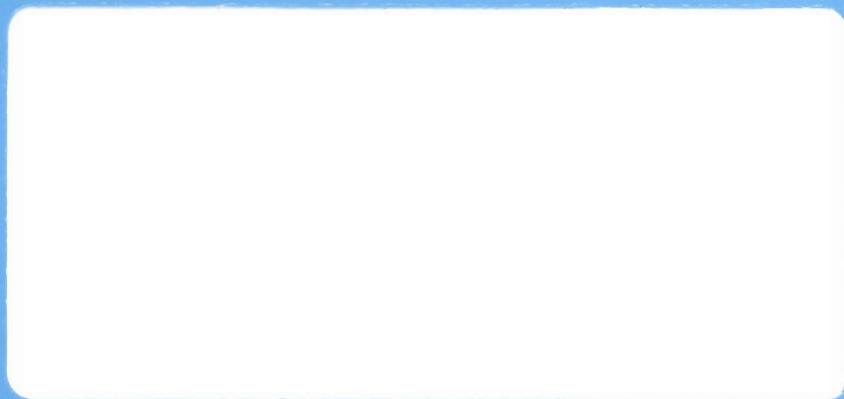




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STRUCTURAL ADJUSTMENT IN SUB-SAHARAN AFRICA

RURAL DIFFERENTIATION, POVERTY AND
AGRICULTURAL CRISIS IN SUB-SAHARAN AFRICA:
Toward An Appropriate Policy Response a/

by

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I. INTRODUCTION

The crisis of African agriculture has attracted considerable attention for more than a decade. Little by little it has been acknowledged that - to a large extent - the long economic recession of Africa has to do not only, or not primarily, with distorted macroeconomic policies and price signals, but with the deep-seated agrarian crisis affecting most countries of the region. This crisis is extremely pervasive. It manifests itself in every single aspect of rural life and in particular in declining output per capita, declining land yields, growing food imports, stagnant commodity exports, declining food availability per capita, and growing malnutrition. In a sense, this agricultural crisis has had a few positive effects. It has opened the eyes of policymakers, international institutions and researchers by dispelling several of the myths and misperceptions surrounding African agriculture. It has also generated an intense research effort and policy debate which were conspicuously lacking during the 1960s and 1970s.

Although the agriculture crisis besetting Africa has more distant origins, its solution has been linked in most countries to the adjustment programmes introduced with increasing frequency during the last decade as a cure to Africa's economic problems. Under the early structural adjustment programmes, devaluation and increases in the producer prices of agricultural products were considered by the IMF and the World Bank as necessary and sufficient conditions to trigger favourable changes in the terms of trade of agriculture, as well as positive supply responses. Since the mid-1980s, however, the standard agricultural adjustment package has been enlarged so as to include among its main policy instruments the privatization of agricultural trade and the dismantling of official marketing boards. More recent analyses by the same institutions (World Bank 1989) have evoked a variety of other factors - ecological, infrastructural and social - responsible for the poor performance of African agriculture. Despite this widening of perspective, policy prescriptions for adjustment in agriculture remain consistently centred on the four main pillars mentioned above, i.e. devaluation, increases in producer prices, privatization of trade in agricultural commodities, and elimination of agricultural parastatal entities.

Several years have elapsed since the introduction of the first structural and agricultural adjustment programmes. In view of the ambitious aim of such programmes - revitalizing African agriculture - the time elapsed is probably still too short to allow a thorough evaluation of their effectiveness. Nevertheless, there is limited evidence of the supposedly

positive impact of such programmes on agricultural output. Moreover, no visible technological changes have taken place, while capital accumulation in agriculture continues to be weak or to decline in most countries, and while population pressure on the land increases the risk of soil degradation. There is therefore a growing feeling of dissatisfaction with the orthodox analysis of the problems of African agriculture and with the prescriptions for recovery that are part of orthodox structural adjustment programmes.

Other interpretations of the crisis of African agriculture have been offered. The view emphasizing the urban bias of most development policies has insisted, for instance, on the need to enhance rural infrastructure and the supply to rural areas of incentive goods. Others have stressed the negative influence of adverse changes in international terms of trade of agricultural commodities produced in Africa south of the Sahara.

Surprisingly, in contrast, comparatively few analysts (with some notable exceptions: see, for instance, Ghai and Radwan 1983) have put the accent on the growing rural differentiation affecting Africa over the last two to three decades. This differentiation explains most of the stagnation of traditional agriculture and the widespread poverty and child malnutrition typical of most of rural Africa. It also explains the extremely slow modernization of farming techniques, which have changed little despite the growing land scarcity now affecting many countries of Eastern, Western and Southern Africa. The agricultural sector in Africa is characterized by a significant degree of differentiation resulting from three closely interrelated biases, i.e. an anti-rural bias which drains resources from agriculture, an anti-smallholder bias leading to a disproportionate control over land, public expenditure (on R & D, rural infrastructure and fertilizers) and credit by the large "progressive" farmers and the plantation sector, and a gender bias further restricting the access of women to productive resources, limiting the supply of male labour and aggravating inter- and intra-household income distribution.

With growing differentiation and a rapidly increasing population, there has been in many parts of Eastern, Southern and Western Africa - i.e. where most of the African rural population lives - a rise in the number of poor landless and near-landless labourers who rely on wage incomes (whether in agricultural activities or not) in lieu of their own agricultural production. Among them women-headed households face the most acute poverty. This has led to patterns of concentration of incomes and output that used to be less well marked. Moreover, rural differentiation has intensified during structural adjustment. Indeed, in the many countries with substantial numbers of landless, near-landless and smallholders who are net food buyers, increases

in food prices have provoked a redistribution of income in favour of surplus producers and to the detriment of net food buyers (Kaluwa 1990). For instance, even in land-abundant Cote d'Ivoire it is estimated that the poorest 10 percent of the population (who is predominantly rural) produce only 60 percent of the food they consume (FAO 1989b).

In what follows, agricultural performance during the last three decades is reviewed. Particular attention is given to the differential performance of crops predominantly produced in the commercial and estate sector vis-a-vis the performance of traditional African crops, such as millet, sorghum and tubers, that are produced mostly by smallholders. The limited evidence on changes in income distribution and human welfare deriving from them is also analysed. The most common interpretations of the African agricultural crisis are then discussed in relation to changes occurring since the 1960s and to the structural adjustment policies of the 1980s. From the conclusions drawn, policy reforms are framed to promote equity and sustainable development over the long term while pursuing specific short-term measures toward structural adjustment.

II. DECLINING AGRICULTURAL OUTPUT, GROWING IMPORTS AND CHANGING CONSUMPTION PATTERNS

Just over half of Africa's cropped area is under cereals, with another 10 percent of land devoted to the production of roots and tubers. Main staples include wheat, maize, barley, rice paddy, millet, sorghum, yams, and cassava. Figure 1 broadly defines three major crop zones, differentiated according to rainfall and ecology patterns and historical trends in food demand associated with mining and plantation wage labour: the millet-sorghum zone, the rice, corn, roots, and tubers zone, and the corn zone (Bryceson 1989).

Livestock production is also an important element of the region's agriculture, with some 60 million pastoralists running cattle herds comprising as much as 14 percent of the total world cattle population. Expansion of the livestock sector is often constrained by the limited carrying capacity of most of the natural grasslands (FAO 1984). To augment their own production, nomads (often comprising 5-10 percent of the national population in many Sahelian countries) require an estimated 20-30 percent of marketed grain output and thus represent an increasingly important factor for grain markets (GDI 1985).

On average, agriculture contributed 34 percent of Sub-Saharan GDP in

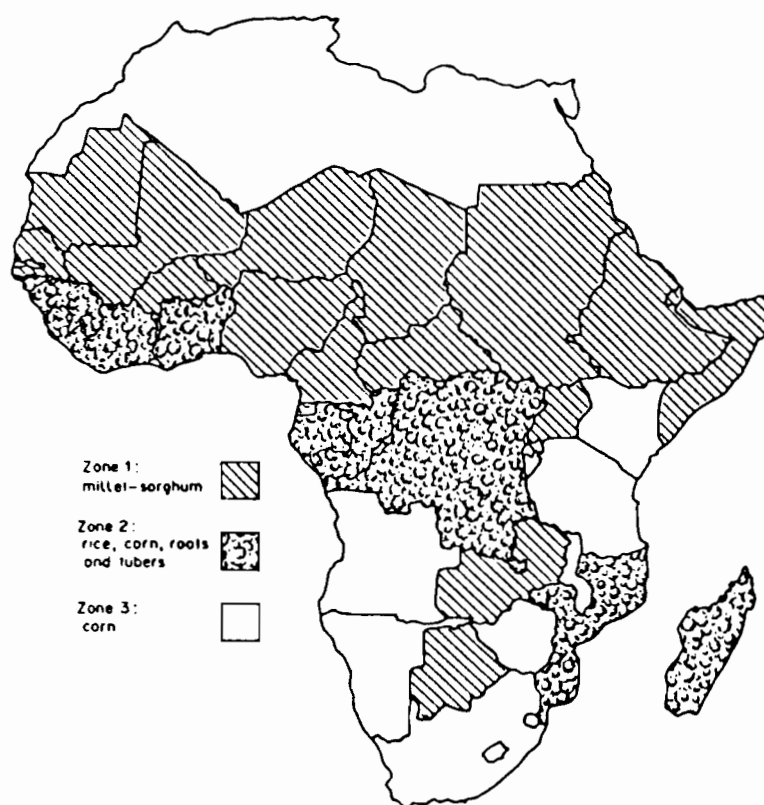


Fig. 1. Map of crop zones in sub-Saharan Africa.

1987, up from 30 percent in 1980 but down from 43 percent in 1965; among low-income countries in the region (excluding Nigeria), 42 percent of 1987 GDP was generated by agriculture. However, the composition and distribution of agricultural output are difficult to document. Official statistics reflect more accurately officially marketed output while there is some underreporting of the output traded on unofficial markets (whether non-monetary or parallel markets), as well as of crops which are produced solely for household consumption or for which no official markets exist. In the latter case, this includes many of the indigenous food crops which fill an important part of the rural diet but which are rarely commercially marketed (e.g. cassava or sorghum in Zambia before the mid-1980s); this is significant in cases (e.g. Nigeria and Tanzania) where root crops contribute 25-30 percent of total calories. Unrecorded or inadequately recorded increases in the production of such foods might therefore have somewhat reduced the severity of the food crisis as measured by official statistics.

Agricultural production across Sub-Saharan Africa has been growing slowly since the 1960s despite the region's wealth of natural resources. The sector's inability to keep pace with the rapidly growing population has led to a persistent and worsening food crisis that occasionally reaches famine proportions. As Carl Eicher (1983) has noted:

TABLE I: AVERAGE ANNUAL GROWTH RATES IN SUB-SAHARAN AFRICA

Average annual % change	1960s	1970s	1980s
Population	2.40	2.95	3.10
GDP	3.80	3.60	0.50
Agricultural production	2.50	1.85	2.50
Food production	2.60	1.60	2.40
Total cereals	2.30	0.90	4.20
Root crops	2.90	2.30	2.00
Total meat	3.00	2.90	1.80
Cereal imports (volume)	9.00	12.70	1.14 <u>a/</u>
Food aid (cereal volume) <u>b/</u>	---	13.40	9.19
Memo items:			
Growth of total imports <u>c/</u>	3.70	7.60	-5.80
Food as % of imports <u>d/</u>	14.00	16.00	12.00
Agriculture as % of GDP <u>d/</u>	43.00	30.00	34.00

Sources: FAO (1986), Atlas of African Agriculture; FAO (1989), The State of Food and Agriculture; FAO (1989), Country Tables; UNDP/World Bank (1989), African Economic & Financial Data; World Bank (1984), Toward Sustained Development in SSA; World Bank (1986), Poverty and Hunger; World Bank (1989), SSA: From Crisis to Sustained Growth.

a/ Note average annual increase of 13.4 percent during 1983-1985.

b/ 1975-1980 average for 1970s. Note single 81 percent increase in 1985.

c/ Averages for 1965-1973, 1973-1980 and 1980-1987.

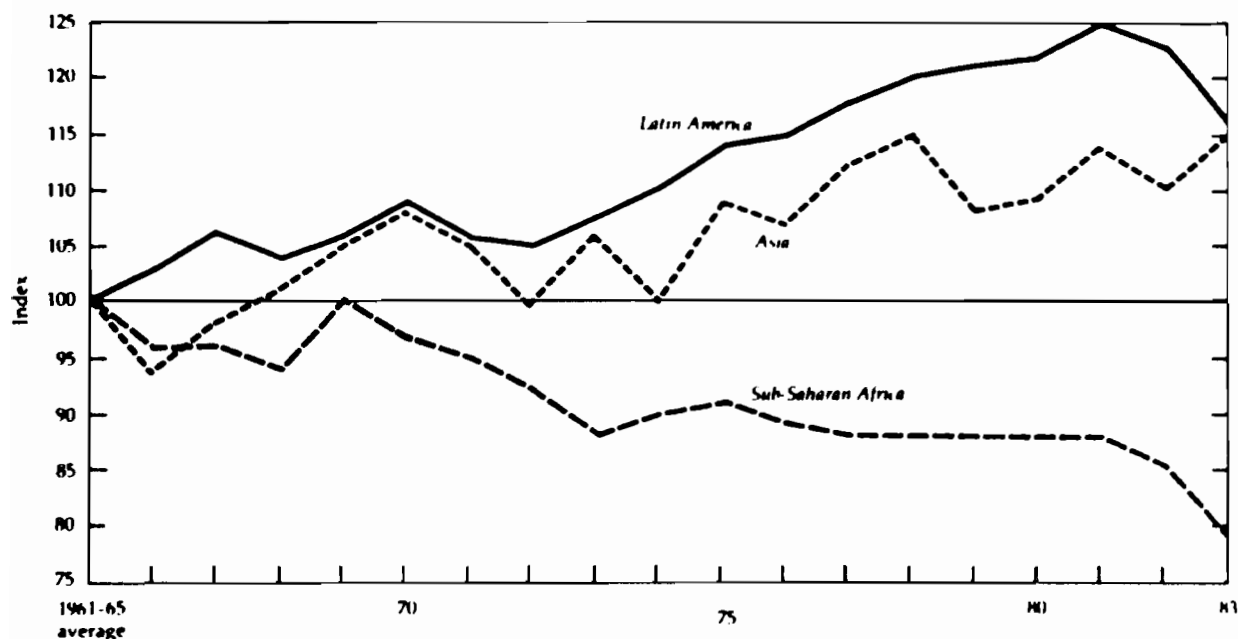
d/ Figures for years 1965, 1980 and 1987.

Africa's current food crisis is long term in nature and has been building up for two decades; blanketing the entire subcontinent are its two interrelated components - a food production gap and hunger. The food production gap results from an alarming deterioration in food production in the face of a steady increase in the rate of growth of population over the past two decades. The hunger and malnutrition problem is caused by poverty - i.e., even in areas where per capita food production is not declining, the poor do not have the income or resources to cope with hunger and malnutrition.

Output and Sectoral Performance

The growth rate of production in agriculture, which averaged between 2 percent and 3 percent annually during the 1960s, slowed during the 1970s (becoming negative in some cases) before rising again in the 1980s (see Table I). Because of the slow growth of output and the acceleration in the rate of

Figure 1.2. Index of Per Capita Food Production, 1961-65 to 1983
(1961-65 average = 100)



Source: Based on data provided by the U.S. Department of Agriculture

population growth, which rose from 2.4 percent per annum in the 1960s to 2.95 percent in the 1970s and over 3 percent in the 1980s, there has been a continuous fall in the level of per capita food production across the region dating from the 1960s. During the 1970s alone, thirteen African states suffered absolute declines in agricultural production and fifteen others exhibited agricultural growth rates lower than their rates of annual population growth. During the 1980s too, there were notable cases of recorded declines in production to 1987 in Angola (88 percent of its 1979-1981 average), Malawi (87 percent), Niger (87 percent), Rwanda (86 percent), Lesotho (83 percent), and Botswana (75 percent) (World Bank 1989). It is important to note that the African food crisis has unfolded during a period in which food production per capita has increased substantially in the other main developing regions (see Figure 2), suggesting therefore the influence of economic, ecological and other factors specific to Africa south of the Sahara.

Although production data may fail to adequately record subsistence production and underreport levels even for those crops marketed commercially (due to parallel market activity, cross-border smuggling, etc.), the extent of the food crisis can be estimated by the level of cereal imports and of food aid. Sub-Saharan cereal imports doubled in volume between the early 1960s and early 1970s, and doubled again between the mid-1970s and mid-1980s; the volume of food aid in cereals rose by more than 600 percent between 1970 and 1986 (Raikes 1988, World Bank 1989).

TABLE II: AVERAGE ANNUAL GROWTH RATES OF SUPPLY AND DEMAND FOR FOOD IN SUB-SAHARAN AFRICA, 1970-1980

	URBAN	RURAL	TOTAL
Food production	0.0	1.6	1.6
Food demand	5.6	2.3	2.9
Difference	-5.6	-0.7	-1.3

Source: FAO (1986): Annex V.

A decomposition of the growth of demand for food between its rural and urban components for the 1970-1980 period shows that the slow increase in total food production was not able to satisfy the rapid growth of urban demand, nor even the more limited growth of rural demand (see Table II). In other words, because of declines in yields or labour productivity and because of growing rural differentiation (see part III), African agriculture has been increasingly incapable of generating a surplus for urban consumption and is also becoming unable to feed the rural population. Imports of cereals (mostly wheat, rice and corn) have therefore filled this growing gap. In 1980 imports represented 17 percent of total food availability (see the first column of Table III), while by 1983-1985 this proportion had increased to 21 percent. As the share of domestic cereal production marketed commercially varies

TABLE III: IMPORTS OF CEREALS IN RELATION TO TOTAL AND URBAN FOOD CONSUMPTION, 1979-1981

	Share of cereal imports in total availability	Share of cereal imports in total domestic trade	Wheat & rice consumption in urban areas as proportion of cereal imports	Total cereal consumption in urban areas as share of total cereal imports
Sudano-Sahel	14	62	75	140
Western Africa	23	48	69	95
Central Africa	29	66	76	125
Eastern Africa	9	37	69	136
Southern Africa	16	44	70	105
Total Sub-Saharan Africa	17	49	70	112

Source: FAO (1986): Annex V.

between 15 percent and 30 percent, with an average of 24 percent for Sub-Saharan Africa as a whole, imports of cereals constituted in 1979-1981 about half of the total domestic trade in cereals (see the second column of Table III). This proportion reached two-thirds of the total in Central Africa. A very large proportion (70 percent) of cereal imports is consumed in urban areas (see the third column of Table III). The rest is absorbed by rural areas which, however, in 1979-1981 provided to the towns on average about 10 percent of the needs of the latter's grain consumption (see the last column of Table III). The rural sector, in other words, generated in 1979-1981 a small net cereals surplus for the urban areas (i.e. domestically produced cereals marketed in urban areas minus cereal imports absorbed by rural areas). Although food production improved in the second half of the 1980s, the situation illustrated above has not changed substantially, and in many countries the share of domestic marketed surplus continues to decline as a share of total urban food consumption. Regional differences are important however: already in 1979-1981 the surplus generated by the rural sector in West Africa was negative, while in Eastern Africa it accounted for about a quarter of consumption in urban areas. The overall picture which emerges is one of a rapidly growing urban demand satisfied to a very large extent, and increasingly so, with imports of wheat, rice and corn. Rural demand is expanding at more contained rates, but it is also not being fully satisfied by domestic production as the latter is growing more slowly than is rural food demand and as a small amount of domestic production is channeled to urban areas.

In addition to compensating for the slow growth of production in relation to domestic demand, the rapid growth of food imports may in part reflect rising domestic transport costs - due in part to the collapse of the transport infrastructure - and changing tastes among consumers for cereals such as wheat, rice and maize in preference to traditional coarse grains such as millet and sorghum. This trend has emerged most clearly in urban areas (see Table IV), where incomes are higher and demand for convenience foods is greater.

The spread of this dualistic consumption pattern has been determined in part by inappropriate production and subsidy policies and inadequate domestic marketing and transport systems, which tend to make it easier to supply cities with imported rather than local grains. The price differentials among calorie sources can be striking and clearly inspire consumer choice. In some parts of rural Niger, close to 90 percent of total calories still come from traditional cereals (millet and sorghum) for which the cost per every 1,000

TABLE IV: CONSUMPTION PATTERNS BY MAIN STAPLES, 1979-1981

	Rural Areas			Urban Areas		
	Wheat & rice	Other cereals	Roots & tubers	Wheat & rice	Other cereals	Roots tubers
Sudano-Sahel	11.2	84.8	4.0	47.4	50.0	2.6
West Africa	12.8	42.1	45.1	49.8	22.8	27.4
Central Africa	2.3	20.0	77.6	21.4	16.0	62.0
East Africa	15.5	56.1	28.4	39.5	45.1	15.3
Southern Africa	5.6	60.6	33.8	53.1	35.1	11.5
Sub-Saharan Afr	11.1	53.8	35.1	43.1	30.7	26.2

Source: FAO (1986): Annex V.

calories is less than half that of other major calorie sources (and one-tenth that of meat) in regions where other (non-traditional) cereals are not readily available; in Uganda, however, the cost per 1,000 calories of matoke (the staple green banana) is two to three times higher than of maize meal, leading to a clear substitution pattern over time (FAO 1989a, ILO 1985).

Additionally, root crops are particularly bulky to transport and, given the backward state of food processing technology in this area, difficult (and usually cost-inefficient) to process for commercial markets. Even in rural areas, therefore, there may be a shift in cereal consumption patterns (including a move away from roots and tubers) based upon the relative ease with which the non-traditional cereals (i.e. maize and wheat) may be processed relative to traditional cereals and root crops; the convenience of processing becomes increasingly important as women's time resources become more constrained. The diffusion of such dualistic consumption patterns should not lead, however, to the simplistic conclusion that urban food consumption patterns have changed permanently. More favourable consumer prices for local crops, their improved processing (as in the case of millet in Senegal), improved transport and marketing infrastructure, and supportive trade and macroeconomic policies, such as the recent ban on the importation of wheat in Nigeria that has raised the price of cassava (Carr 1989), can modify urban consumption patterns which have not yet fully crystallized.

Changes in the Pattern of Crops Produced

The agricultural dualism alluded to above is also evident from cropping patterns. Smallholders, many of whom are women, specialize in low-risk, low-input, low-yield traditional crops (sorghum, millet, dura, roots, and tubers). Such specialisation is influenced by many factors, including agro-geological conditions, limited access to inputs and credit and greater risk-aversion. The estate and commercial farm sector, in contrast, concentrate to a considerable extent on export crops and internationally traded grains. It is important, therefore, to analyse changes in output performance by the main types of crops in order to infer the relative performance of smallholders versus that of commercial farmers and the estate sector (Kaluwa 1989). While such an assumption has some obvious limitations (since a considerable proportion of smallholders takes part in the production of some export crops such as coffee, cocoa and groundnuts), it nevertheless helps in tracing the income and welfare effects of changes in agricultural output on the various rural groups identified, i.e. the landless and near-landless, small subsistence farmers, commercial farmers, and the estate sector.

Trends in average annual per capita growth rates for different crop groups in Sub-Saharan Africa are summarized in Table V. While there is an almost universal decline in all categories (reflecting the sustained fall in per capita agricultural production over the years), the data point to a differentiated performance by types of crops. The production per capita of African cereals (i.e. sorghum and millet) and roots and tubers has declined more rapidly or grown more slowly than has that of non-African cereals (i.e. wheat, rice and maize) in three-quarters of the cases where a comparison is possible on the basis of the growth rates reported in Table V. Moreover, the differential between growth rates of traditional versus non-traditional crops increased during the 1980-1987 period. Similarly, the production per capita of export crops for the region as a whole declined during the 1980-1987 period much less than did that for African cereals and roots and tubers, statistics for which remain particularly unreliable. During the 1965-1980 period, however, export crops suffered the most severe decline in the production of all types of crops. There are some indications therefore that the decline of African agriculture has been more pronounced for traditional crops than for non-African cereals and - since the 1980s - for export crops. These trends suggest negative consequences particularly for small farmers (as the most frequent producers of such crops) and greater nutritional vulnerability (especially among small farm households). As noted earlier,

TABLE V: AVERAGE ANNUAL PER CAPITA GROWTH RATES OF MAJOR CROPS

Country group	African cereals	Non-African cereals	Roots and tubers	Non-food a/
Low-income SSA				
1965-80	-1.1	-0.3	0.0	-3.9
1980-87	-3.0	0.2	-7.1	1.5
Mid-income SSA				
1965-80	-2.7	0.0	-0.7	-5.6
1980-87	0.6	-3.8	-7.3	-4.5
Oil-Exporting SSA				
1965-80	-2.1	-1.6	-0.4	-9.8
1980-87	-2.8	-1.0	-6.8	-6.1
All SSA				
1965-80	-1.3	-0.3	-0.2	-4.3
1980-87	-2.6	-0.4	-7.1	-0.4

Source: Derived from World Bank (1989).

a/ Periods include years 1975-1980 and 1980-1985 only.

however, these figures must be read with caution since changing output patterns may reflect not only failed production in one crop but also farmer response to market demand for other non-traditional cereals.

The trend toward a relatively worse performance of traditional African foodcrops is confirmed by data on changes in yields by main crop types. During 1960-1970, wheat yields in low-income Africa rose by 2.05 percent annually, maize by 0.04 percent and rice by 0.54 percent, while millet yields rose by 0.17 percent and sorghum by 0.16 percent; during 1970-1984, wheat yields continued to rise by 2.10 percent, maize by 0.96 percent and rice by 0.09 percent, while millet and sorghum yields fell by 1.56 percent and 0.78 percent, respectively (World Bank 1986).

The differential expansion rates of various types of crops (see Table V) raise the question of why small farmers (usually dominating food production) fail to benefit from policy changes which may be promoting the growth of the modern sector. For example, in Malawi there has been a more rapid rise in estate production than in smallholder production (the latter failing to keep pace with population growth), with estimates suggesting that as few as the top 20 percent of small-scale farmers benefit from national agricultural policy decisions (Morna 1989). This has had particularly severe consequences for women farmers who comprise the majority of smallholders in Malawi.

The data in Table V also indicate that agricultural performance has exhibited a falling trend for many of the crops produced for export (with steeper falls in production than for food crops during the 1965-1980 period). Notable examples of decline in agricultural export volumes since 1970 have occurred for cocoa (e.g. Ghana, Sierra Leone and Togo), coffee (e.g. Angola, Cameroon and Togo), cotton (e.g. Angola and Burundi), groundnuts (e.g. Gambia and Guinea Bissau) and tobacco (e.g. Swaziland, Tanzania and Zambia) - all with serious implications also for the incomes of those small farmers engaged in the production of such crops (World Bank 1989). Even where there may have been an increase in volumes traded, the fall in the unit value of the exported commodities has sharply reduced the earnings of the agricultural export sector (Mosley and Smith 1989). Many countries have increased production and export levels in attempts to compensate for falling international prices, only to find that the increase in commodity stocks further depresses commodity prices and consequent export earnings.

III. IMPLICATIONS FOR INCOME DISTRIBUTION, HOUSEHOLD WELFARE AND NUTRITION

There are scattered but important indications that the distribution of incomes from agriculture has changed over the last three decades. Previous analyses suggest a trend toward worsening income distribution (Ghai and Smith 1987). For instance, in the Central and Nyanza provinces of Kenya, comprising 76 percent of all smallholders, the share of the bottom 40 percent in land and income distribution declined from 1963 to 1974. In addition, in Ghana, Zambia, Malawi, and Cote d'Ivoire there was, during the same broad period, an increase in the share of farm earnings accruing to commercial farmers, while in Somalia and Botswana there was evidence of increasing concentration in cattle ownership. Indeed, large farmers and the commercial sector are generally able to control a greater - and often growing - share of productive resources and to exploit better the linkages between the agricultural sector and other sectors of the economy; it is the larger farmers who have been able to gain control of the most fertile land and to register production gains in response to incentives intended for pricing policy reform (Kaluwa 1990). Even in the case of sectoral decline, large farmers are in a better position to minimize their losses since they command greater resources with which to overcome, for instance, obstacles arising from the general deterioration of rural infrastructure. Small farmers, on the other hand, have a weaker

resource base and may retreat from commercial production altogether, resorting to subsistence production or foraging.

To the extent that small farmers are predominantly involved in the production of traditional cereals and tubers, they have suffered the greatest losses among agricultural producers (see Table V). Small farmers are also disadvantaged in that they lack the necessary resources (e.g. adequate credit, appropriate inputs, rural transport, and storage infrastructure) to shift to the production of cash crops. The position of the small farmer has worsened where the general decline in support systems for agriculture has left small remote farmers increasingly isolated from commercial activity, as in the case of Sierra Leone. Those farmers engaged in the production of wheat, maize and rice have been far less affected, as the production and yields data presented above show. In most countries, such farmers tend to coincide with medium and large commercial farmers.

Thus the need to correct the rural-urban income gap must be seen in relation to the long-term pattern toward income concentration within rural areas and to the tendency of adjustment policies to increase further income inequality whenever the distribution of agricultural output is very skewed. It is in fact no longer clear that a simple shift in terms of trade in favour of agriculture will benefit all rural residents; data compiled for a case study of Zambia during adjustment suggest that, although overall farm income may have risen slightly, the distribution of agricultural incomes has grown more unequal as larger commercial farmers have benefited from policy changes and the rural poorest experienced no gain (and may have suffered from rising consumer prices in the event that the household is a net purchaser of food) (Strickland 1989). Changes in pricing policies for internationally traded cereals alone, without an improvement in access to inputs and rural infrastructure for the small farmers, may thus worsen rural income distribution.

The consideration of income and poverty effects arising from changes in production must also include an analysis of changes occurring within the rural household, with particular attention to the activities of women as important rural producers. In many countries, such as Malawi, an estimated 70 percent of small farmers are women (Morna 1989). The importance of the role of women in agriculture is underscored by statistics on rural households and production: an estimated 30 percent of rural households in Africa are headed by women, and women are estimated to contribute some 80 percent of agricultural labour, mainly as unpaid family labour; they produce approximately 60 percent of the food consumed by rural households, and they

generate at least 33 percent of all household income, mainly through small-scale agro-industry, trading, craft work, and casual labour (Jiggins 1989). Generally, women work long hours, usually more so than men. In rural Niger, for instance, a woman's working day may average 15 to 16 hours (FAO 1989a), while in rural Cote d'Ivoire (FAO 1986: Annex V) women do 67 percent of all the work done by men and women together, and 10-14 year-old girls work as much as do men of 20-25 years of age.

The distribution of production activities by gender and the assignment of household income among household members carry implications for the welfare of the household. Any shift in female time allocation toward the increased production of cash crops - which may follow from changes in producer price policies - must be measured against other costs which would be incurred by the changing production structure (Vaughan and Moore 1988). Data for the region already suggest that, for a growing number of rural households, the stress on female labour time has become insupportable (Jiggins 1989). Case material from Zambia indicates that agricultural modernization and emphasis upon production for the market have increased women's workload (in terms of hours spent in agriculture) as compared to that of men, and that men have on balance benefited more from cash-crop sales (Munachonga 1988).

Given women's role in household nutrition and health, any change in the productive activities of women will carry consequences for overall household welfare, particularly child feeding and child nutrition and care. This will be affected by a change in gross production for household consumption needs (if cropping patterns change or the woman farmer shifts to a cash crop), the satisfaction of which may lead to higher national food import requirements (which may serve as a useful proxy measure). Household nutrition will also be affected by changing real income for the household, dependent in part upon the relative consumer price of food and the degree to which the household is a net food purchaser or producer.

Food purchases for the household also depend upon the proportion of total income commanded by the woman, a factor which may vary as the woman's production activities change. While nutrition may be affected more by the effect of a shift to cash cropping upon a household's effective demand for food (with changes in employment and income) than by changes in overall food availability, it is necessary to consider the source and the distribution of incomes within the household. Where incomes are both in cash and in kind, women are more likely to command control over the latter and to use it for consumption purposes. Increased income from cash sales does not necessarily

TABLE VI: TRENDS IN PER CAPITA CALORIE SUPPLIES AND INCIDENCE OF UNDERNUTRITION, 1969-1971 TO 1983-1985

	Per capita supplies (calories per day)	Incidence of undernutrition (Total population)		Estimated number of undernourished people (millions)	
		Alter. A */	Alter. B	Alter. A	Alter. B
1969-71	2100	23.5	32.6	63	86
1979-81	2150	21.9	30.6	78	110
1983-85	2050	26.0	35.2	105	142

Source: FAO (1988a).

*/ Alternative A assumes a minimum caloric requirement of 1.2 times the Basal Metabolic Rate (BMR), while in Alternative B the requirement is 1.4 BMR.

benefit household nutrition, especially as such income is periodic and received in lump sums and is often spent on non-food items; notably, such income is also frequently controlled by the male head-of-household.

Little evidence has been found to substantiate the postulation that increased commercialization of agriculture will lead necessarily to improved nutrition; other factors, such as sanitation and health services, play an important determining role (see, e.g., IFPRI 1987). Emphasis upon commercialization will continue to have minimal effects upon household nutrition patterns as long as issues of intra-household income distribution remain unaddressed.

In conclusion it is useful to report data on changes in overall food availability and nutritional status that are the synthesis of the various trends discussed above in overall demand and production, differential production by crop types, and intra-rural and intra-household income distribution. The data in Table VI indicate that the rapid surge in commercial imports and in food aid allowed for modest but positive expansion in average total food availability per capita during the 1970s. While trends in supply and demand for food did not change during the 1980s, the economic crisis affecting Sub-Saharan Africa imposed serious limitations on the possibility of bridging an ever growing gap through commercial imports which continued to increase only moderately (see Table I). Despite continued high levels of food aid, overall average food availability per capita declined between 1980 and 1985. By 1983-1985 the average calorie availability per capita per day had declined to a level lower than that of 1969-1971.

In view of the decline in average calorie availability, the possible worsening in the distribution of production among different classes of farmers suggested by the data in Table V, and the potentially adverse trends discussed above concerning the number of landless and the time-use of women, the incidence of malnutrition among the population as a whole increased from 21.9 percent to 26.0 percent between the early and the mid-1980s (Alternative A). Under Alternative B, the incidence of malnutrition increased over the same period from 30.6 percent to 35.2 percent. However tentative, these estimates point to a dramatic worsening of overall household welfare in Africa.

IV. CAUSES OF THE DECLINE IN AGRICULTURE

Three main theses have been put forward over the last ten years to explain the stagnation of African agriculture:

- The "external shock thesis" emphasizing negative changes in international terms of trade,
- The "pricist thesis" stressing the negative influence of overvalued exchange rates and low producer prices, and
- The "structuralist thesis" arguing that technological and infrastructural backwardness and neglect are the root of the problem.

The argument in this paper is that, while all three theses, and in particular the third, contain several elements of truth, some amount of recasting is necessary to include in the analytical framework an element neglected in the external shock and pricist theses and non-central in the structuralist thesis: the growing differentiation within the rural sector and the accompanying misdistribution of resources among subsistence farmers, small commercial farmers, "progressive" farmers, and the estate sector. In a sense, the explanation put forward hereafter might be called "structuralist-misdistributive".

Before discussing the validity of the three theses referred to above and before attempting to derive by implication an explanation for the decline observed, it is necessary to review - if briefly - the changes in agrarian structures and modes of production that have occurred over the last 20 to 30 years. This will help highlight the considerable differentiation of rural

Africa and underscore the need for specific responses for groups of farmers operating under substantially different conditions.

A Premise: Agrarian Structures in Transition

Although varying from place to place, the traditional land tenure system prevailing in pre-colonial times in most of Africa was characterized by communal ownership, with land allocated for cultivation by the chief, the village headman or the council of the elders. Land was in almost unlimited supply, reducing the scope for differentiation within the rural sector. Cultivation, carried out on a slash-and-burn basis with long fallow periods (from a minimum of 6-7 years up to 10 years), was founded on a sexual division of labour and geared to subsistence needs. Production - concentrated on a main growing season of about four months, as well as on a second shorter season in those countries with a bimodal precipitation pattern - depended essentially upon land and labour. There was little or no capital accumulation, and output could only be increased through greater labour inputs. Excepting climatic changes, output per head and yields per hectare remained constant. Under this stationary state, there were few changes in social differentiation (as land was in unlimited supply), nutritional standards (as land and labour productivity were constant), or soil fertility (as long fallow periods allowed for an appropriate reconstitution of nutrients).

Over the long-term four factors have substantially modified this situation and led to a highly differentiated rural sector both among and within countries:

First, colonization led to the alienation of large tracts of land (particularly in the most fertile areas) for use by European settlers and for the establishment of plantations, in Kenya and Cote d'Ivoire, for instance. This also led to the creation of a class of agricultural workers dependent on wage labour for their livelihood. In recent times similar trends have continued in Malawi owing to the decision of the Government to alienate lands under customary tenure to the estate sector (Kaluwa and Kandoole 1989).

Second, the commercialization of agriculture put additional pressure on the traditional land tenure system. The moment land was planted with cash crops, especially tree crops, it became vastly more valuable. Although there was an attempt to develop a system of registration of private ownership in only a few countries, such as Kenya, de facto land ownership became more

individualized in several countries. In countries such as Ghana and Nigeria, significant land markets developed alongside the beginnings of a system of tenancy and share cropping (Ghai and Radwan 1983).

Third, population growth substantially altered farming systems in many areas. Improvements in health-care technologies led to large reductions in death rates, while birth rates remained broadly constant. This inherently positive development led to high and rising rates of population growth, as mentioned above. Initially, increasing demand for food was satisfied by extending the surface of good-quality land brought under cultivation. At a later stage, it encouraged migration to areas of lower and more variable rainfalls and the shortening of the fallow period that - in the absence of improvements in irrigation and soil fertilization practices - led to declining yields per hectare and rapidly decreasing output per capita, as in the case, for instance, of Sierra Leone, Gambia and Nigeria (FAO 1988). A study on Eastern Nigeria describes the decline in yields resulting from shortened fallow periods induced by population growth. In three villages selected for their uniformity in agro-geological conditions and social organization, the average yields of cassava were 10.8, 3.8 and 2.0 tonnes per hectare corresponding to average fallow periods of 7, 4 and 2 years (Lagemann 1977, quoted in Carr 1989). In extreme cases, the shortening of the fallow period, coupled with growing demand for wood for fuel and construction associated with a growing population, led to severe problems because of loss of soil fertility, erosion and even desertification. These well-documented processes, affecting Rwanda, Burundi, Ethiopia, and the other Sahelian countries on a massive scale, are at work to varying degrees in most African countries. In all of them, the most tragic element has been the inability to "manage the transition" from a land-abundant, shifting agriculture to more input-intensive settled farming systems. In the case of Africa, the Boserup hypothesis - which holds that, with increasing population densities, a corresponding shift to greater agricultural production and more intensive use of the land takes place autonomously through the development of market forces - has not yet been verified.

The data in Table VII show unambiguously that the input intensity of production varies only marginally between land-rich and land-scarce countries of Sub-Saharan Africa (panels 1 and 2). In the latter group of countries, however, the main strategy for increasing agricultural production requires, together with a more equitable distribution of land, an intensification in the use of land through the increased application of fertilizers (Carr 1989). Providing fertilizers to small farmers with small plots in remote areas of,

TABLE VII: AGRICULTURAL INPUTS AND YIELDS IN SUB-SAHARAN AFRICA AND SOUTHEAST ASIA, 1982-1984

Country	GDP per capita 1987 US\$	Arable land per agric. worker (ha)	% Irrigated land on arable land	Fertilizer consumption (kg) per ha	Yields of cereals (tonnes/ha)
<u>A. Land-rich Sub-Saharan Countries</u>					
Cameroon	970	3.0	0	12	1.0
C.A.R.	330	5.5	0	1	0.5
Zaire	150	1.9	0	2	0.9
Average	480	3.5	0	5	0.8
<u>B. Land-scarce Sub-Saharan Countries</u>					
Burundi	250	0.4	1	2	1.1
Ethiopia	130	1.0	0	5	1.2
Kenya	330	0.7	1	27	1.6
Lesotho	370	0.5	0	24	0.8
Malawi	160	1.1	1	18	1.2
Nigeria	370	1.4	0	9	0.7
Rwanda	300	0.3	0	1	1.2
Somalia	290	0.8	4	3	0.6
Uganda	260	0.9	0	0	1.7
Average	270	0.8	1	10	1.1
<u>C. Land-scarce South-East Asian Countries</u>					
Bangladesh	160	0.5	16	41	2.0
India	300	0.9	25	38	1.5
Indonesia	450	0.7	26	65	3.3
Nepal	160	0.4	24	13	1.6
Pakistan	350	1.4	-	62	1.6
Sri Lanka	400	0.7	28	73	2.8
Vietnam	-	0.4	17	44	2.5
Average	300	0.7	23	45	2.2

Source: Elaborated from Alexandratos (1988).

often, landlocked countries still represents a formidable challenge and may require in many cases subsidies for the transport cost of fertilizers (Lele 1989).

The data in Table VII also show that fertilizer use and the proportion of arable land irrigated in the land-scarce Asian countries - i.e. countries with comparable average amounts of arable land per agricultural worker and at a similar level of economic development - are, respectively, four and twenty-two times greater than they are in the land-scarce countries of Africa south of the Sahara. Land yields - measured as tonnes of cereals per hectare

of land - correlate closely with the input intensity of production. Average yields increase from 0.8 tonnes per hectare in land-rich African countries (where maximization of labour productivity takes precedence over that of land productivity), to 1.1 tonnes per hectare in land-scarce African countries (where, in contrast, land yields ought to be increased), and to 2.2 tonnes per hectare in the land-scarce but relatively more input-intensive economies of Southeast Asia.

Fourth and last, public expenditure (and private accumulation) in agriculture has been grossly inadequate in both volume and pattern. This phenomenon should be seen within the wider context of rural-urban income distribution or, to be more explicit, within the context of the "urban bias" paradigm. A thorough discussion of this phenomenon would require an analysis of exchange rates, pricing policies for inputs and products, taxation and public expenditure, and saving and investment flows. While the limited evidence available on farmers' terms of trade points to a variety of situations (with losses for export-crop growers broadly more frequent than those for food growers), the evidence is more conclusive in terms of flows of taxation and public expenditure. While the rural-urban breakdown of all public expenditure (including health, education and general administration) is not readily available, data on the expenditure on agriculture provide a partial indication of the neglect suffered by the rural sector. Since the early 1960s, the share of agriculture in total government expenditure has generally been around or below 10 percent. The data in Table VIII for the 1979-1981 period confirm this situation. In addition, data covering the 1971-

Table VIII: SHARE OF AGRICULTURE IN TOTAL GOVERNMENT EXPENDITURE, 1979-1981			
	Agr. Share in Publ. Exp(1)	Agr. Share in GDP(2)	Ratio (1)/(2)
Centr. Afr. Rep.	6.1	35.8	17.0
Gabon	2.1	6.5	32.3
Gambia	14.2	28.7	49.5
Kenya	15.6	35.4	44.1
Liberia	9.4	35.1	26.8
Mali	11.9	41.4	28.7
Somalia	26.7	60.2	44.4
Swaziland	11.9	30.5	39.0
Tanzania	9.7	51.4	18.9

Source: Norton (1987).

1973 to 1985 period for Malawi, Tanzania, Kenya, Ghana, and Cameroon show that the share of agriculture in total expenditure increased in the latter country, remained constant in Kenya, but declined in all others (Mosley and Smith 1989).

The pattern of public expenditure in agriculture has also reinforced inequalities associated with ecological factors, location and access to resources, weakened the peasant sector and increased rural differentiation. By and large, public expenditure on road and transport infrastructure, input subsidies, extension, R & D, and irrigation has favoured large-scale farmers and the plantation sector (often occupying the best and most accessible land to start with) at the expense of small commercial and subsistence farmers, as in the case of Kenya, Malawi, Zambia, Botswana, Ghana, Nigeria, Zimbabwe (until independence), and others (Ghai and Radwan 1983). Data on fertilizer use, for instance, show that - with the exception of a few countries with good distribution systems that also reach smallholders, as in Kenya - fertilizer is generally used for export crops, particularly for cotton and groundnuts. On average, export crops - grown predominantly by large farmers or in the estate sector - received 32 kilograms of fertilizers per hectare in the early 1980s, while food crops received an average of only 5 kilograms per hectare (FAO 1986: Annex V).

A review of expenditure on R & D in agriculture, for instance, points to substantially greater efforts in the areas of export crops (grown predominantly by large farmers and the plantation sector) than for traditional peasant crops. The Consultative Group on International Agricultural Research indicates that in 1976, \$39 million were spent in developing countries and international centres on research on coffee. In the same year, \$23 million were spent on research on maize, while at the same time no significant research was carried out on sorghum and millet. In the Sahel, perhaps the area where the food crisis has been most severe, improved seeds were developed and adopted for cotton and groundnuts, while little or no improvement occurred in the area of the main food crops, i.e. millet and sorghum (FAO 1986: Annex V). Lipton (1985) concludes that R & D in Sub-Saharan Africa has yielded low returns and favoured export crops and, in this way, has mainly benefitted consumers in Western countries. The extent of the neglect of R & D on traditional African cereals can best be grasped if it is considered that maize, sorghum and millet represented in 1982, respectively, 31 percent, 23 percent and 22 percent of the total cereal production. Obviously it is on these "poor people's staples" that research for high-yielding varieties should be concentrated.

The successive unfolding and interaction of the four phenomena described above have led to radical changes in land use, tenure and farming systems, a rapidly growing differentiation in the resource base (including land) among different types of farms and varying degrees of integration in the market economy. Broadly speaking, the rural sector can now be represented schematically as comprising:

- Landless and near-landless peasants, respectively estimated in 1985 at 15 percent and 30 percent of rural households in Africa south of the Sahara as a whole (FAO 1988, Alexandratos 1988, Durring 1989). In 1985 there were close to 20 million landless labourers in Africa south of the Sahara. Kenya, Malawi, Rwanda, and Burundi are examples of countries where such a phenomenon is particularly acute. In several countries near landlessness has been accompanied by a "feminization" of these farms.

- Resource-poor traditional subsistence peasants still relying almost exclusively on land and labour inputs for their production activities and gearing their production primarily to their own consumption needs. For them - possibly another 40 percent of rural households - labour shortage during the main growing season, limited irrigation potential and declining soil fertility are the main problems in production.

- Resource-poor small commercial farmers, broadly adopting the simple production technology described immediately above, but cultivating both food crops and cash crops such as coffee and cocoa. They are more integrated into the market and are therefore potentially more responsive to changes in the relative prices of inputs versus outputs if conditions of timely and efficient entry into these markets (for seeds, tools, fertilizers, credit, extension services, marketing, etc.) can be ensured.

- Medium and large commercial farmers with considerable access to fertile land and other productive resources and producing both food and non-food crops for local and export markets. Farming techniques are generally capital- and input-intensive, often reflecting a skewed distribution of agricultural credit (frequently at negative interest rates), subsidized inputs and extension services.

- The estate sector - at times coinciding analytically with the large commercial farm sector - concentrating generally only on the production of export crops. These last two sectors were estimated to own in the early 1970s between 20 percent and 40 percent of all arable land in several Sub-Saharan countries.

The articulation of the rural sector among these five categories varies substantially with agro-geological conditions, population density and history. Where arable land is still in unlimited supply, as in parts of Central and Southern Africa (Congo, Gabon, Central African Republic, Zaire, Zambia, and Angola), landlessness and near-landlessness are virtually absent, and - given present and expected factor endowment - the main problem is to increase the productivity of the scarcest production factor, i.e. labour (Tshibaka 1989). However, contrary to popular belief, substantial differentiation also exists in land-abundant countries. A recent study on rural stratification in Acholi in southern Sudan shows, for instance, that the top ten percent of the rural population controlled 24 percent of cash income, while the share of the bottom ten percent was only 1.8 percent of such income. Poor households also exhibited a lower degree of self-sufficiency in basic foods and owned fewer consumer goods. Such relatively high inequality appeared to be directly related to the household endowment of land and human resources, as well as to access to (distant) markets for the sale of surplus crops, the exposure of the (head of) household to life away from the village, and more frequent visits by extension workers (House and Phillips-Howard 1990).

Problems of land scarcity and unequal access to the land, however, are more common - and are becoming even more so as population expands - in the Sahel and in parts of coastal West Africa, mountainous East Africa and the Southern dry belt. In 1990 average arable land per agricultural worker is estimated to be less than one hectare in 12 countries, between one and two hectares in 15 countries and more than two hectares in 11 countries (Alexandratos 1988, see also Lele and Stone 1989). Thus, in view of the low to medium potential of most land and of the fragility of the soils, land does not constitute a major constraint to production in only 11 countries (including Zambia, Cameroon, Congo, the Central African Republic, Sudan, Cote d'Ivoire, and others). These countries still contain substantial reserves of land, but account for less than 20 percent of the African population. Barring migrations of biblical proportions, these data indicate therefore that the distribution of the available reserves of potential land relative to the distribution of the population will not allow the prospects of the majority of African smallholders to be improved. Per capita land figures can be deceptive since they can conceal important differences in soil fertility and regional concentration of population. However, similar conclusions about land scarcity have been reached by an FAO study on land carrying capacity as assessed by soil and climatic conditions and existing farm technology. The

study found that the actual population in 1975 already exceeded what the land could support on a sustainable basis in 14 Sub-Saharan countries out of 40, i.e. Botswana, Burundi, Ethiopia, Kenya, Lesotho, Malawi, Mauritania, Namibia, Niger, Nigeria, Rwanda, Senegal, Somalia, and Uganda, comprising about half of the population of Africa south of the Sahara (Livingstone 1990).

The agricultural labour force is expected to grow for the rest of the century at the modest rate of 1.8 percent per year for the region as a whole, although in Kenya and Rwanda, both land-scarce countries, it is expected to grow at 3.1 percent and 2.7 percent, respectively (Alexandratos 1988). The continuation of such trends will mean that close to two-thirds of the African population in the year 2000 will be living in countries affected by some or a considerable degree of land scarcity and, in the absence of major changes in farm technology and land distribution, at the limits of land carrying capacity.

The problem of access to land by the poor has been compounded by an increase in the inequality in land ownership that has accompanied changes in land tenure on the model of Western property-right systems over the last three decades, the alienation of land under customary tenure to the estate sector and the expansion of an unregulated market for land transactions that has accompanied the commercialization of agriculture. Agricultural censuses and sample surveys available for 20 Sub-Saharan countries show that, already in the late 1960s and early 1970s, inequality in the distribution of land appeared to be more pronounced than would normally have been deduced from the widespread perception of an African agriculture characterized by land abundance, traditional land tenure systems and egalitarian subsistence-farming. With the exception of clearly land-abundant countries, such as Congo, Zaire and the Central African Republic, where Gini coefficients oscillated around 0.3, Gini coefficients ranged between 0.4 and 0.7, with a mode of 0.4-0.5 (Ghai and Radwan 1983, FAO 1988). On the whole, land concentration in the region was less marked than it was in Latin America and the Middle East (where Gini coefficients of 0.7-0.8 were more frequent). However, it was not very dissimilar from that in Southeast Asian countries, such as Pakistan (0.51), Thailand (0.45) and the Philippines (0.51), where land reform was (and still is) seen as a central policy issue for the alleviation of poverty and the improvement of the efficiency of agriculture. Data for the late 1970s and 1980s are more fragmentary. Census data are available only for six countries. Land concentration appeared very high - higher than in the early 1970s - in Kenya and Madagascar (with Gini

coefficients of 0.8) and moderate (with a Gini of about 0.4) in Mauritania, Niger and Malawi (FAO 1988). In Malawi, however, land concentration increased again over the 1980-1986 period (ibidem).

Landlessness, share-cropping, frequent recourse to wage-labour, shifts to marginal land, land concentration, and, as a result, growing rural poverty have therefore emerged in several countries of the Sahel, Western Africa and the dry belt of Southern Africa and in most countries of Eastern Africa. Apart from landlessness caused by the shortage of land in certain countries such as Lesotho and Rwanda, the major factor affecting landlessness in Africa south of the Sahara is the growing tendency toward the alienation to large farmers or the estate sector of land under customary tenure and, perhaps even more, toward the unchecked privatization of land rights, leading to a dispossession of the poorest in the process of adjudication or through forced sales due to indebtedness.

Unequal access to land and other resources is particularly acute for women, who (as mentioned above) play a crucial and increasingly important role in food crop agriculture (Due and Magayane 1989). According to the Malawi 1980-1981 National Sample Survey of Agriculture, 47 percent of male-headed households had holdings of less than one hectare. In contrast, for female-headed households, the percentage was a much higher 69 percent (Kaluwa 1990). For female-headed households, the gender bias compounds the class bias in access to resources despite trends toward the "feminization" of food crop agriculture and the emerging integration of women in cash crop farming.

In summary, three major and closely interrelated problems have come to afflict African agriculture:

- An anti-rural bias, which drains resources out of agriculture through overtaxation of export crops, inadequate producer prices, a low share of public expenditure in rural areas and, in several cases, exchange rate overvaluation. This has led to low average levels of investment, fertilizer use, R & D, and capacity building in agriculture as a whole.

- A strong, and growing, differentiation within the rural sector characterized by the control of a disproportionate share of land, public expenditure (on R & D, rural infrastructure and fertilizer subsidies) and credit by "progressive" farmers and the estate sector and by the exclusion of smallholders from the production of particularly profitable crops (as in the case of burley tobacco in Malawi or maize in Zambia). This has led to increasing poverty and malnutrition and landlessness and near landlessness and to the skewed distribution of inputs, yields and outputs described in the

previous pages. In land-scarce countries, it has also led to considerable allocative inefficiency since yields per hectare or total factor productivity are in most cases greater in the small farm sector. In addition, this dualistic pattern has thwarted efforts at reducing rural poverty through increases in producer prices, as the distribution of the benefits of such a policy has been strongly biased in favour of food surplus farmers and the plantation sector.

- A gender bias, which is a source of intra-sex and intra-household inequality. First, restrictions on the ownership of land and the access to inputs and credit by women reduce the incentive and ability of women to increase agricultural output and are in clear contradiction with the growing trend toward the "feminization" of agriculture. Second, the sexual division of labour typical of most African households is responsible for the heavier workload of women that threatens to disrupt the maintenance of household welfare, particularly child welfare, especially during times of intense agricultural activity. The sexual division of labour is also responsible for the restricted supply of male labour during critical phases of the farming cycles (such as planting, weeding and harvesting) that constrains total agricultural output. Thirdly, the control of household cash income by men limits the potential benefits of the shift of women from subsistence production to cash cropping that results from related changes in pricing policies. Furthermore, in some cases, such a shift could increase malnutrition, particularly among young children.

The Validity of the Three Theses for African Agricultural Decline

The preceding discussion has been necessary in order to illustrate the past and present evolution of agrarian structures and to point out the variety of situations and growing stratification in terms of farming techniques, access to productive resources and market integration of various groups of farmers.

How applicable are the "external shock", "pricist" and "structuralist" theses illustrated earlier in light of the preceding discussion (and, of course, other factors)?

The "external shock" thesis. After a surge in the 1974-1978 period, the international prices of cocoa, coffee and cotton have declined sharply since 1978, while that of copper has been on a long-term decline since the mid-1960s. Export earnings have been negatively affected by the drop in prices

but also by the decline in export volumes recorded for close to half of the main export crops. In this sense, the external shock thesis indicates an important contributor to the crisis. However, this view does not explain the relatively poor performance of commodity export volumes during the 1973-1980 period (when export volumes contracted in about half of the cases) despite rising international prices and demand (until about 1979). The external shock thesis seems even less able to explain the slow growth of food output not only during the fiscal and foreign exchange crises of the 1980s, but also during the relatively more favourable period of 1965-1980. During that period, for instance, the production of millet - equal to about one quarter of total grain production in 1965 - increased by only 0.9 percent per year.

The "pricist" thesis. An examination of the validity of this thesis first requires an examination of the evidence on price discrimination, then a presentation of the empirical evidence on supply elasticities and finally the identification of the factors responsible for the (low) value of these elasticities. Concerning the evidence on combined discrimination due to overvalued exchange rates and depressed farmgate prices (in relation to border prices), two recent surveys of the available evidence (Ghai and Smith 1987, Beynon 1989) come to the conclusion that, while producer prices (compared to border prices) were relatively low in the early 1970s, the price changes that occurred between 1969-1971 and 1981-1983 indicate that price incentives for cereals and export crops rose, respectively, by 51 percent and 2 percent on average for Sub-Saharan Africa. When the impact of appreciating exchange rates is included, the case for rising discrimination is stronger, but not conclusive. Indeed, combining the effects of price and real exchange rate changes, price incentives rose on average by 9 percent for cereals, while declining by 27 percent in the case of export crops. It would appear therefore, that the case for price discrimination, while real, has been overstated, certainly in the case of cereals, and that price discrimination alone cannot explain the deterioration in agricultural performance in Africa south of the Sahara in the 1970s.

Furthermore, an examination of econometric estimates of aggregate supply elasticities in agriculture provides values varying between 0.005 and 0.35 in the short run and between 0.1 and 0.5 over the long term (Beynon 1989). A specific investigation of agricultural responses to price increases covering nine Sub-Saharan countries (i.e. Ghana, Kenya, Cote d'Ivoire, Liberia, Madagascar, Senegal, Tanzania, Uganda, and Burkina Faso) has found short-run aggregate elasticities ranging between 0.05 and 0.22 and averaging 0.18. Long-run elasticities were slightly higher, ranging between 0.07 and

0.34 and averaging 0.21 (Bond 1983). Aggregate supply responses to price increases in Sub-Saharan Africa therefore appear small in both the short and the long run, although a more general review of the literature shows that the long-run response in agriculture is substantially larger than suggested by the Sub-Saharan data (Biswanger 1990). However, these long-term elasticities take time to produce their effects fully - as much as 10 to 20 years. While econometric investigations in this area are fraught with methodological problems, it appears that the expected aggregate supply responses to price increases are substantially lower than claimed earlier, particularly in the case of short-term elasticities.

The "structuralist" thesis. Why are aggregate supply responses to price increases so small? The structuralists emphasize the existence of deep-seated constraints on the supply side of African agriculture.

First, unlike individual crops which, in the face of higher prices, can be produced rapidly in the short term by diverting resources from other cultivations, aggregate agricultural output can grow only if more resources are devoted to agriculture or if technology changes. In the short run, however, the supply of most factors of production - land, labour capital and inputs - is basically fixed. The amount of land available cannot increase without considerable investment; capital accumulation is slow under the best of circumstances, and labour supply can increase only through population growth or migration. Together, land, labour and capital account for 70 percent to 90 percent of the value of all agricultural inputs, reaching close to 100 percent in subsistence agriculture. The only factors which can be changed quickly are variable inputs, such as fertilizers and pesticides.

Second, whether large or small, all farmers in the same areas often face severe infrastructural constraints in transport, communications, power, storage, markets, and support services. Such infrastructural bottlenecks often inhibit the ability of farmers to respond fully to higher prices by increasing fertilizer and equipment use, for example. Public action and investment in this area have been shown to trigger large supply responses, as indicated, for instance, by the aggregate supply elasticities of investment in roads (0.26), irrigation (1.62) and adult literacy (0.54) (Biswanger 1990). Hence, public investment in infrastructure has a strong positive effect on output. It also has a strong "crowding-in" effect on private investment since it substantially raises the demand for fertilizers and equipment. In this regard, it is likely that cuts in public expenditure on rural infrastructure, part of the adjustment programmes of the 1980s, may

have made more problematic the realization of aggregate short-term supply responses to higher producer prices.

Third, in many rural areas the lack of consumer goods pushes the marginal utility of additional cash earnings close to zero. With higher producer prices, the same level of money income can be achieved at lower levels of output. In this case, an improved supply of consumer goods would have a greater effect on output than would price increases.

Within this broad framework, particular groups of farmers face very specific constraints. The model of stratification of the rural sector presented in the previous section is of assistance in illustrating the nature of the specific constraints faced by these various classes of farmers. Among them:

- Near landless farmers lack the land base for increased production; the problem is particularly acute in one of the continent's most fertile, well-watered and densely populated zones, in Eastern and Southern Africa (Carr 1989), but it is also apparent in some land-abundant countries (as noted in the study on Southern Sudan presented above).

- Given their mode of production (making use only of land and labour), subsistence farmers cannot expand production during the main growing season because, under normal conditions, the available labour supply is already fully utilized. In addition, in the humid tropics of West and Central Africa, subsistence farmers face severe problems in maintaining soil fertility. In the Sahel and in the Savannah zone of Eastern and Southern Africa, subsistence farmers could expand output on a yearly basis by producing a second crop (often different from the first) during the slack period. In rainfed agriculture, however, lack of water becomes the binding constraint. Therefore, increasing output under the same mode of production primarily requires investment in irrigation, water conservation and harvesting, and reconstitution of soil fertility. In contrast, in the land-abundant countries of Central and West Africa, increases in output require more capital per head.

- Small commercial farmers integrated to some extent in the market system do adopt farming techniques similar to those of subsistence farmers, although their use of inputs is somewhat higher. An increase in production over the short and longer term would require greater use of fertilizers, better tools and investment in land improvement and consolidation. The spontaneous generation of private investment among small commercial farmers, however, is unlikely to materialize due to the modest investible surplus

these farmers are able to produce, limited credit availability and gender barriers which preclude access to resources by the growing female peasant class. Similarly, increases in supply due to technical progress are limited by the general weakness of extension services. The imperfect nature of credit and input markets thus reduces the effectiveness of the price mechanism.

- Large commercial farmers and the estate sector, with substantially greater access to land, capital and credit to finance more intensive use of fertilizers and other inputs, are more likely to be able to take advantage of increases in real producer prices.

The "Structuralist-Misdistributive" Thesis

All three theses described above contain elements of truth. Except for countries dominated by the "plantation economy", however, the importance of the external shocks thesis has been overstated. So has that of the pricist thesis, which tends to overlook the importance of modes of production, population pressures and rural infrastructure. The structuralist thesis, in contrast, provides a more powerful explanation. Ironically, however, it lacks focus on the growing differentiation within the rural sector and on the negative effects that the existing allocation of productive resources has on overall efficiency and rural income distribution.

The structuralists are correct in saying that there is a need to reorient public and private resources toward agriculture as a whole in order to remove the supply bottlenecks described above and stem the growing problems of ecological involution. Furthermore, "public-goods" and the indivisible nature of the benefits of roads, large irrigation schemes, investment in human resources, and R & D requires that the state must play an important role in the process of the creation of rural infrastructure (since the private sector will be less likely to invest in agricultural infrastructure).

To this, it must be added, however, that the increase in resources going to agriculture must be concentrated on the small subsistence and commercial farm sector and, in particular, on women farmers. The reason for this focus is not only past neglect, but also sheer allocative efficiency. Outside the main growing season, small farmers - in both land-rich and land-poor countries - have important reserves of labour utilized in low productivity non-agricultural tasks that could be brought into the production process if investment in small irrigation schemes and credit for inputs were available.

TABLE IX: RATIO OF LAND AND LABOUR-USE INTENSITY AND LAND YIELDS IN SMALL VS. LARGE FARMS, 1973-1979 */

	Labour Intensity	Land-Use Intensity	Land Productivity
Uganda	7.3	2.4	6.3
Ethiopia	11.7	0.8	8.1
Tanzania	24.7	1.2	3.1
Nigeria	9.6	1.6	5.2
Sudan	5.1	1.0	3.7

Source: Elaboration on Cornia (1985)

*/ Small farms contain less than one hectare; large farms contain more than 15 hectares for Sudan, Nigeria and Tanzania, more than 8 hectares for Uganda and more than 6 hectares for Ethiopia.

The experience of Zimbabwe between 1980-1985 (when marketed maize output by the communal and small-scale farmers increased by 31 percent owing to increased allocations of credit, extension and marketing services, and stable and remunerative prices) lends support to this view (Stanning 1989). Provided equal access to intermediate inputs is secured, the productivity of small farms in land-scarce countries has been shown - in Africa and elsewhere - to be higher than or equal to that of large farms because of greater labour inputs and land-use intensity. (In the early 1980s, for instance, in the estate sector in Malawi, only 28 percent of the land was under productive use; see Kaluwa 1990.) Small farmers also generally make higher investments in the land in the form of the direct application of labour. For these reasons, an increased allocation of productive resources (land, credit, R&D, and extension) to the small farm sector would likely have positive effects on output growth, rural poverty and income distribution. Empirical evidence on yields and productivity by farm size is very limited. An analysis of farm-level data from the mid-1970s for Tanzania, Nigeria, Uganda, Sudan, and Ethiopia consistently shows that labour and land-use intensity and yields per hectare were greater in small farms in comparison to large farms (Cornia 1985). It appeared in particular (see Table IX) that man-days of work per hectare were 5 to 24 times greater in the farms of less than one hectare, while land-use intensity also tended to be higher for smallholders. Land productivity (in US dollars per hectare) was three to eight times higher in the small farms, reflecting a substantially more intensive cultivation of

land and a rapidly declining marginal productivity of labour. It must be underlined that, regardless of their size, all farms included in the country samples analysed made use of a broadly similar amount of intermediate inputs per unit of output.

In contrast, a recent analysis covering Kenya and Malawi (Lele and Agarwal 1989) shows that yields per hectare were consistently higher on estates than they were on small holdings. The difference arises from a far greater use of all major inputs in the estate sector. In order to measure efficiency of resource use, the same study has calculated domestic resource costs (DRCs), which measure the value of the domestic resources needed to obtain one unit of output. The calculations show that, in the case of coffee production in Kenya, DRCs were considerably lower in the smallholder sector than they have been in the estate sector. In Malawi the DRC's of smallholders for maize and two different types of tobacco were equal to or substantially lower than those of the estate sector. Therefore, while yields were higher in the estate sector, the production efficiency of smallholders was found to be similar to or higher than that of the estates.

In countries where land is still abundant, the main task is to increase the productivity of labour. Besides appropriate types of investment in irrigation to improve cropping intensity throughout the year (as in land-surplus Sudano-Sahelian countries), major progress could be achieved through improvements in rural infrastructure and an increase in credit and capital per head (in the form of draught animals, improved tools and a minimum of fertilizers) that would allow cultivation of a greater amount of land with the same amount of available labour. A detailed analysis of food production in the remote, land-surplus, labour-scarce economy of the Zairian Basin (Tshibaka 1989) concludes, for instance, that investment in roads and transport systems would enhance the terms of trade of farming in that area. Moreover, measures promoting the distribution and marketing of tools, equipment and seeds are considered to have the strongest effect on labour productivity at the farm level. In addition, in these countries, labour shortage could be lessened, and output increased, if the rigid sexual division of labour were modified so as to incorporate in production during periods of labour shortage a greater share of male labour for tasks normally carried out by women.

Therefore, it appears that a more equitable distribution of land, capital and available inputs between subsistence and small commercial farmers on the one side and large farmers and the plantation sector on the other would raise overall agricultural output, shift the composition of output

toward food crops, and have a beneficial effect on intra-rural income distribution. Even more crucial, it would gradually raise the low technological level of the average farmer which, as shown in Table VII, is still rather backward.

Finally, there are three more arguments for diverting a growing share of investible surplus and available credit toward small farmers and away from the plantation sector.

First, further (capacity-creating) investment in the plantation sector might negatively affect total earnings because of the projected decline in commodity prices, thus further aggravating the efficiency of investment and the balance of payments crisis. In contrast, investment in the peasant sector (which produces export crops, as well as the largest share of food crops) may have a more positive effect on the balance of payments by reducing the need to import food.

Second, the improvement of intra-rural income distribution following the reallocation of productive resources toward small farmers would have beneficial effects in terms of the structure of overall consumption expenditure (with fewer conspicuous consumption imports) and in terms of a greater use of the investible surplus generated within agriculture for the satisfaction of basic needs.

Third, the allocation of resources to women farmers within the peasant sector would have a greater positive effect on child and overall nutrition than would allocations to the large farm sector or to the small farm sector tout-court.

V. APPROPRIATE POLICIES FOR THE LONG-TERM EQUITABLE DEVELOPMENT OF AGRICULTURE

Neglecting agriculture has probably been the single most important policy mistake of the 1960s, 1970s and, despite much talk, the 1980s. This neglect has been particularly detrimental in view of the profound changes occurring in the structural conditions of African agriculture, which, over the last three decades, has gradually moved from land-surplus shifting-farming, largely geared to subsistence production and with communal access to land, to a more settled farming, geared to market production and with individual - and unequally distributed - property rights over the land.

The long-term solution of the problems of African agriculture requires that all three of the problems mentioned above be tackled, i.e. the anti-

rural bias, the growing differentiation within the rural sector and the gender bias. As the experience with adjustment policies in the 1980s has shown, the attempt to correct the anti-rural bias without reducing the inequality in the distribution of resources and the gender bias has brought only limited output increases. At the same time, it has done little to reduce rural poverty, malnutrition and infant mortality, which are now proportionately much higher than they used to be, in relation to the rates prevailing both in urban areas and in the rural areas of other developing countries that have followed a more egalitarian pattern of rural development.

For these reasons, this paper does not propose an agricultural development strategy of just any type, but a strategy which would be designed to address the three biases mentioned above and would focused on small farmers and women. Other "models" of agriculture appear less suited to achieve this task. De facto or de jure, traditional land tenure systems have been abandoned in most countries, while plantation-type agriculture has been shown to lead to increasing landlessness, slowly growing output and acute rural income inequality. Moreover, modern forms of socialist agriculture have not had a good record in the African context. Smallholder agriculture, therefore, presents the best prospects for reaching the goals of an efficient and equitable strategy.

Four sets of policy actions are required for the implementation of this strategy. They concern land reform, increased investment and human capacity-building in agriculture, access to current inputs, and more favourable pricing policies.

Land Reform

Access to land has been identified as a major factor underlying poverty among smallholders and the landless. Land redistribution to the landless or to land-deficient farmers ought therefore to be implemented on a priority basis in all those countries with surplus land in the plantation and large-farmers sector or under traditional tenancy. Depending on local circumstances, adequate forms of indemnization ought to be foreseen for the expropriation of private land. Land reform should include specific provisions for redistribution to women, who represent a large proportion of the land-deficient farmers, but are normally excluded from receiving land titles. In countries where landlessness has not yet emerged on a large scale, land ceilings may be needed to prevent inequalities. However, since inequalities tend to reproduce themselves in a context of the private ownership of land,

appropriate measures (such as a strong progressive tax on land ownership beyond certain thresholds, or the periodic review of land ceilings) might be necessary to avoid the resurgence of excessive land concentration. In countries where land-scarcity is very pronounced, even radical land reform cannot offer a solution to the problems of all land-deficient farmers. While a number of these farmers would be able to gain access to the land, others would have to complement their farm incomes through off-farm employment. Land tenure systems should also be reviewed also in most land-abundant countries. Individual and permanent rights, including women's rights, would increase the incentive to invest in the land and thus increase the productivity of the land or preserve its fertility in the face of rapid population growth. Secure land rights could also be offered as collateral and, in this way, would help rural credit markets to develop - an important advantage for those, such as women, who are generally excluded from borrowing.

Increased Investment and Human Capital Formation

More rapid agricultural growth in Africa south of the Sahara will require a switch in farming techniques toward more resource-intensive agriculture. Such a switch would improve the productive potential of African agriculture and put farmers in a position to benefit better from eventual price reform. There is a need therefore to increase capital formation in agriculture both in collective infrastructure (physical, i.e. roads, electricity, markets, major irrigation works, etc., as well as human, i.e. through better health, vocational training, research and development, etc.) and at the farm level (for land consolidation, preservation of soil fertility, on-farm irrigation, and capital equipment). Except for the estate sector, investment in agriculture has been grossly inadequate, as shown by the data in Table VII and the limited amount of credit extended through rural banking systems. Even in Niger, Sierra Leone and Nigeria, economies with large surpluses originating from the mining sector and a large share of populations in rural areas, little investment in agriculture has taken place.

There is a major need therefore to re-orient a greater share of investible surplus away from the urban and the estate sector and toward smallholders. In practice, in view of the uncertain prospects for export crop prices, there should be no additional capacity-creating investment in the estate sector which is not subject to land reform.

While the modalities of such re-orientation of investible surplus toward small farmers will vary from country to country, the following

measures will likely be necessary in all countries to increase the level of investment in small-scale agriculture:

- Increased public investment in rural infrastructure. Although experience shows that such expenditure has large supply elasticities, public investment is consistently the first item to be cut in the course of structural adjustment programmes. Such trends will need to be reversed. In addition, the spatial distribution of such investment will have to take into consideration the needs of small farmers. Sustained public investment will require the mobilization of sufficient government revenue through fiscal reform and, in economies in which mining is important, a reorientation of the mining surplus toward agriculture. It will also require a different macroeconomic policy in the area of debt management and external resource flows.

- The creation of collective infrastructure through the direct application of surplus labour in the off-peak season. The mobilization of seasonally idle labour - through rural employment schemes, for instance - for work in land terracing, afforestation, the construction of rural roads, etc., can substantially add to rural capital stock, while providing valuable short-term income support.

- Increased public investment in human capacity building, through public expenditure in rural health, education, vocational training, R & D (particularly on "crops of the poor"), and extension services.

- Support for the development of savings and credit systems in rural areas. While the three previous measures aim at facilitating the creation of collective rural infrastructure, the establishment of well-functioning financial markets would facilitate the process of capital formation at the farm level.

Improved Access to Current Inputs

The switch to more resource intensive farming will also require a substantial increase in the application of fertilizers, pesticides and other inputs by smallholders and commensurate support by extension workers for their proper use. In view of the (presently) unfavourable conditions surrounding fertilizer use (high transport cost, a high foreign exchange component, unfavourable output-nutrient price ratio, etc.) and the limited ability of the private sector to establish competitive markets for credit, fertilizers and other inputs at an early stage, a substantial increase in

public resource flows to this sector and a more equitable distribution of existing fertilizers will be required.

Women farmers need to be specifically targeted if policies aimed at improving access to current inputs, including transport, credit and extension services, and access to field staff are not to prove self-defeating (Munachonga 1988). For a substantial proportion of economic production, besides family health care and nutrition (Loutfi 1987), research suggests that sexually neutral policies aimed only at heads-of-household - as most adjustment policies are - are ineffective because they fail to account for the potentially biased distribution of power, productive resources and income within the household. In contrast "placing more development resources under women's control and increasing their entitlements can be important means of improving the welfare of poor households" (Loutfi 1987).

Better and More Stable Prices

Smallholders should receive more remunerative prices for the crops they produce. International prices can be used as a broad reference for fixing agricultural prices. So far, however, adjustment policies in this field have focused predominantly on improved prices for export crops. The scope has thus to be broadened so as to include food crops more consistently. However, such a policy needs to be qualified on three accounts. First, price realignment will be more effective if the distribution of inputs and of output is not too distorted. Otherwise, whenever the price increase is substantial, it might be necessary to introduce measures to shelter the urban poor and food-deficit rural households from the higher food prices. Second, once the price increase has taken place, further improvements in the income of farmers will have to come from productivity gains. Over the long-term, pricing policies should be as neutral as possible. Third, farm prices need to be not only remunerative, but also stable. Large year-to-year variations in planting and output are often associated with wide price fluctuations. Measures to ensure a certain agricultural price stability over the medium term would thus help boost long-term output.

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