty percent increase in the growth rate in the initial period, then a three percent increase subsequently (when the terms of trade remain at the higher level, but the change is zero). Finally, foreign assistance has a small negative impact on growth, through its depressing effect on both saving and investment.

²⁶ Most important, the implied elasticity of inflation with respect to the money supply drops below .5, and output becomes non-significant. Both contradict the quantity theory's prediction.

²⁷ Other mechanisms by which a devaluation might be contractionary are discussed by Van Wijnbergen (1986).

Other important elasticities are given in the lower part of the table. *A ceterius paribus* increase in the growth rate (an upward, parallel shift in the growth equation) of ten percent (e.g., from 3.0 to 3.3) results in a three percent deterioration in the trade balance, threatening the sustainability of the increase. When all feedbacks are considered, saving is highly inelastic with respect to the interest rate (an elasticity of .06). Taking the inflation equation alone, a ten-percent change in the money supply results in a 7.3 percent increase in the price level. However, because changes in the money supply affect the rate of growth (through the interest rate), the elasticity with all feedbacks is almost unity.

These feedback elasticities imply a heterodox policy package for growth. Let the analysis begin with a 'typical' sub-Saharan country with a GDP growth rate of three percent, trade deficit of six percent of GDP, a fiscal deficit of five percent, and an inflation rate of twelve percent.²⁸ The policy goals are to increase the growth rate, reduce the trade deficit, and lower the rate of inflation. Table 7 presents the relevant policy mix. To reduce the rate of inflation, the government acts to lower the rate of money growth. This will be associated with an elasticity close to unity with all feedbacks, with little effect on output. To reduce the trade deficit, the exchange rate is devalued, using a 'crawling peg'. These two effects together result in a contraction of the economy. To offset the contraction, the Central Bank administers a low, but positive real interest rate, of two to three percent. A low real interest rate would have little effect on the saving rate. More important for increasing saving would be to increase the growth rate. Simultaneously with these three policy measures, the central government would increase public investment to stimulate growth directly. The coefficients of the model predict that a combined ten percent change in money growth (decrease), the share of public investment in GDP (increase), and the real exchange rate (devaluation), would increase the growth rate by seven percent (from three to 3.2 percent), reduce inflation by nine percent (to below eleven percent), and narrow the trade gap by eight percent (to 5.5 percent of GDP). In summary, the packages involve monetary restraint, fiscal expansion, and purposeful and controlled devaluations.

Orthodox objections to such a policy combination might focus on the fiscal deficit (which increases from five to 5.5 percent of GDP), because of its alleged impact on inflation or its 'crowding out' effect. With regard to the first, the model indicates that the deficit is not correlated with money growth, casting doubt upon the inflation mechanism. If the change in the money supply is replaced by the fiscal deficit in the inflation equation (see Annex), it proves to be correlated with changes in the price level. However, the elasticity is low, and the deficit is inter-correlated with changes in output. This indicates that the relevant causality is from growth to the deficit, with the former generating an increase in public sector revenues. As for 'crowding out', while deficits do promote higher real interest rates, the impact of these on investment is non-significant.

These relationships do not contradict orthodox theory; rather, they indicate that policy should be formulated upon an empirical evaluation of their practical importance. It may be that deficits foster inflation, but the mechanism is weak, and the impact of inflation on growth minor, as demonstrated in recent World Bank research (Bruno & Easterly 1995). Indeed, several of the orthodox parables contain a grain of truth:

²⁸ These are the cross-country averages for 1970-1995 (for those countries and years with complete observations).

devaluation reduces the trade deficit (but is contractionary); expansion of the money supply generates inflationary pressures (but high real interest rates reduce GDP growth); and deficits increase interest rates (but the impact on investment is non-significant). The problem with the orthodox parables is that they tend to be presented *ceterius paribus*, with their feedback effects neglected.

A pragmatic application of macroeconomic principles should be based upon the characteristics of sub-Saharan economies. The relevant characteristics for policy making are several. First, infrastructure investment is of considerably greater importance in these economies than in more developed middle-income countries. As a result, public sector investment plays a leading role in stimulating growth. Private sector investment, both domestic and foreign, is sensitive to the growth rate, so growth-enhancing policies are simultaneously investment-enhancing. Second, due to the low per capita income of the countries, saving as a share of GDP rises with increases in the growth rate. Much of saving is unresponsive to interest rates, especially in the household sector, where it is identical with the act of investment.

Second, for the trade sector imports and exports tend to be insensitive in the short run to exchange rates. For imports this results from the low level of industrialisation, implying a limited scope for substitution of domestic for imported inputs and capital goods. As a result, the negative income effect of devaluation tends to overwhelm the positive substitution effect. The net effect is to discourage investment. This provides a further argument for a leading role for public sector investment, which can be administratively designed to be import-saving (e.g., labour-intensive public works).

Third, financial markets remain at a relatively primitive stage of development. In particular, governments typically lack the financial instruments to 'sterilise' foreign exchange flows. As a result, the movement of unregulated exchange rates can go contrary to the goal of export promotion, especially if there are substantial inflows of development assistance and foreign investment.²⁹ The underdevelopment of financial markets also implies that interest rates tend to be administered, by the private sector if not by the Central Bank. If public sector bonds are a poor substitute for foreign bonds, and if the private banking sector is relatively concentrated, then interest rates will tend to reflect market power rather than allocative efficiency. In this circumstance, it would be appropriate for the government, through the Central Bank, to administer interest rates consistent with its growth policy.

To complete the discussion of the two policy frameworks, Table 8 presents the orthodox and heterodox applications of the basic policy measures. With regard to money growth, the two approaches agree: money growth should be constrained to reduce inflationary pressures. However, this is easier to recommend than to implement. If domestic and foreign capital flows are deregulated, and if the monetary authorities lack the instruments of effective control (e.g., a market for public sector bonds), the scope for directly managing the money supply is limited. For the orthodox framework, interest rates should be used in place of open market-type operations for restriction of money growth, but the heterodox package rejects this. In the latter, interest rates should be consistent with the government's growth objective, not an instrument of demand compression. Thus, implicitly, the heterodox framework is tolerant of moderate inflation

²⁹ This is the case for Mozambique. See Weeks 1998.

if interest rates are the only effective mechanism to restrict increases in the money supply. Both approaches favour real devaluation; the difference lies in the mechanism to achieve it. In the orthodox framework, the exchange rate would be deregulated, while in the heterodox approach it would be administered (regulated) to ensure real devaluation. This intervention to devalue the exchange rate is especially important if trade has been liberalised. Trade deregulation tends to bring internal prices of tradeables in line with 'border' prices (the so-called Law of One Price). If product markets are relatively efficient, this tendency will negate the devaluation; i.e., the purpose of the devaluation in the heterodox approach is cut the price of exportables below their world price, and lower the domestic price of importables below border prices. By repeated, moderate devaluations, the real exchange rate stays ahead of the internal price adjustment forced by the Law of One Price. Finally, the key element in the growth strategy is an increase in government investment. While the orthodox approach is not opposed to this in principle, it places priority on reduction of the fiscal deficit; in contrast, the heterodox approach would sacrifice deficit reduction for the growth-generating effect of increased investment.

Table 2: OLS-Estimated Growth Model, '**Orthodox**'
(aka World Bank) across Sub-Saharan Countries, 1971-1995
[dependent variable: growth of GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.05153	1.582	.115
[Fiscal deficit/GDP]t	.0035	.049	.961
Δ [real exchange rate]t	.0322	1.630	.104
[Seignorage ($m - y$)]t	-.1042	-4.276	.000
[Real interest rate]t	-.0066	-.014	.851
Adjusted R ²	.1343		
F-statistic	2.25		
	(@ .001)		
Degrees of freedom	283		
Countries with significant shift coefficients (.10 or less): two (Omitted, Benin; no complete observations for Angola, Madagascar, Mozambique, Zaire)			

Note: All variables in logarithmic form.

Table 3: OLS-Estimated Growth Model, '**Heterodox**'
across Sub-Saharan Countries, 1971-1995
[dependent variable: growth of GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	-.0581	-3.748	.000
[Investment/GDP]t	.0291	5.509	.000
Δ [Export volume]t	.0252	2.573	.010
Δ [Terms of Trade]t	.0610	3.865	.000
[Real Interest Rate] (t-1)	-.0627	-3.661	.000
Adjusted R ²	.1306		
F-statistic	14.76		
	(@ .000)		
Degrees of freedom	532		
Without country dummies			

Note: All variables in logarithmic form.

Table 4: Summary of OLS Modelling Results, sub-Saharan Countries

<u>Dependent:</u> <u>Independent:</u>	<u>GDP</u> growth (<i>x</i>)	<u>Investment</u> GDP (<i>I/Y</i>)	<u>Imports</u> GDP (<i>N/Y</i>)	<u>Exports</u> GDP (<i>X/Y</i>)	<u>Saving</u> GDP (<i>S/Y</i>)
Real (quantity) variables:					
GDP growth (<i>y</i>)		positive & significant (t-1)	positive & significant (t-1)		positive & significant (t-1)
Investment/GDP (<i>I/Y</i>)	positive & significant (t)				
Export growth (<i>y</i>)	positive & significant (t)				
Imports/GDP (<i>N/Y</i>)		positive & significant (t)			
Aid/GDP (<i>A/Y</i>)	non-significant	negative & significant (t)	positive & significant, correlated with RER		negative & significant (t-1)
Relative prices & money variables					
Terms of trade (TT)	first difference, positive & significant (t)			positive & significant	
Real interest rate (<i>r</i>)	negative & significant (t-1)	non-significant (t-1)			positive & significant (3 yr aver)
Real exchange rate (<i>rer</i>)	non-significant		negative & significant (t)	positive & significant (t-1)	
Inflation (<i>p</i>)	non-significant	negative & significant (t)			
Money growth (<i>m</i>)	positive & significant				
Seignorage (<i>seign</i>)	negative and significant (t)				
Fiscal deficit (<i>Df/Y</i>)	non-significant	negative & significant (correlated with <i>p</i>)			
Interpretation:	Growth is demand constrained, not relative price constrained	Investment is stimulated by growth, constrained by imports	imports determined by growth, relatively inelastic with respect to exchange rate	exports determined by relative prices, terms of trade more important than exchange rate	saving determined by growth, inelastic with respect to interest rate

Table 4 (continued)

Dependent: Independent:	Inflation (p)	Real interest rate (r)	$(X - N)$ GDP	Money growth (m)
Real (quantity) variables:				
GDP growth (y)	negative & significant (t, t-1)		negative & significant (t-1)	
Investment/GDP (I/Y)				
Export growth (x)				
Imports/GDP (N/Y)				
Aid/GDP (A/Y)	positive & significant (t)		negative & significant (t-1)	non- significant
Relative prices & money variables				
Terms of trade (TT)			positive & significant (t)	
Real interest rate (r)	negative & significant (t)			negative & significant (t-1)
Real exchange rate (rer)			positive & significant (t)	
Inflation (p)				
Money growth (m)	positive & significant (t, t-1)	positive & significant (t)		
Seignorage ($seign$)	positive & significant (t)			
Fiscal deficit (Df/Y)	positive & significant, but inferior specification	positive & significant (t-1)		non- significant
Interpretation:	money is not neutral	not 'crowding out' because $I/Y = f(r)$ not statistically significant	aid worsens the trade balance (equation not used in simulation)	money growth is not correlated with the fiscal deficit

Note: Shaded boxes indicate relationships used in simulations.

Table 5: Summary of Macroeconomic Model for the Sub-Saharan Countries, 1970-1995
(all variables in logarithmic form)

Dependent variable	Constant	Independent Variables:				
GDP growth	-.0581 (.000)	$+0.0291(Y/I)_t$ (.000)	$+0.0252(x)_t$ (.010)	$+0.0610(\Delta TTd)_t$ (.000)	$-0.0627(r)_{t-1}$ (.000)	$R^2 = .1306$ $F = 14.76$ $DF = 532$
Inv/GDP	1.5116 (.000)	$+1.2080(y)_{t-1}$ (.000)	$+0.3999(M/Y)_t$ (.000)	$-0.2234(p)_t$ (.051)	$-0.0556(A/Y)_t$ (.023)	$R^2 = .6844$ $F = 25.98$ $DF = 491$
Saving/GDP	.2071 (.000)	$+0.2605(y)_{t-1}$ (.002)	$+0.0911(r)_{t3}$ (.023)	$-0.0537(A/Y)_t$ (.000)		$R^2 = .3062$ $F = 68.56$ $DF = 466$
Imports/GDP	3.5884 (.000)	$+0.4251(y)_{t-1}$ (.003)	$-0.1012(RER)_t$ (.000)			$R^2 = .7252$ $F = 75.29$ $DF = 1136$
Exports/GDP	.3217 (.175)	$+0.0530(RER)_{t-1}$ 1 (.021)	$.3033(TT)_t$ (.000)			$R^2 = .7376$ $F = 74.00$ $DF = 999$
Inflation	.0238 (.000)	$-0.3994(y)_t$ (.000)	$-0.2888(y)_{t-1}$ (.000)	$+0.4034(m)_t$ (.000)	$+0.3315(m)_{t-1}$ (.000)	$R^2 = .5024$ $F = 254.63$ $DF = 1001$
Real Interest Rate	.0431 (.000)	$+0.2340(Df/Y)_{t-1}$ 1 (.009)	$-0.4723(m)_{t-1}$ (.000)			$R^2 = .3996$ $F = 110.79$ $DF = 333$

Notes:

1. Model closure condition is: $[(I/Y) - (S/Y)] + [(X/Y) - (M/Y)] = 0$.
2. Numbers in parenthesis give the probability that the coefficient might be zero.
3. The correlation coefficients are adjusted for degrees of freedom.

Table 6: OLS Implied Elasticities between Variables for the Sub-Saharan Region
(direct and indirect effects included)

Change in: with respect to:	GDP growth rate	Partial	Trade balance	Comments:
Money supply	.113		-.030	
Investment/GDP	1.052		-.054	
Real interest rate	-.128		.004	
Real exchange rate	-.194		.671	
Deficit	-.001		.001	
Terms of trade	.277	2.167	1.105	<<[Partial: after one period, ΔTT zero in 2nd period]
Foreign aid	-.059			
GDP growth rate			-.268	
real interest rate	<u>saving</u> .062			
money supply	<u>Inflation</u> .897	.734		Partial: output constant

Notes: A trade surplus and a fiscal surplus as defined as positive. An increase in the exchange rate indicates a devaluation. Consistent with closure rule, $(I - S) = (X - M)$.

Table 7: An Expansionary Policy Mix for Sub-Saharan Countries
(based on OLS coefficients)

Policy Measure	First round impact	Lagged impact & net effect	Commentary
reduce money supply	lowers inflation raises real interest rate	stimulates investment (via inflation), lowers growth (via interest rate) net GDP effect: negative ($\epsilon_y = .113$)	Effective if goal is to reduce inflation ($\epsilon_{p,m} = .897$) Inflation policy
devalue	increases export share lowers import share	stimulates growth (via exports), lowers trade deficit, reduces investment (via imports), net GDP effect: negative ($\epsilon_y = -.194$)	Effective if goal is to reduce trade deficit ($\epsilon_{td,rer} = .671$) Trade policy (crawling peg)
fix a low real interest rate (e.g., 2-3 %)	reduces demand constraint on the economy (assuming the rate is lowered)	if lowered, negative effect on saving, net GDP effect: positive ($\epsilon_y = -.128$)	Effective if goal is to increase growth, Growth policy
increase government investment	directly increases growth rate, increases deficit	increases interest rate (lowers growth) net GDP effect: strongly positive ($\epsilon_y = 1.052$)	Effective if goal is to increase growth, Growth policy

Table 8: Summary of Policy Packages

Policy Measure	Orthodox (WB/IMF)	Heterodox
reduce money supply	Yes	Yes
fix a low real interest rate (e.g., 2-3 %)	No	Yes
devalue	Yes in principle, in practice accept the result of a float	Yes , through administered exchange rate
increase government investment	No invariant rule, in practice priority given to deficit reduction	Yes , at the expense of deficit reduction if necessary

Conclusion

In no region of the developing world have neoliberal policy reforms been so unsuccessful in stimulating recovery as in Africa south of the Sahara. There is an urgent need for policy formation to move from ideological generalisations to pragmatism. The structural characteristics of the region and empirical evidence indicate that policy should focus upon identifying effective forms of state interventions, rather than emphasis upon restricting the role of governments. In the past governments in the region engaged in many activities either ill-advised or beyond their capacity. But the time has come to move from the dismantling of the state to fostering and extending its positive role, a change recognised in rhetoric by the World Bank (World Bank 1997). Further deregulation and restriction of government action would not produce a growth performance consistent with expanding employment and improving livelihoods. A less ideological and more growth-focused macroeconomic policy is essential to a new policy consensus. While this has been conceded in principle by the Chief Economist of the World Bank (Stiglitz 1998), it has yet to have its impact on the policies of the multilaterals in Sub-Saharan Africa.

The first step towards an employment-generating and poverty-reducing strategy is faster growth. No matter how often it is asserted, deficit cutting, exchange rate liberalisation, and high real interest rates do not constitute a growth strategy. Were stimulating growth this simple, the sub-Saharan countries would have recovered long ago from their decades of stagnation and decline (Mosley 1995). Adjustment policies, as they are currently formulated for the countries of the region, constrain growth at the macro level. This might be justified were the region characterised by high inflation and other indicators of chronic instability. Except for a few countries, inflation is not rampant in across the sub-Sahara; on the contrary, prior to the adjustment period the region-wide average rarely rose above fifteen percent. The problem in the Sub-Saharan region has been slow growth and lack of export diversification, not macroeconomic instability.

Statistical Annex

This annex provides the details of the regression equations reported in Table 5. All equations are estimated using two World Bank data bases on CD-ROM: *World Development Indicators 1995* ('STARS') and *World Development Indicators 1997*. Degrees of freedom vary across equations because of missing observations.

Table A1:
OLS Estimated for Share of Investment in GDP
across Sub-Saharan Countries, 1971-1995
[dependent variable: share of investment in GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	1.5116	8.813	.000
Δ [GDP] (t-1)	1.2080	5.354	.000
[Imports/GDP]t	.3999	.8.334	.000
[Inflation]t	-.2234	-1.959	.051
[Aid/GDP]t	-.0556	-2.278	.023
[Real Interest rate] (t-1)	-.0300	-.244	.8075
Adjusted R ²	.6844		
F-statistic	25.98		
Degrees of freedom	491		
Countries with significant shift coefficients (.10 or less): twenty-two (Omitted, Benin; no complete observations for Angola, Madagascar, Mozambique, Zaire)			

Note: All variables in logarithmic form.

Table A2:
OLS-Estimated Model for Saving in GDP
across Sub-Saharan Countries, 1971-1995
[Dependent variable: (Saving)/ GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.2071	21.394	.000
Δ GDP (t-1)	.2605	3.174	.002
[real interest rate] (3 year average, t, t-2)	.0911	2.276	.023
[Aid/GDP](t-1)	-.0537	-13.990	.000
Adjusted R ²	.3062		
F-statistic	68.56		
Degrees of freedom	466		
without country dummies			

Table A3:
 OLS-Estimated Model for Imports as a Share of GDP,
 across Sub-Saharan Countries, 1971-1995
 [Dependent variable: imports as a share of GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	3.5884	33.360	.000
Δ [GDP](t-1)	.4251	2.941	.003
[Real exchange rate](t)	-.1012	-5.593	.000
Adjusted R ²	.7252		
F-statistic	75.29 (@ .000)		
Degrees of freedom	1113		
Countries with significant shift coefficients (.10 or less): twenty-nine (Omitted, Benin; no complete observations for Angola)			

Note: All variables in logarithmic form

Table A4:
 OLS-Estimated Model for Exports as a Share of GDP,
 across Sub-Saharan Countries, 1971-1995
 [Dependent variable: Exports as a share of GDP]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.3217	1.359	.175
[Real exchange rate] (t-1)	.0530	2.316	.021
[Terms of Trade]t	.3033	7.811	.000
Adjusted R ²	.7376		
F-statistic	74.00		
Degrees of freedom	999		
Countries with significant shift coefficients (.10 or less): thirty-one (Omitted, Benin; no complete observations for Angola)			

Note: All variables in logarithmic form.

Table A5:
 OLS-Estimated Model for Inflation,
 across Sub-Saharan Countries, 1971-1995
 [Dependent variable: change in the GDP deflator]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.0238	4.475	.000
Δ [GDP](t)	-.3994	-7.301	.000
Δ [GDP](t-1)	-.2888	-5.38	.000
[sum]	[-.6882]		
Δ [Money](t)	.4034	21.971	.000
Δ [Money](t-1)	.3315	17.655	.000
[sum]	[.3970]		
Adjusted R ²	.5024		
F-statistic	254.63		
	.000		
Degrees of freedom	1001		
without country dummies			

Note: All variables in logarithmic form.

Table A6:
 OLS-Estimated Model for the Real Interest Rate,
 across Sub-Saharan Countries, 1971-1995
 [Dependent variable: the real interest rate]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.0431	4.681	.000
Deficit/GDP (t-1)	.2340	2.624	.009
Money Growth (t)	-.4723	-14.696	.000
Adjusted R ²	.3959		
F-statistic	110.79		
Degrees of freedom	333		
without country dummies			

Note: All variables in logarithmic form.

Table A7:
 OLS-Estimated Model for Inflation (Quantity Theory),
 across Sub-Saharan Countries, 1971-1995

[Dependent variable: change in the GDP deflator]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	-.0349	-1.157	.248
[ΔGDP](t)	-.3189	-.4.921	.000
[ΔGDP](t-1)	-.2502	-4.047	.000
[sum]	[-.5691]		
[ΔMoney](t)	.3336	14.761	.000
[Δmoney](t-1)	.0011	11.102	.000
[sum]	[.3347]		
[Aid/GDP](t)	.0243	3.002	.003
Adjusted R ²	.6148		
F-statistic	26.36		
Degrees of freedom	655		
Countries with significant shift coefficients (.10 or less): fourteen (Omitted, Benin; no complete observations for Angola)			

Note: All variables in logarithmic form.

Table A8:
 OLS-Estimated Model for Inflation,*
 across Sub-Saharan Countries, 1971-1995

[Dependent variable: change in the GDP deflator]

<u>Variable</u>	<u>Coefficient</u>	<u>T-statistic</u>	<u>Significance</u>
Constant	.1026	1.507	.133
[ΔGDP](t)	-.1650	-1.805	-.019
[ΔGDP](t-1)	-.0750	-.858	-.858
[Deficit/GDP](t)	.2358	2.122	.0345
Adjusted R ²	.4018		
F-statistic	8.47		
Degrees of freedom	405		
Countries with significant shift coefficients (.1 or less): six (Omitted, Benin; no complete observations for Angola, Mozambique & Zaire)			

*Tests the hypothesis that the fiscal deficit is monetised.

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