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**TMD DISCUSSION PAPER NO. 10**

**MACROECONOMIC ADJUSTMENT AND  
AGRICULTURAL PERFORMANCE IN  
SOUTHERN AFRICA: A QUANTITATIVE OVERVIEW**

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## **Abstract**

This paper describes, in quantitative terms, the macroeconomic adjustments effectively implemented and accompanying agricultural and overall economic performance, particularly since 1980, in four low-income countries in Southern Africa, namely, Malawi, Tanzania, Zambia, and Zimbabwe. Because the economic effects of macroeconomic adjustment have been confounded by the 1992 drought that caused an unprecedented disruption of agricultural production and trade in the region, a separate discussion of the post-1991 policy developments and economic performance in the four study countries is also given. Annual data published by the World Bank, IMF and FAO are used. Significant differences are found in the macroeconomic policy and agricultural performance indicators, which can be attributed to the differing nature and severity of the exogenous shocks (both internal and external) that buffeted the four economies during the period.

## INTRODUCTION

The stylized facts of external and macroeconomic developments in Sub-Saharan Africa (SSA) over the last two decades distinguish among three basic phases.<sup>1</sup> First, during 1973-79, SSA countries benefited from a significant improvement in their external terms of trade, which was accompanied by large increases in government expenditures, expansionary monetary policy, intensified trade and foreign exchange restrictions, and increasingly overvalued real exchange rates. The second phase, from 1980 to 1984, was characterized by a deterioration in the external economic environment occasioned by the recessionary conditions in developed countries, declining world commodity prices, and a sharp rise in international interest rates; adjustment efforts were initiated in some countries to alleviate the macroeconomic imbalances during this "crisis period," but the policy reform process was quickly reversed and little progress was achieved. In the subsequent "adjustment period" marking the third phase, many SSA countries undertook significant macroeconomic policy reforms in the face of an even more hostile external environment, as represented by the average decline in the terms of trade by some 40 percent during 1985-92.

It remains a contentious issue whether Sub-Saharan Africa has recovered from the "disastrous economic performance" in the 1980s (Mosley and Weeks 1993). Average income per capita in the region (based on World Bank data) exhibits an inverted U-curve: in 1987 US dollars, it rose from 360 in 1971 to the highest level of 480 in 1980, followed by an almost continuous decline to 340 in 1991. However, such average regional

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<sup>1</sup> As characterized, for example, in Nsouli (1993).

performance conceals significant differences among individual SSA countries, owing to dissimilarities in their initial conditions and structural characteristics as well as in the policy choices made. The latter includes macroeconomic adjustment, by which is commonly meant the implementation of macroeconomic policy reforms--with or without the active support of the two Bretton Woods institutions--as a response to the unfavorable external shocks and as a means of promoting stable and sustainable growth.

This paper provides a quantitative overview of the macroeconomic adjustments effectively implemented and accompanying economic performance, particularly since 1980, in four low-income countries in Southern Africa, namely, Malawi, Tanzania, Zambia, and Zimbabwe. Considering that these four economies are heavily agricultural, how the agricultural sector has performed is of analytical and policy interest. Because the economic effects of macroeconomic adjustment have been confounded by the 1992 drought that caused an unprecedented disruption of agricultural production and trade in the region, a separate discussion of the post-1991 policy developments and economic performance in the four study countries is given towards the end of the paper.

#### **EXTERNAL ENVIRONMENT AND MACROECONOMIC GROWTH**

Developed countries account for a dominant share in the foreign trade and capital transactions of most developing countries (LDCs); hence, the level of economic activity in the former countries is a major determinant of the external influence on LDC economic performance. In terms of the comparative growth rates of developed or "high-income" economies for 1970-

80 and 1980-91 as shown in Table 1, developing countries faced a more favorable external economic environment in the seventies than in the subsequent period. This would explain, but only in part, the (proportionately more significant) slowdown in economic growth after 1980 among low- and middle-income economies and among SSA countries.

It can also be seen from Table 1 that more rapid GDP growth was achieved during 1980-91 relative to the preceding period by developing countries in East Asia and Pacific as well as in South Asia. This has been attributed, in the case of the East Asian countries, to prudent macroeconomic management and market-oriented policies adopted (Balassa 1989), enhancing their ability not only to attract foreign capital but also to realize high returns on domestic investment and to increase export earnings. The general acceleration in GDP growth among South Asian countries in the 1980s, on the other hand, was stimulated in part by marked increases in public expenditure (leading in some cases to unsustainable macroeconomic imbalances) and in part by a gradual policy emphasis on economic efficiency and increasing willingness of government to undertake deregulatory policies and to expand private-sector participation in the economy (Bautista 1993).

For small economies with no monopoly or monopsony power in world markets, the external terms of trade (TOT) represents a principal mechanism for transmitting the effects of changes in the international economic environment to domestic producers. Table 2 shows the annual TOT changes for the four Southern African countries averaged over each of the three subperiods corresponding to Sub-Saharan Africa's three basic phases during 1973-91 as described earlier. It would appear that only Tanzania

conforms to the above characterization of SSA terms of trade that improved during 1973-79, worsened during the crisis period 1979-84, and further deteriorated during the adjustment period 1985-91. In sharp contrast, for Zambia and Zimbabwe, the most rapid TOT decline occurred during 1973-79, which gave way to an increasing trend (especially for Zambia) during 1985-91. Unfortunately for Malawi, its foreign terms of trade continued to deteriorate over the entire period. The evolution of the terms of trade for these four countries during 1973-91 was significantly influenced by the nonsynchronous changes in world prices of their principal exports (coffee for Tanzania, copper for Zambia, tobacco for Malawi and Zimbabwe, and cotton for Tanzania and Zimbabwe), of petroleum products (which are heavily imported in each country), and of developed-country manufactures.

Other things remaining the same, an improvement (a decline) in the external terms of trade increases (reduces) the country's capacity to import, which is favorable (unfavorable) to real GDP and export growth--particularly in foreign exchange-constrained economies. Exports will be affected also by the associated changes in domestic relative prices, including those arising from "Dutch disease" effects.<sup>2</sup>

Average growth rates for real GDP and exports in each of the four study countries during the three subperiods are presented in Table 3. Also included in the table are the subperiod GDP growth rates for Sub-Saharan Africa; notably, they indicate that economic growth in SSA countries as a group accelerated during 1984-91 from the putative crisis

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<sup>2</sup> It has been observed that some diversification of the primary export base took place in many SSA countries during the 1980s owing to the significant decline in world prices of traditional export products (Helleiner 1994:457).

period of 1979-84 but it was not nearly as rapid as that recorded during 1973-79 (2.6 vs. 4.1 percent). Although not perfectly correlated, high GDP growth rates are associated with high export growth rates. Export growth is of course a crucial determinant of an LDC's capacity to import, which is necessary for overall growth, and also of its ability to service foreign debt.

It is worth noting from Table 3 that Malawi and Tanzania did register significant improvements (in terms of the two measures of economic performance) from 1979-84 to the following subperiod through 1991. The outcomes for Zambia and Zimbabwe were mixed. Also, in the latter two countries, the lowest GDP and export growth rates were not registered during 1979-84, which may then not qualify as a crisis period for either country.

Comparison of the corresponding entries in Tables 2 and 3 reveals a general lack of positive association between TOT changes on the one hand and either GDP or export growth on the other, across countries and over time. Despite the continuously negative trend in Malawi's terms of trade, its GDP and merchandise exports grew remarkably rapidly. Also, Tanzania suffered its worst TOT decline during 1984-91 when the domestic economy and exports were expanding at relatively high rates.

There are of course other influences on a country's GDP and exports, apart from the external terms of trade, and it would appear that their effects have not been dominated by the observed TOT changes. Among these other factors that affect GDP and export performance are the macroeconomic adjustment measures implemented in the study countries during the period (especially since the mid-1980s) in response to the external shocks as



well as to redress past inappropriate policies that led to macroeconomic imbalances and slow (or negative) growth.

### **MACROECONOMIC POLICY REFORMS**

Macroeconomic adjustment programs typically consist of a combination of (1) demand-reducing policies (often associated with macroeconomic stabilization), in particular contractionary fiscal and monetary policies, and (2) supply-enhancing policies (often associated with structural adjustment), in particular shifts in trade and exchange rate policies aimed at improving economywide resource allocation and exploiting more fully the gains from trade. While there are similarities in the macroeconomic policy reforms adopted in different SSA countries, the extent or severity of a given reform measure in both design and implementation, as well as its economic effects, would differ, depending on individual-country circumstances.

Macroeconomic adjustment programs were initiated in the four Southern African countries at different times since the early 1980s. Most of these adjustment efforts were assisted by the financial support of the World Bank and IMF.

Malawi started a series of adjustment measures in the early 1980s, aimed at stabilizing the balance of payments and reestablishing the growth momentum of the preceding decade. The policy reforms emphasized trade and exchange rate adjustments as well as the reduction of public spending and improvement of monetary and credit policies (Mtawali 1993).

In Tanzania an "economic recovery program" was adopted in 1986, replacing the failed structural adjustment program of 1982-85. It focused

initially on improving exchange rate policy and on raising producer prices of the main export crops, which continued into industrial, agricultural, and financial sector reforms starting in 1988 (Mans 1993).

Zambia has had some unsuccessful attempts (in the late 1970s and early 1980s) at reforming the economy when the government launched a comprehensive reform program in 1985. It soon ran into difficulties, owing to shortfalls in copper export earnings and poor monetary and fiscal control, giving way to the introduction of the New Economic Recovery Program in 1987 (which reversed many of the macroeconomic policy reforms undertaken earlier) and subsequently of the policy reforms formulated in the 1989 Policy Framework Paper and the 1991 Fourth National Development Plan (Shawa 1993).

Zimbabwe began to implement a wide-ranging program of policy reforms in 1991. It represented a movement away from the pervasive economic controls characterizing the first decade of the country's political independence. Among the major components of the adjustment program are fiscal and monetary reform, trade policy liberalization, and deregulation of private-sector activities (Takavarasha 1993).

In this section we examine quantitatively the changes in fiscal, monetary, exchange rate, and trade policies in the four Southern African countries over the period 1973-91, with special attention to the macroeconomic policy and performance indicators during 1985-91. The accompanying changes in the agricultural sector will be addressed in the following section.

### Fiscal Policy

An overall measure of fiscal policy improvement is the extent to which the government budget deficit has been reduced. Large fiscal deficits tend to be accommodated by rapid growth of money supply leading to high inflation rates, or if there is access to domestic and foreign financing, serve to crowd out private investment and to enlarge the current account deficit. Also an important dimension of fiscal policy is the ratio of government current (consumption) expenditure to GDP. Because the level of capital payments is typically not high, and given the underdeveloped state of infrastructure in most SSA countries, a required fiscal retrenchment under macroeconomic adjustment would be preferably done through a reduction in consumption spending.

As shown in Table 4, fiscal performance in terms of the budget deficit over the three subperiods differed significantly among the four Southern African countries. Zambia consistently incurred the highest average deficit-to-GDP ratio, and it did not show any reduction during the adjustment period 1985-91. Tanzania's fiscal deficit had also been relatively large--which even increased on average during 1985-91. Both Malawi and Zimbabwe increased their deficits from 1973-79 to 1980-84, but there was a subsequent decline--markedly so for Malawi. The annual values of the deficit ratio over the period 1980-91 indicate sustained reductions for Malawi during 1986-90, for Zambia during 1986-89, and for Zimbabwe (even in the absence of a formal macroeconomic adjustment program) during 1987-91. On the other hand, Tanzania's deficit ratio fell sharply in 1987 (one year after the economic recovery program was launched), but gradually increased until 1991.

With regard to government current expenditure as a percentage of GDP over the period (also shown in Table 4), the increasing subperiod-average values from 1973-79 to 1980-84 for Malawi and Zimbabwe contrasts with the declining ratios for Tanzania and Zambia. Subsequently, the latter two countries continued to cut current spending (in relation to GDP) further--substantially in the case of Zambia. Annual data during 1985-91 indicate a declining trend of the current expenditure ratio for all four countries; by the end of the period, the ratio was well below 20 percent for each country except Zimbabwe (which had 23.7 percent).

### Monetary Policy

Three indicators of monetary policy are used here. The first is the growth rate of money supply, a commonly used measure. The second is the money supply growth in relation to GDP, or seignorage, which represents the revenue from government (central bank) monopoly of printing money. The larger the seignorage, the greater is the capacity to finance government deficits and the greater is the likelihood of rapid inflation (especially in the longer run). The third measure is the real interest rate, more specifically on bank deposits. Low interest rate policy discourages savings and impairs the effectiveness of financial intermediation in the economy. Excess demand for loanable funds is created, leading to credit rationing that favors large borrowers in urban centers to the detriment of agricultural producers and small-scale enterprises. The latter would have to rely on the informal credit market where interest rates are much higher.

As shown in Table 5, money supply expansion and seignorage during 1973-79 were relatively large in Tanzania but not in the three other

countries. The average annual rates increased in each country from 1980-84 to 1985-91, contrary to what might be expected in the course of macroeconomic adjustment. Zambia is seen to have the largest seignorage and most rapid inflation during 1985-91; indeed, as of 1991, its inflation rate of 93 percent was much higher than that in the other three countries which ranged from 13 to 23 percent.

Relating to interest rate policy, Table 6 indicates a rising average deposit rate over the three subperiods in each of the four countries. However, domestic inflation was such that the real interest rate remained negative.<sup>3</sup> In Tanzania and Zambia the relatively large increases in the nominal interest rate during the adjustment period did not prevent the occurrence of two-digit negative real rates--which can only be considered financially repressive.

### Trade Policy

Government interventions in foreign trade affect relative prices and sectoral production incentives in two ways. One is through the differential effect on the domestic prices of tradable goods; the other is through the effect on the real exchange rate which in turn affects the domestic prices of tradable goods relative to nontradable goods. For example, import duties and quotas directly raise the domestic price of import-competing products relative to exportables, encouraging a shift away from export production. The same policy instruments have the effect of reducing the demand for imports which lowers the price of foreign exchange, making the domestic price of tradable goods fall relative to

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<sup>3</sup> The real interest rate is computed as  $[(1+i)/(1+p^*) - 1]$ , where  $i$  is the nominal (deposit) interest rate and  $p^*$  is the inflation rate.

nontradables and hence indirectly biasing production incentives against both import-competing and export goods.

By "trade policy reform" is usually meant a shift to greater incentive neutrality, that is, toward equality of price incentives across production sectors. Assessment of its effectiveness requires a comparison of domestic and foreign (border) prices of the relevant commodities.

An aggregate measure of trade policy bias is first considered here, indicating the extent to which the trade regime raises or lowers the domestic price of exportables relative to importables. The differential effects of trade policy on relative prices between tradable and nontradable goods, between agricultural and nonagricultural goods, and among agricultural products will be examined later.

The aggregate trade policy (TRP) measure is represented by

$$\text{TRP} = (P_x/P_m)/(P_x^*/P_m^*), \quad (1)$$

where  $P_x$  and  $P_m$  are the domestic prices of exportables and importables, respectively, and  $P_x^*$  and  $P_m^*$  are their respective border prices. This measure would reflect the effects of trade restrictions on the domestic prices of exportables and importables relative to their border prices.<sup>4</sup> If TRP is less than one, the production of importables is being promoted relative to exportables--which would tend to reduce foreign trade. On the other hand, if TRP is greater than one, there is a policy-induced price

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<sup>4</sup> The right-hand side of equation (1) can be written as  $(1-t_x/1+t_m)$ , where  $t_x$  is the implicit tax rate for all exports and  $t_m$  is the implicit tariff rate for all imports.

bias in favor of export production and against import substitution, increasing therefore the possibilities for trade.

The "initial" trade policy, i.e., before macroeconomic adjustment, among Sub-Saharan African countries was one of relative discrimination against export producers, which resulted in part from the heavy taxation of primary product exports and the promotion of industrial development through import protection (DeRosa 1992). It is expected, therefore, that trade policy reform will lead to a lower anti-export bias; this could be achieved by lowering import barriers and export taxes, which in fact many SSA countries have included in their adjustment programs.

The TRP measure for three of the four Southern African countries (relevant data are not available for Tanzania) is calculated as an index (1987=100) based on: (1) national income accounts data on the values of exports and imports at current and constant prices (to derive the index for  $P_x/P_m$ ); and (2) the external terms-of-trade index ( $P^*/P^*$ ). In a given period, TRP higher (lower) than 100 means that trade policy is providing greater price incentives to export (import-competing) producers than in 1987.

Table 7 shows that the trade policy measure increased, from 1980-84 to 1989-91, only in Malawi--which, notably, has been included in the list of "10 intensive trade adjustment loan countries" (World Bank 1989:22). On the other hand, it would appear that the trade regime became less open and more biased against export production in Zimbabwe and, more significantly, in Zambia. In the latter case, growing macroeconomic imbalances caused a reversal of the trade liberalization process.

More disaggregatively, the nominal protection rate (NPR) is a commonly used indicator of the degree to which the trade regime causes a divergence of the domestic price of a given product from its foreign (border) price. Quiroz and Valdés (1992) provide NPR estimates for the main export and import-competing agricultural products in the four Southern African countries during 1980-87. As shown in Table 8 below, price "disprotection" to Malawi's main crop producers was reduced during the period; in Zimbabwe, import-competing crop producers benefited from increased protection at the expense of export producers. It is also notable that the import-competing crops became highly protected in Tanzania at the end of the period while in Zambia the nominal protection turned negative. A final observation is that producers of the main export crops in Malawi, Tanzania, and Zimbabwe (most likely, also in Zambia where the NPR estimates are not available) were still being penalized by domestic price distortions induced by the existing trade regimes in 1986-87.

#### Exchange Rate Policy

Trade policy reform towards incentive neutrality, to be effective, invariably requires an accompanying real exchange rate depreciation. The latter will raise the domestic price of tradable goods (both exportables and importables) relative to nontradables, encourage resource movement towards tradable goods production, and help prevent a deterioration of the current account that may result from the liberalization of imports. It will also make possible a positive net output effect, offsetting the potential production losses in previously protected import-substituting



industries with likely output gains elsewhere, particularly in the export sector.

It is of course the real exchange rate, rather than the nominal exchange rate (which the government can control directly), that is relevant in the assessment of the relative profitability of tradable goods production. The real exchange rate can be assumed to have been heavily overvalued in most SSA countries, especially before macroeconomic adjustment, owing to the existing trade restrictions and unsustainable current account deficits that served to artificially defend an unrealistic (disequilibrium) exchange rate (Krueger et al. 1988). This would have affected agricultural producers adversely, since the relative prices of tradable farm products are rendered less competitive.

In the absence of reliable time-series estimates of real exchange rate overvaluation for the four Southern African countries, the measure of exchange rate policy used here is the "real effective exchange rate" (REER), represented by the following index:

$$REER_t = REER_{t-1} [1 + \sum_i w_i (R_i^* + WPI_i^* - CPI_t^*)] \quad (2)$$

where CPI is the focus country's consumer price index,  $WPI_i$  is the wholesale price index in trade-partner country  $i$ ,  $R_i$  is the nominal exchange rate per unit of country  $i$ 's currency,  $w_i$  is the trade share of country  $i$ , and the asterisk (\*) denotes annual rate of change. The five largest contributor to each country's foreign trade in 1980 are included in the calculations. This empirical measure of the real exchange rate is an approximation of that used in theoretical discussions representing the

foreign price of tradable goods, expressed in domestic currency, relative to the price of nontradable goods.

The average annual rates of change in the real effective exchange rate in Malawi, Tanzania, Zambia, and Zimbabwe for the two subperiods 1980-84 and 1985-91 are presented in Table 9. Without exception the real exchange rates in all four countries depreciated (increased) during the adjustment period 1985-91. The average rate of REER increase varied across countries, being particularly substantial in Tanzania and Zimbabwe. The former case is seen to represent a marked change from the appreciating REER that characterized the preceding period.

It bears emphasizing that the nominal exchange rate used in the REER calculations are the official rates. Depending on how agricultural-product markets function in a specific country, changes in the official exchange rate over a given period may not get transmitted fully to the farmgate. Where parastatal organizations have a monopoly or monopsony power in particular markets, their pricing policy will determine the extent to which the exchange rate change is passed through. Moreover, any concurrent changes in trade policy will affect the differential between farmgate and border prices of tradable goods.

The domestic relative price of tradable goods vis-a-vis nontradables can also be represented empirically by the weighted average of the implicit price deflators for total imports and total exports divided by the implicit price deflator for services. Each of these price indexes can be calculated from available national-income accounts data for Malawi, Zambia, and Zimbabwe. As shown in Table 9, this measure of the relative price of tradable goods increased in the three countries during 1980-91,

but not at the same rate as the REER changes. Also, the observed average annual change in each of the three countries was greater during 1980-84 than in the subsequent period, whereas the opposite had been the case in the REER changes. Based on the comparative values during 1985-91, it would appear that only a small part of the REER increases were transmitted to tradable goods producers in the three countries, most particularly in Zimbabwe. The implication is that reforms in agricultural marketing and sector-specific price policies, perhaps more than exchange rate adjustments, could have provided greater price incentives to tradable goods producers during 1985-91.

#### A Summing Up

It is evident from the above discussion that, while there was general progress in exchange rate policy during the adjustment period 1985-91, the four countries showed mixed results with respect to the three other aspects of macroeconomic policy reform. Fiscal policy improved in Malawi only in so far as the budget deficit was reduced significantly; however, government consumption spending further increased during 1985-91. The opposite case prevailed in Zambia, which cut down on current expenditure but continued to incur the highest deficit ratio among the four countries. Neither Tanzania nor Zimbabwe can be said to have undertaken significant fiscal policy reform.

Monetary policy continued to be expansionary. The inflation rate remained at double-digit levels and the real interest rate negative in the four countries. Zimbabwe, with average inflation and real interest rates of 14 and -3 percent, respectively, during 1985-91, appears to have had the least unfavorable monetary regime.

The outcomes of trade policy reform were again mixed for the four countries. It was effective in reducing the average price bias against export producers in Malawi but not in Zambia and Zimbabwe. Most of the main export crops continued to be subject to negative direct protection in 1986-87; by contrast, markedly high levels of protection characterized the main import-competing crops in Tanzania and Zimbabwe.

#### **AGRICULTURAL INCENTIVES AND PERFORMANCE**

Agriculture and the rural sector have a predominant weight in the economies of most developing countries, particularly lower-income LDCs. The four Southern African countries under study are no exception. In 1980 the agricultural share in GDP ranged from 14 percent in Zimbabwe and Zambia to 37 percent in Malawi (Table 11). This indicator understates, however, the importance of agriculture to the national economy in view of the artificial undervaluation of agricultural products in low-income countries (Schultz 1978, Bautista and Valdés 1993). The proportion of the labor force engaged in agricultural activities represents a better measure, which in 1980 was from 73 to 86 percent in the four countries.

Without agricultural growth and rural development that can raise the real income of 60 to 90 percent of the population residing in rural areas, it is difficult to see how rapid growth of the national economy can be sustained and whether equitable growth can be achieved in any of those four countries. Moreover, while macroeconomic adjustment affects differently various aspects of each country's economic performance, it is reasonable to expect that the effects on agriculture and the rural sector would be a critical determinant of the success or failure of the policy

reforms. Indeed, as argued by Adelman and Taylor (1990:406) in the case of Mexico, "agricultural development is a key to successful adjustment policies from a macro point of view."

Macroeconomic policy reform can affect agricultural performance through the induced changes in product and factor (including credit) markets and in access to infrastructure. As observed above, negative real interest rates continued to prevail in the four countries under study during the adjustment period 1985-91, restricting the availability of institutional credit to rural producers, especially small farmers.

Agricultural growth and rural development in most SSA countries have also been constrained by underdeveloped markets and deficiencies in infrastructure (Mellor et al. 1987). In the context of macroeconomic adjustment, therefore, a relevant measure of fiscal policy is the proportion of total government expenditure allocated to agriculture, which can be considered to reflect government efforts to improve agricultural markets and infrastructure. Table 12 shows that, except for Zambia, the agricultural expenditure shares in the 1980s on average had been much lower than the corresponding agricultural shares in GDP; in other words, the government was spending disproportionately more in other production sectors. It is also striking, and perhaps ironic, that the agricultural share even declined in the second half of the decade in Malawi and Zambia, but increased in Zimbabwe where an economic reform program was not formally initiated until 1991.

Other things remaining the same, it can be expected that economic policy reform will have a positive effect on agricultural-product prices

in most low-income economies, given the initial condition of policy-induced price bias against agriculture. However, there are nonpolicy influences, including world-market price movements and other external developments, that can offset (or reinforce) the expected positive impact of policy reforms, both macroeconomic and sector-specific.

At the most aggregative level, we examine first the actual changes in the domestic (agricultural) terms of trade during the two subperiods 1980-84 and 1985-91, based on the implicit price deflators for agricultural and nonagricultural value added. As shown in Table 12, in three of the four countries (Malawi is the exception),<sup>5</sup> relative agricultural prices not only improved during the adjustment period 1985-91 but also increased at higher rates than in the preceding subperiod. This implies that any adverse world-price changes were dominated by the sectoral and macroeconomic policy effects. With respect to the latter, it is worth recalling (from Table 9) that the real exchange rate depreciated much more rapidly during 1985-91 in Tanzania, Zambia, and Zimbabwe than in Malawi, presumably (on grounds that agricultural output is more tradable than nonagricultural products on average) contributing to the observed larger improvements in the domestic terms of trade in the three countries.

Table 13 presents estimates of the changes in average domestic prices of export and import-competing crops (relative to the consumer price index) in the four countries during 1980-87, as derived in Quiroz and Valdés (1992). Export crops are seen to have suffered a significant price

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<sup>5</sup> That the agricultural terms of trade in Malawi (calculated from published World Bank data) was nearly constant during 1980-91 (indeed, during 1980-93) strongly suggests that it is a statistical anomaly.

decline, except in Tanzania.<sup>6</sup> On the other hand, import-competing crops benefited from a price increase, except in Zimbabwe.

Also contained in Table 13 is a decomposition of the domestic price changes into three components, namely, the changes in foreign price, in the real exchange rate, and in nominal protection. The generally declining world commodity prices during 1980-87 are reflected in the negative rates of change in the foreign prices of both agricultural exportables and importables in the four countries. Their unfavorable effect on the domestic price was offset to a varying extent by the real exchange rate depreciation (increase) in each country. However, nominal protection for export crops was reduced (or disprotection increased) drastically, except in Tanzania where a slight increase took place, resulting in a substantial fall in the domestic price for the three countries as noted above. With respect to the importables, increases in nominal protection in Malawi and Tanzania augmented the positive effect of real exchange rate depreciation and served to overbalance the decline in foreign prices, leading to a significant improvement in domestic prices. By contrast, reduced nominal protection to import-competing crops in Zambia and Zimbabwe reinforced the unfavorable effect of falling world-market prices and mitigated the positive effect of real exchange rate depreciation on the domestic price in either country.

It is interesting to observe from Table 12 above that agricultural production grew more rapidly in three of the four countries during 1985-91

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<sup>6</sup> A similar finding on the changes in the "real producer price of export crops" from 1981-83 to 1989-91 in the four countries is reported in a recent World Bank (1994:244) study.

than during 1980-84, and from Table 3 that GDP growth was also faster during 1985-91 in the same three countries. Zimbabwe shows slightly lower agricultural and GDP growth rates. At least for Tanzania and Zambia, the positive effect of the domestic terms-of-trade improvement is reflected in the overall growth performance of the agricultural sector. Other (nonprice) influences would also have had a favorable effect, or if unfavorable, would have been a relatively smaller effect.

Food production and agricultural export growth rates for the four countries during 1980-84 and 1985-91 are shown in Table 14. The first point to note is that food production in each country expanded more rapidly in the later period; however, only in Zambia and Zimbabwe did food production per capita increase. The growth rate of agricultural exports also increased between the two periods in Malawi, suggesting the absence of a tradeoff between food and export crops; this was not the case in Zimbabwe. Finally, despite the increased domestic price for agricultural export producers in Tanzania (from Table 13), export growth during the two periods was negative.

In view of the rising food production per capita in Zambia and Zimbabwe, it can be expected that their food import requirements would be lower towards the end of the period. This is borne out in Table 15, in terms of the significant reduction in both total food and cereal imports. Also not surprisingly, Malawi increased its food and cereal imports, and it helped that there was a concurrent expansion of agricultural exports. By contrast, Tanzania's negative export growth might have been an important factor in the observed reduction of its food and cereal imports.



For many SSA countries, the concentration of agricultural production and exports in a few commodities, particularly maize and certain "traditional" export crops, presented a difficult problem in the face of sharply declining world prices of those products since the late 1970s. It accentuated the policy interest in crop diversification (i.e., into nontraditional and preferably higher-value crops) as well as in noncrop (e.g., livestock) production, which can be viewed as part of the process of structural transformation in most low-income countries.

Some indication of the extent to which crop diversification was achieved during 1980-84 and 1985-91 is provided in Table 16, which contains the comparative production growth rates for the most important traditional crops and for all crops in each of the four study countries. A striking observation is that, during 1985-91 in each country, the crop (production) index increased at a slower rate than maize production, implying that crop diversification away from the predominant crop did not take place. In the preceding period, however, Zambia and Malawi diversified out of maize but not Tanzania and Zimbabwe. The production structure shifted to tobacco in Malawi and Zimbabwe and to rice in Tanzania in both periods. During 1985-91 cotton in Tanzania and wheat in Zimbabwe rebounded dramatically from the production losses in the earlier period. Overall, it would appear that the same set of traditional crops remained important during 1980-91 in each country.

A potentially important source of crop diversification for many developing countries is horticultural products (Islam 1990). The production of fruits and vegetables is labor intensive and has strong "forward linkages" to food processing, transportation, and services.

Comparison of the growth rates of horticultural production during 1980-84 and 1985-91 shown in Table 17 with the corresponding rates for the crop index (in Table 16) indicates that only Malawi diversified into fruits and vegetables (to a modest extent) during the two periods. It is also notable that horticultural production expanded in the three other countries at a significantly lower rate than the total crop index during 1985-91.

Rapid expansion of livestock production is also often regarded as an important element of the "agricultural transformation" (Sarma and Yeung 1985). The average rates of increase in the "livestock index" during the two periods (also shown in Table 17) are seen to be generally lower than the corresponding rates for the crop index. The agricultural production structure shifted to livestock only in Tanzania during both periods and in Malawi during 1980-84.

The conclusion that can be drawn from the above discussion is that agricultural performance during 1980-91 varied widely among the four study countries. Differences in the overall growth and in the changes in production structure of the agricultural sector were presumably related to the accompanying changes in relative prices induced by domestic policies and external developments as well as in the nonprice constraints that are also affected by macroeconomic policy adjustments.

#### **POST-1991 DEVELOPMENTS**

Southern Africa was visited by a severe drought in 1992, which caused widespread economic misery in three of the four countries under study, Tanzania being the exception. Agricultural production declined by 22

percent in Malawi, by 24 percent in Zimbabwe, and by 33 percent in Zambia (Table 14). Production levels in 1993 exceeded the 1991 levels in all three countries, but only by 1.8 percent in Malawi and Zambia--which therefore cannot be said to have recovered fully from the adverse effects of the drought on agriculture.

Indirectly, the industrial and service sectors would also have been adversely affected, owing to the induced agricultural-input shortages and reduction in domestic demand. It is not surprising, therefore, that economic growth in each of the three countries was negative in 1992. Relatedly, real GDP levels in 1993 were lower than their trend values; in Zimbabwe, real GDP was lower in 1993 than the 1991 level by 6.1 percent.

In terms of the external economic environment, the period 1991-93 was one of slow (or negative) growth for the major industrialized countries. The external terms of trade worsened, at least in 1992, for each of the four Southern African countries (Table 14). Additionally, the increased need for food imports and the reduced net exports (in the case of Zambia, increased net imports) of agricultural products contributed to the deterioration of external imbalances in 1992, the current-account deficit as a ratio to GDP rising sharply by 6 to 7 percentage points in the four countries.

Despite the unfavorable internal and external developments, there was no wholesale reversal of macroeconomic policy reforms. Available data indicate a surprisingly lower ratio of the budget deficit to GDP in 1992 (or 1992-93, on average) than in 1991 for Malawi and Zambia, while the opposite case is seen for Tanzania (Table 14). On the other hand, government consumption as a proportion of GDP increased from 1991 in

Malawi and Tanzania but declined in Zambia and Zimbabwe. Thus, in terms of both measures, Zambia was the only one able to improve its fiscal position; however, it remained precarious in view of the (still) unsustainably high budget deficit ratio.

Interyear data on money supply during 1991-93 are available only for Malawi and Zimbabwe. In both countries money supply growth and seignorage were dramatically lower in 1992 but which subsequently increased to levels exceeding those in 1991 (Table 14). There was no relief from the high and increasing inflation rates for all four countries, the average annual CPI increases in 1992-93 (which were higher than in 1991) varying from 23 percent for Malawi and Tanzania to 35 percent for Zimbabwe to 193 percent for Zambia. While upward adjustments were made on nominal (deposit) interest rates in 1992, rapid inflation made for even more highly negative real interest rates. In 1993 the direction of real interest rate change was reversed, with Zimbabwe showing a positive rate of 1.5 percent; in sharp contrast, Zambia continued to have an egregiously negative (-35 percent) rate.

Again, only Malawi and Zimbabwe have relevant data for deriving the index of trade policy, and only for two years during 1991-93 (Table 14). The index shows a significant decline in Malawi from 1991 to 1992, which represented a reversal of the upward trend since 1988. The more restrictive trade policy was presumably related to the ill effects of the drought compounded by the drastic reduction in foreign assistance beginning May 1992. In Zimbabwe, however, the process of import liberalization continued in 1992 and 1993, reflected partly in the observed rise in the aggregate trade policy index from 1991 to 1992;

relatedly, the export retention scheme was increased to 50 percent in April 1993.

Large currency devaluations were implemented in the four countries during 1992-93. The average annual change in the nominal exchange rate with the US dollar, for example, varied significantly from 25 percent in Malawi to 36 percent in Tanzania, 39 percent in Zimbabwe, and 165 percent in Zambia (Table 14). However, because of the much higher domestic inflation rate vis-a-vis their major trading partners in 1992 and 1993, the real exchange rate depreciated to a smaller extent. In Malawi an RER increase of only 8 percent was achieved, in Tanzania 21 percent, and in Zimbabwe 25 percent. Most notably, despite the considerable nominal devaluation undertaken in Zambia, the real exchange rate actually appreciated by 29 percent.

The overall picture is therefore one of varying policy responses among the four Southern African countries to the 1992 drought. Some aspects of macroeconomic adjustment continued to be undertaken in each country, but much remains to be done in dealing with macroeconomic instability and in promoting long-run growth of the national economy.

## CONCLUSION

This paper has presented a quantitative description of the external and macroeconomic developments, as well as the accompanying agricultural performance, in Malawi, Tanzania, Zambia, and Zimbabwe during 1973-93. Annual data published by the World Bank, IMF, and FAO are used. While such data might be regarded as reasonably comparable across countries and over time, it would be useful to verify their reliability based on data

sources at the individual-country level.<sup>7</sup> A particularly relevant question to investigate is how closely the implicit price deflators for sectoral value added reflect the actual prices facing agricultural and nonagricultural producers in each of the four study countries. More generally, there is a real need to complete and update critically important time-series data for macroeconomic policy analysis.<sup>8</sup>

Of the four Southern African countries, only Tanzania can be said to have followed the stylized pattern of external and macroeconomic developments in Sub-Saharan Africa during 1973-91. The 1992 drought severely impinged on the agricultural sector in Malawi, Zambia, and Zimbabwe, but not in Tanzania; it did not help that there was a concurrent deterioration in the external terms of trade for each country. Remarkably, over the period 1973-91, the observed terms-of-trade changes did not appear to have had a critical influence on both export and GDP growth in the four countries. Agricultural and GDP growth rates for 1980-84 and 1985-91 were positively correlated.

Significant differences are found in the macroeconomic policy and agricultural performance indicators among the study countries, which is not surprising given the differing nature and severity of the exogenous

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<sup>7</sup> With respect to World Bank data, it is stated that "a concerted effort has been made to standardize data ... which are drawn from sources thought to be most authoritative. ... However, full comparability cannot be ensured" (World Bank 1993:ix).

<sup>8</sup> For example, using the December 1994 issue of the IMF's International Financial Statistics, one finds that data on government finance for Zambia and the national accounts for Zimbabwe are available only up to 1989; monetary data for Tanzania are missing for the three years from 1989 to 1991; and balance of payments data for Malawi are available only to 1988.

shocks (both internal and external) that buffeted the four economies during the period. As discussed above, the two sets of indicators are intimately related. It would be necessary, as a next step, to undertake in-depth country studies addressing the causal interrelations between macroeconomic adjustment and agricultural performance. Not only the macroeconomic policy reforms actually implemented but also alternative, counterfactual reforms need to be systematically analyzed at the national level. Understanding their comparative economywide effects can only contribute to the promotion of sustainable economic growth with equity in Southern Africa.

## REFERENCES

- Adelman, I. and J. Taylor. 1990. Is structural adjustment with a human face possible? The case of Mexico. *Journal of Development Studies* 26:387-407.
- Balassa, B. 1989. Adjustment policies in East Asia. *Asian Economics Journal* 3:1-20.
- Bautista, R. M. 1993. Trade and agricultural development in the 1980s and the challenges for the 1990s: Asia. *Agricultural Economics* 8:345-375.
- \_\_\_\_\_ and A. Valdés. 1993. *The bias against agriculture: Trade and macroeconomic policies in developing countries*. San Francisco: ICS Press.
- Dans, D. 1993. Tanzania: Resolute action. In *Adjustment in Africa: Lessons from country case studies*, eds. I. Husain and R. Faruquee. Washington, D.C.: The World Bank.
- DeRosa, D. A. 1992. Protection and export performance in Sub-Saharan Africa. *Weltwirtschaftliches Archiv* 128:88-124.
- Helleiner, G. K. 1994. Trade, aid and relative price changes in Sub-Saharan Africa. *Journal of International Development* 6:453-461.
- Islam, N. 1990. *Horticultural exports of developing countries: Past performances, future prospects, and policy issues*. IFPRI Research Report 80. Washington, D.C.: International Food Policy Research Institute.
- Krueger, A. O., M. Schiff and A. Valdés. 1988. Agricultural incentives in developing countries: Measuring the effect of sectoral and economywide policies. *World Bank Economic Review* 2:255-272.
- Mellor, J. W., C. L. Delgado and M. J. Blackie. 1987. *Accelerating food production in Sub-Saharan Africa*. Baltimore: Johns Hopkins University Press.
- Mosley, P. and J. Weeks. 1993. Has recovery begun? "Africa's adjustment in the 1980s" revisited. *World Development* 21:1583-1606.
- Mtawali, K. M. 1993. Malawi. In *Agricultural policy reforms and regional market integration in Malawi, Zambia, and Zimbabwe*, eds. A. Valdés and K. Muir-Leresche. Washington, D.C.: International Food Policy Research Institute.
- Nsouli, S. M. 1993. Structural adjustment in Sub-Saharan Africa. *Finance and Development* 30:20-23.



- Quiroz, J. and A. Valdés. 1993. Agricultural incentives and international competitiveness in four African countries: Government interventions and exogenous shocks. In *Agricultural policy reforms and regional market integration in Malawi, Zambia, and Zimbabwe*, eds. A. Valdés and K. Muir-Leresche. Washington, D.C.: International Food Policy Research Institute.
- Sarma, J. S. and P. Yeung. 1985. *Livestock products in the third world: Past trends and projections to 1990 and 2000*. IFPRI Research Report 49. Washington, D.C.: International Food Policy Research Institute.
- Schultz, T. W. 1978. On economics and politics of agriculture. In *Distortions of agricultural incentives*, ed. T. W. Schultz. Bloomington: Indiana University Press.
- Shawa, J. J. 1993. Zambia. In *Agricultural policy reforms and regional market integration in Malawi, Zambia, and Zimbabwe*, eds. A. Valdés and K. Muir-Leresche. Washington, D.C.: International Food Policy Research Institute.
- Takavarasha, T. 1993. Zimbabwe. In *Agricultural policy reforms and regional market integration in Malawi, Zambia, and Zimbabwe*, eds. A. Valdés and K. Muir-Leresche. Washington, D.C.: International Food Policy Research Institute.
- World Bank. 1989. *Strengthening trade policy reform*. Vol.II. Trade Policy Division, Country Economics Department (processed).
- \_\_\_\_\_. 1993. *World tables 1993*. Baltimore: Johns Hopkins University Press.
- \_\_\_\_\_. 1994. *Adjustment in Africa: Reforms, results, and the road ahead*. Oxford: Oxford University Press.

Table 1--Average annual growth of real GDP by country groups (percent)

	1970-80	1980-91
High-income economies	3.2	2.9
Low-and middle-income	5.3	3.3
Sub-Saharan Africa	4.0	2.1
East Asia and Pacific	6.6	7.7
South Asia	3.5	5.4

Source: World Bank, World Development Report (1993:240-41).

Table 2--Average annual change in foreign terms of trade (percent)

	1973-79	1979-84	1984-91
Malawi	-3.8	-1.6	-4.3
Tanzania	1.0	-3.0	-4.1
Zambia	-9.9	-7.8	4.9
Zimbabwe	-5.4	-1.9	0.1

Source: World Bank, World Tables 1994, on diskette. Socioeconomic Time-Series Access and Retrieval System (STARS).

Table 3-- Average annual growth of real GDP and merchandise exports  
(percent)

	1973-79	1980-84	1985-91
Real GDP			
Malawi	6.3	1.4	3.6
Tanzania	2.3	1.1	5.1
Zambia	0.5	0.7	1.3
Zimbabwe	-0.2	5.4	3.6
Sub-Saharan Africa	4.1	1.8	2.6
Real exports			
Malawi	6.2	7.0	8.8
Tanzania	13.3	-1.9	11.6
Zambia	1.6	-1.7	-3.4
Zimbabwe	0.0	0.5	5.5
Sub-Saharan Africa	n.a.	n.a.	n.a.

Source: World Tables 1994 in World Bank's STARS diskette.

Table 4-- Average ratios of government deficit and current expenditure to GDP (percent)

	1973-79	1980-84	1985-91
Deficit/GDP			
Malawi	7.4	9.7	6.2 <sup>a</sup>
Tanzania	8.7	9.3	9.4
Zambia	12.2	13.3	13.3 <sup>b</sup>
Zimbabwe	7.7 <sup>c</sup>	8.7	8.0
Current expenditure/GDP			
Malawi	15.3	20.3	20.1
Tanzania	19.7	13.6	12.0
Zambia	27.4	26.1	19.6
Zimbabwe	28.0 <sup>c</sup>	32.2	33.6

Source: For deficit/GDP in Tanzania, IFS Yearbook 1993; for others, World Tables 1994 in World Bank's STARS diskette.

Note: <sup>a</sup> For 1985-90.  
<sup>b</sup> For 1985-89.  
<sup>c</sup> For 1976-79.

Calculation of government deficits includes grants received, except for Tanzania.

Table 5-- Average money supply growth, seignorage, and inflation rates (percent)

	Money supply growth			Seignorage		Inflation			
	1973-79	1980-84	1985-91	1973-79	1980-84	1985-91	1973-79	1980-84	1985-91
Malawi	10.0	11.6	23.4	1.07	0.97	1.93	n.a.	13.8 <sup>a</sup>	17.2
Tanzania	25.4	14.9	33.0 <sup>b</sup>	4.65	3.87	5.16 <sup>b</sup>	13.9	29.6	27.8
Zambia	12.9	11.2	59.8	2.07	1.78	5.46	13.8	15.6	75.1
Zimbabwe	10.3 <sup>c</sup>	14.5	19.6	1.43 <sup>c</sup>	1.90	2.29	10.3	14.5	13.8

Source: World Tables 1994 in World Bank's STARS diskette.

Note: <sup>a</sup> For 1981-84.

<sup>b</sup> For 1985-88.

<sup>c</sup> For 1975-79.

Table 6--Average nominal and real interest rates (percent)

	1973-79	Nominal 1980-84	1985-91	1973-79	Real 1980-84	1985-91
Malawi	n.a.	9.8 <sup>a</sup>	12.9	n.a.	-3.0 <sup>a</sup>	-3.3
Tanzania	4.0 <sup>b</sup>	4.0	12.6 <sup>c</sup>	-8.4 <sup>b</sup>	-19.7	-13.7 <sup>c</sup>
Zambia	5.2	6.8	15.8 <sup>d</sup>	-6.5	-7.5	-30.2 <sup>d</sup>
Zimbabwe	3.6 <sup>e</sup>	9.7	10.2	-6.6 <sup>e</sup>	-4.0	-3.0

Source: IMF, International Financial Statistics Yearbook 1994. World Tables 1994 in World Bank's STARS diskette.

Notes:

- <sup>a</sup> For 1981-84.
- <sup>b</sup> For 1974-89.
- <sup>c</sup> For 1985-89.
- <sup>d</sup> For 1985-90.
- <sup>e</sup> For 1975-79.

Table 7--Index of trade policy bias (1987=100)

	1980-84	1989-91
Malawi	102.3	113.0
Tanzania	n.a.	n.a.
Zambia	63.7	53.2
Zimbabwe	98.5	97.4

Source: Calculated from basic data in World Tables 1994 in World Bank STARS diskette.

Note: An increase in index value means that price incentives for export producers improved relative to import-competing producers.



Table 8-- Nominal protection rates for main crops, 1980-82 and 1986-87 (percent)

	1980-82	1986-87
Malawi		
Tobacco (X)	-73	-68
Wheat (M)	-43	-30
Maize (M)	-44	-26
Tanzania		
Coffee (X)	-38	-49
Cotton (X)	-31	-12
Rice (M)	28	115
Maize (M)	-14	53
Zambia		
Tobacco (X)	10	n.a.
Cotton (X)	0	n.a.
Wheat (M)	112	-4
Maize (M)	9	-33
Zimbabwe		
Tobacco (X)	18	-15
Cotton (X)	-20	-37
Wheat (M)	54	57
Rice (M)	23	122

Source: Adapted from Table 4.5 in Quiroz and Valdés (1992:105).

Note: X and M denote export and import-competing products, respectively.

Table 9-- Average annual changes in the real effective exchange rate and in the relative price of tradable goods (percent)

	1980-84	1985-91
REER		
Malawi	0.2	3.4
Tanzania	-5.3	42.0
Zambia	6.3	6.4
Zimbabwe	8.6	18.7
RPTN		
Malawi	2.0	0.8
Tanzania	n.a.	n.a.
Zambia	3.6	3.3
Zimbabwe	4.7	2.4

Source: Calculated from basic data in World Tables 1994, World Bank's STARS diskette.

Note: RPTN is the ratio of the weighted average of the implicit price deflators for total exports and total imports to the implicit price deflator for services.

Table 10--Selected economic indicators, 1980

	GNP per capita (US dollars)	Agricultural GDP	share (percent) Labor force	Rural population (Percent of total)
Malawi	180	37.2	93.3	90.9
Tanzania	290	44.4	85.6	83.5
Zambia	600	14.2	73.1	60.3
Zimbabwe	710	14.0	72.8	78.1

Source: World Bank, Trends in Developing Economies 1993, and World Tables 1993.

Table 11-- Average agricultural share in total government expenditure, 1980-84 and 1985-89 (percent)

	1980-84	1985-89
Malawi	13.3	11.5
Tanzania	8.5	n.a.
Zambia	15.4	12.2 <sup>a</sup>
Zimbabwe	8.6	10.9

Source: IMF, Government Finance Statistics Yearbook (various issues).

Note: <sup>a</sup> For 1985-88.

Data for 1990 and 1991 are not available for the four countries.

Table 12-- Average annual change in domestic terms of trade and agricultural growth rate (percent)

	1980-84	1985-91
Malawi		
DTOT	0.0	0.0
AGR	0.4	2.7
Tanzania		
DTOT	2.4	4.1
AGR	2.6	5.1
Zambia		
DTOT	-1.2	5.8
AGR	1.7	3.3
Zimbabwe		
DTOT	6.3	10.4
AGR	3.2	2.9

Source: Calculated from basic data in World Tables 1994 in World Bank's STARS diskette.

Note: DTOT = change in domestic terms of trade.  
AGR = agricultural growth.

Table 13-- Changes in relative agricultural prices decomposed by source, 1980-87 (percent)

	Change in domestic price	Change in foreign price	Change in real exchange rate	Change in nominal protection
Malawi: X	-29.5	-7.2	35.4	-57.8
M	36.9	-28.1	35.4	29.6
Tanzania: X	3.5	-50.8	51.7	2.6
M	51.9	-52.0	51.7	52.3
Zambia: X	-34.6	-2.1	110.9	-143.5
M	6.9	-86.1	110.9	-17.9
Zimbabwe: X	-20.0	-24.5	32.8	-28.2
M	-19.9	-119.3	32.8	-66.5

Source: Adapted from Tables 4.1 and 4.2 in Quiroz and Valdés (1992:81-82).

Note: X and M denote export and import-competing crops, respectively.

Table 14-- Average annual growth of food production and agricultural exports, 1980-84 and 1984-91 (percent)

	1980-84	1985-91
Food production		
Malawi	0.91	1.39
Tanzania	1.27	1.95
Zambia	0.65	4.69
Zimbabwe	1.77	6.07
Agricultural exports		
Malawi	7.59	8.19
Tanzania	-1.01	-0.81
Zambia <sup>a</sup>	-	-
Zimbabwe	6.16	3.22

Source: Calculated from annual data in FAO, 1992 AGROSTAT diskette (Production and trade domains).

Notes: Food production levels are indexes (1979-81=100).  
Agricultural export levels are in US dollars deflated by the country's unit export value index.

<sup>a</sup> Less than \$US 0.25 in average levels for the two periods.

Table 15-- Average annual net imports of food and cereals, 1980-84  
and 1989-91

	1980-84	1989-91
<b>Food imports (million US dollars)</b>		
Malawi	19.6	49.9
Tanzania	105.0	44.7
Zambia	66.2	27.8
Zimbabwe	31.7	25.0
<b>Cereal imports (thousand metric tons)</b>		
Malawi	39.4	148.3
Tanzania	319.4	109.7
Zambia	296.4	112.0
Zimbabwe	130.6	72.7

Source: Calculated from annual data in FAO, 1992 AGROSTAT diskette  
(Trade and food balance domains).



Table 16-- Average annual crop production for 1979-81 and growth rates for 1980-84 and 1985-91

	Production, 1979-81 (thousand metric tons) <sup>a</sup>	Growth rates (percent)	
		1980-84	1985-91
<b>Malawi</b>			
Tobacco	53	6.71	6.92
Tea	32	3.86	1.78
Maize	1275	0.53	2.44
Crop index	100	1.05	2.10
<b>Tanzania</b>			
Cotton	106	-3.30	15.16
Rice	251	10.12	9.42
Maize	1762	2.82	3.81
Crop index	100	0.97	1.44
<b>Zambia</b>			
Maize	941	1.32	8.86
Crop index	100	3.54	4.85
<b>Zimbabwe</b>			
Tobacco	104	5.74	6.27
Cotton	102	13.55	-1.11
Wheat	179	-9.59	25.14
Maize	1829	11.69	22.20
Crop index	100	4.51	5.57

Source: Calculated from annual data in FAO, 1992 AGROSTAT diskette (Production domain).

Note: <sup>a</sup> Except for crop index (1979-81 = 100).

Table 17-- Average annual horticultural and livestock production for 1979-81 and growth rates for 1980-84 and 1985-91

	Production <sup>a</sup> 1979-81	Growth rates (percent)	
		1980-84	1985-91
Malawi			
Horticultural crops	588	2.38	2.19
Livestock index	100	3.12	0.95
Tanzania			
Horticultural crops	2927	1.13	0.50
Livestock index	100	1.82	4.62
Zambia			
Horticultural crops	285	3.18	2.62
Livestock index	100	-4.35	4.27
Zimbabwe			
Horticultural crops	244	1.90	3.08
Livestock index	100	2.96	2.53

Source: Calculated from data in FAO, 1992 AGROSTAT (Production domain).

Note: <sup>a</sup> In thousand metric tons for horticultural crops; livestock index has 1979-81 as base period.

Table 18--Selected economic indicators, 1991-93

	Malawi			Tanzania		
	1991	1992	1993	1991	1992	1993
<b>Production</b>						
Agricultural value added (millions of 1987 local currency)	993	774	1,098	142.9	149.2	n.a.
Gross domestic product (millions of 1987 local currency)	2,848	2,622	2,912	238.6	247.6	n.a.
<b>Foreign trade</b>						
External terms of trade (1987=100)	94.9	90.3	n.a.	77.8	70.9	n.a.
Food imports (million US dollars)	44.9	111.8	n.a.	57.4	90.6	n.a.
Net agricultural trade (million US dollars)	388.5	253.6	n.a.	158.1	128.7	n.a.
Current-account deficit/GDP (percent)	11.6	18.5	12.4	25.7	31.5	19.6
<b>Price indexes (1987=100)</b>						
Consumer price index	189.6	232.6	285.8	241.7	295.0	364.3
Agricultural terms of trade	99.7	99.7	99.7	104.7	108.9	n.a.
<b>Fiscal policy (percent)</b>						
Budget deficit/GDP	5.2	4.5	n.a.	6.8	6.8	12.0
Government consumption/GDP	14.0	18.5	16.7	10.2	10.6	11.2
<b>Monetary policy (percent)</b>						
Money supply growth	31.5	19.4	34.9	n.a.	n.a.	28.0
Seigniorage	2.47	1.84	2.96	n.a.	n.a.	6.15
Nominal interest rate	12.50	16.50	21.75	n.a.	n.a.	n.a.
Real interest rate	-0.10	-5.05	-0.01	n.a.	n.a.	n.a.
<b>Trade and exchange rate policies</b>						
Trade policy index (1987=100)	83.3	96.8	n.a.	n.a.	n.a.	n.a.
Nominal exchange rate (local currency/US dollar)	2.80	3.60	4.40	219.2	297.7	405.3
Real effective exchange rate index (1980=100)	142.7	218.8	283.2	581.7	679.8	674.3

Table 18--cont'd

	1991	Zambia 1992	1993	1991	Zimbabwe 1992	1993
<b>Production</b>						
Agricultural value added (millions of 1987 local currency)	2,426	1,623	2,469	1,344	1,016	1,508
Gross domestic product (millions of 1987 local currency)	19,384	20,113	21,490	9,644	8,876	9,053
<b>Foreign trade</b>						
External terms of trade (1987=100)	113.9	109.4	n.a.	106.1	101.1	n.a.
Food imports (million US dollars)	32.3	124.0	n.a.	18.6	113.2	n.a.
Net agricultural trade (million US dollars)	-2.8	-81.3	n.a.	664.8	207.1	n.a.
Current-account deficit/GDP (percent)	16.7	23.7	15.5	9.0	15.1	5.0
<b>Price indexes (1987=100)</b>						
Consumer price index	1,485	4,416	12,764	175.5	249.4	318.2
Agricultural terms of trade	150.7	308.2	309.2	144.2	220.0	n.a.
<b>Fiscal policy (percent)</b>						
Budget deficit/GDP	13.0	8.4	11.4	6.4	n.a.	n.a.
Government consumption/GDP	16.3	14.7	9.1	23.7	22.7	21.2
<b>Monetary policy (percent)</b>						
Money supply growth	78.3	n.a.	n.a.	23.2	5.6	80.9
Seignorage	4.48	n.a.	n.a.	2.55	0.59	71.55
Nominal interest rate	31.29	48.50	86.42	14.10	28.78	29.45
Real interest rate	-31.83	-50.06	-35.50	-7.49	-9.35	1.46
<b>Trade and exchange rate policies</b>						
Trade policy index (1987=100)	62.3	n.a.	n.a.	100.0	106.8	n.a.
Nominal exchange rate (local currency/US dollar)	64.6	179.0	452.8	3.43	5.11	6.58
Real effective exchange rate index (1980=100)	60.1	49.3	29.6	447.9	625.0	695.7

Source: World Tables 1994 in World Bank's STARS diskette: IMF, International Financial Statistics (December 1994); FAO, Trade Yearbook 1992.

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