Chapter II

THE ROLE, STRUCTURE AND PERFORMANCE OF AGRICULTURE

A. Introduction

Agriculture is the key sector in many African countries, particularly in low-income countries in SSA. Analysts with very different perspectives agree that the generally weak performance of the sector in the 1970s contributed to the economic crisis which developed in the region at the end of the decade.[1] But there is little consensus about the causes of this weak performance, why it has persisted in many countries despite policy reforms, and what should be done to end it. Promoting agricultural development in Africa has proved to be a complex matter and has given rise to different views on both the role of agriculture in economic development and the tasks which governments should undertake.

Two main issues recur in policy debates, the first being the mix of private incentives and public goods that can best support agricultural development. The second issue is the pattern and processes of resource flows and linkages between agriculture and other sectors of the economy that best promote overall economic development, and what government needs to do to facilitate them.

Agricultural policy reform in Africa has been based on the view that poor performance is due to policies designed to extract resources from farmers in order to promote industrialization and to serve urban interests at the expense of agriculture. The alignment of producer prices to world prices and the fostering of private input and output markets were expected to provide the necessary incentives to farmers to increase output. However, many have argued that "getting the prices right" is not sufficient, because agricultural supply response is constrained by structural factors, including infrastructure, technology and various agrarian institutions such as the gender division of labour and land tenure patterns. There is now increasing agreement on the importance of such non-price constraints on production and productivity growth.[2] But which ones are critical, how they are to be removed, and whether there are trade-offs between policies which support the achievement of price and non-price conditions for agricultural growth are still open questions. Moreover, despite greater understanding in some of these areas, policy is still geared to reducing the fiscal burden of the agricultural sector, and wedded to privatization and market liberalization rather than to pragmatic solutions tailored to the level of development.[3]

The issue of price incentives is embedded within a broader issue relating to intersectoral transfers between agriculture and industry, urban bias, and the contribution of agriculture to the overall growth process. Since the initiation of the reform process, this broader issue has been neglected as the idea that sustained growth in Africa depends on industrialization has fallen out of favour. But this does not mean that the effects of agricultural policy on other sectors, and vice versa, can be ignored. The basic policy problem of all

predominantly agrarian economies, including those in Africa, is how to manage the relations between agriculture and the rest of the economy in a way that promotes agricultural growth and thus enables a structural transformation in which the relative importance of the agricultural sector declines as other sectors, and particularly manufacturing, move onto a dynamic growth path. Thus, policy issues in agriculture need to be addressed in terms of multiple intersectoral linkages which often involve complex policy choices.[4]

The central theme of this and the next chapter is the role of government in promoting agricultural development, focusing in particular on how policy affects incentives and investment. This chapter discusses the role, structure and performance of the agricultural sector in Africa. It starts with the main ways in which agriculture can contribute to economic growth in that region. This is followed by a discussion of its main structural characteristics, including ownership patterns, infrastructure and production structure. Finally, the chapter examines agricultural performance since the 1970s, focusing on total production and food output, exports and productivity growth. It is shown that there have been some improvements in agricultural growth since the mid-1980s. Nevertheless, productivity growth is sluggish, food production still lags behind population growth and the agricultural trade balance continues to deteriorate. The next chapter examines the role of policy in this situation, in particular its impact on incentives, and the influence of structural constraints on investment behaviour and supply response.

B. The role of agriculture in economic growth

Although the economic importance of agriculture has been declining over the last 25 years, the sector still accounts for a large share of GDP and employment in many African countries (table 37). In 16 SSA countries the agricultural sector employs more than two thirds of the labour force and generates more than one third of GDP. In 14 countries more than 80 per cent of the labour force are still in agriculture. Economies in which agriculture contributes less than one third of total GDP and less than two-thirds of the total labour force include the North African and South African Customs Union (SACU) countries, three oil exporters – Congo, Gabon and Nigeria – as well as Cape Verde, Côte d'Ivoire, Mauritania and Mauritius. All the middle-income economies in Africa except Cameroon are in this group. There are only 15 countries in Africa as a whole in which the sector's share in GDP is less than 15 per cent, and in only eight of these (Algeria, Botswana, Cape Verde, Lesotho, Mauritius, South Africa, Swaziland and Tunisia) agriculture absorbs less than 40 per cent of the labour force.

In such predominantly agricultural economies there are two main ways in which output per head can be increased: by shifting employment from agriculture to the industrial sector, where labour productivity is typically higher; and by increasing sectoral labour productivities while maintaining or raising the level of employment. As international comparisons show, there are ample opportunities for enhancing productivity within agriculture in low-income countries. But the scope for sustaining a high rate of productivity growth is much greater in manufacturing. Agriculture is "innately a slow-growing sector"[5], and accelerating agricultural growth normally entails moving from a growth rate of 2-3 per cent to one of 4-6 per cent. By contrast, in manufacturing, because of the greater potential for productivity gains and also because of higher income elasticity of demand, growth rates of 8-10 per cent can be sustained over long periods.

The realization of such growth potentials is an extremely complex process. It depends on an appropriate structure of incentives for private investment in both the agricultural and the industrial sectors, as well as on public investment in physical and social infrastructure. Also, it requires the attainment of key macroeconomic balances: be-

Table 37

AFRICA: CHANGES IN THE SHARE OF AGRICULTURE IN THE LABOUR FORCE AND GDP SINCE 1970, BY REGION

(Percentages)

	Share in			
	Total labour force		GDP	
Region	1970	1990	1970	1995
Low-income countries in:				
West Africa[a]	83.7	75.4	41.5	38.2
East and Southern Africa[b]	80.9	78.5	39.1	35.4
Middle-income countries in:				
West Africa[c]	79.1	67.9	32.2	25.2
East and Southern Africa[d]	59.5	33.4	27.5	7.8
South Africa	31.0	13.5	7.9	4.7
North Africa[e]	49.6	35.4	19.3	14.7
Oil exporters[f]	75.6	55.3	27.3	21.4

Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 1997* (CD-Rom).
Note: Shares are simple averages of individual country shares.
a Benin, Burkina Faso, Central African Republic, Chad, Gambia, Ghana, Mali, Mauritania, Niger, Sierra Leone, Togo.
b Burundi, Democratic Republic of the Congo, Kenya, Lesotho, Madagascar, Malawi, Rwanda, Somalia, Sudan, Uganda, Zambia, Zimbabwe.
c Côte d'Ivoire, Senegal.
d Botswana, Mauritius, Swaziland.
e Algeria, Egypt, Morocco, Tunisia.
f Cameroon, Congo, Gabon, Nigeria.

tween foreign exchange requirements and foreign exchange availability; between the rate of growth of real wages and the availability of wage goods; between public sector investment needs and non-inflationary means of financing such investment; and broadly between savings and investment. In the early stages of development the growth of agriculture is itself a major component of overall economic growth. But in addition, there are linkages through which agricultural growth can also stimulate growth in other sectors.

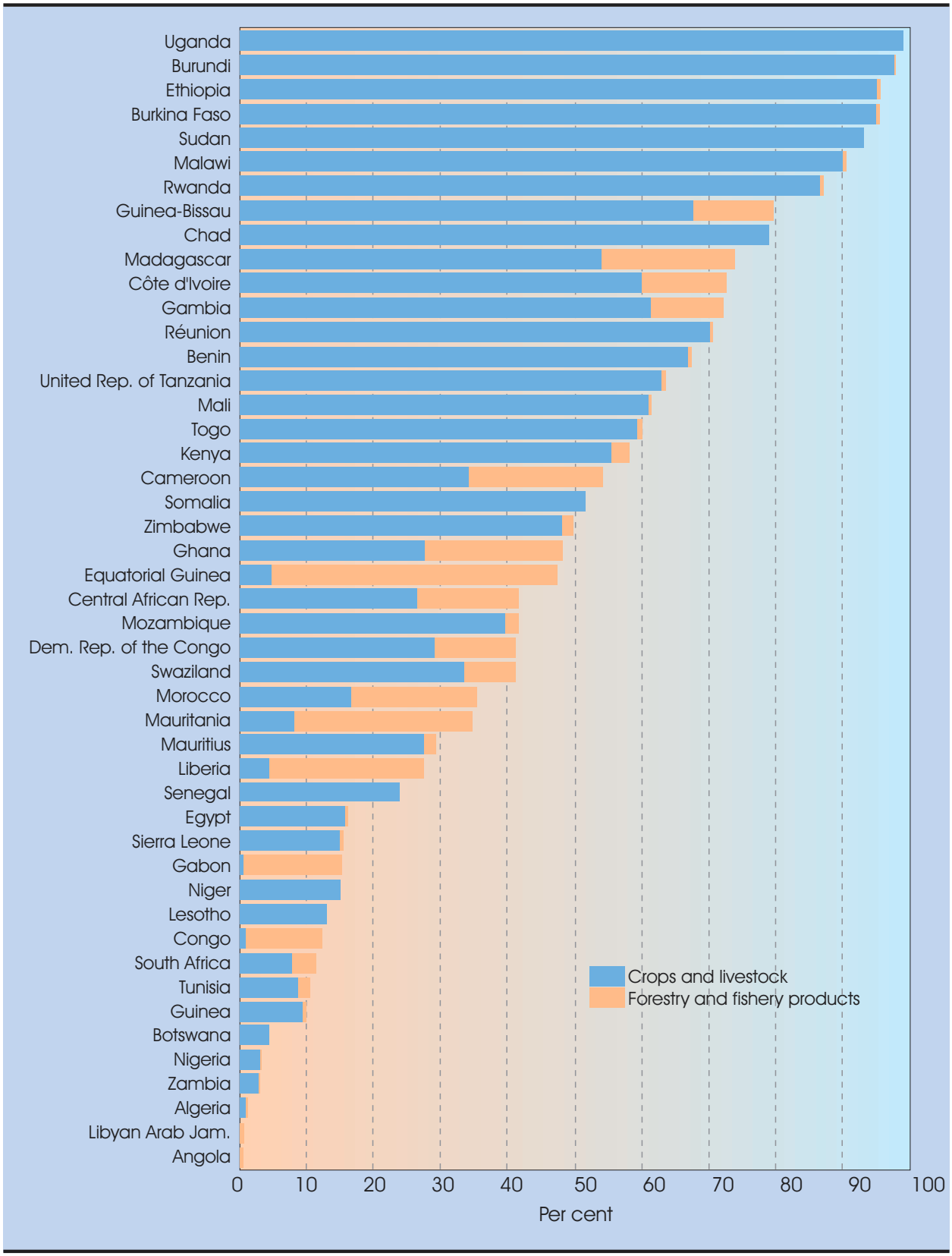
In Africa, overall economic growth depends critically on the performance of agriculture.[6] Firstly, except in a small number of countries with rich mineral resources, significant earnings from tourism or workers' remittances, agriculture is the most important source of foreign exchange earnings, contributing over 50 per cent of total exports in recent years in 20 countries (chart 11). Such earnings are needed to finance the import not only of intermediate and capital goods for local industries, but also of the manufactured consumer goods that must be made available to farmers if incentives to increase output are to have any impact. There is evidence from the early 1980s that a shortage of such incentive goods can create a vicious circle by prompting a reduction in the production of cash crops which in turn deepens the payments crisis, thereby aggravating the shortage of manufactured goods and causing further cutbacks in production.[7]

A second key contribution by agriculture is the provision of food supplies. This is particularly important in view of very high levels of food deprivation in SSA. A number of estimates sug-

Chart 11

SHARE OF AGRICULTURAL PRODUCTS IN TOTAL EXPORTS FROM AFRICAN ECONOMIES, 1995

(Percentages)



Source: UNCTAD secretariat calculations, based on FAO, *FAOSTAT* database.

gest that during 1990-1992 about 43 per cent of the population of SSA – some 215 million people – had inadequate access to food, double the number in 1969-1971.[8] Reducing this deprivation is not only a moral and political priority for governments, but also a critical economic objective since poor nutrition tends to reduce labour productivity.[9] Another reason why food supplies are important is that lower real food prices have important growth-enhancing ramifications throughout the economy, as they allow real wages to rise without impeding accumulation.

Agriculture's third contribution to overall growth is through the supply of raw materials to industry. These forward linkages from agriculture are important because high productivity in agriculture and cheap agricultural raw materials tend to increase profitability and investment in agro-processing industries, thereby enhancing international competitiveness. It has been estimated that between one third and two thirds of manufacturing value added in sub-Saharan Africa depends on agricultural raw materials.[10] For Zimbabwe, one of the economies with a more diversified industrial structure, agriculture provides 40 per cent of all manufacturing inputs. In Kenya, nearly half of micro-enterprises (almost two thirds if forestry and textiles are included) rely directly on agricultural supplies.[11]

Fourthly, being the dominant sector, agriculture can provide, directly or indirectly, resources for public or private investment both within and outside agriculture by generating what is technically known as the "net agricultural surplus", which is simply defined as the total value added in the sector minus the consumption of direct agricultural producers. During the immediate post-colonial period, attempts were made to mobilize the available agricultural surplus of farm households producing export crops through the marketing boards which had been established during the colonial period. Estimates suggest that before the 1980s, export crops contributed from 20 per cent to 40 per cent to government revenue.[12]

Another of agriculture's contributions is the provision of a domestic market for manufacturing. This was historically important for economies which managed to build up a small, inward-looking manufacturing sector. According to a study of seven countries for 1965-1986, "a major cause of manufacturing growth in SSA has been rooted in the establishment of an environment conducive to steady expansive growth outside the sector itself and principally primary-product related".[13] For all except two countries (Côte d'Ivoire and Zambia) the predominant source of growth was increasing domestic demand, which accounted for 54 per cent of manufacturing growth in Botswana, 55 per cent in Cameroon, 69 per cent in Kenya, 76 per cent in Nigeria and 72 per cent in Zimbabwe. As urban incomes grow and manufacturing becomes internationally competitive, the dependence on rural demand is weakened. Nevertheless, as experience shows, including in East Asia, this source of demand is particularly important in the early stages of import substitution when manufacturers rely on the domestic market before they can compete with more efficient producers in world markets.[14] In Africa, too, manufacturing export success has almost invariably been developed on the basis of import-substitution activities.

Lastly, agricultural policy has been used in Africa to promote a pattern of income distribution which is regarded as legitimate and which therefore does not threaten political stability. This is an extremely delicate problem in nation-state building in Africa. Some aspects of agricultural pricing policy, particularly the practice of providing uniform guaranteed prices countrywide, have been part of an implicit social contract designed to redress colonial imbalances and ensure that certain ethnic groups with less fertile land and limited access to markets are not totally excluded.[15]

A major dilemma in agrarian economies is that policies designed to increase the contribution of the agricultural sector to the rest of the economy can impede agricultural growth, thereby failing to attain their original objectives. Thus, attempts to provide fiscal revenues through taxation of agricultural exports may reduce incentives for agricultural producers and cut foreign exchange earnings. Again, policies designed to provide cheap food for the urban population or cheap supplies to industry can reduce agricultural incentives, thereby creating shortages. Similarly, the system of agricultural pricing can be abused to reward political support or punish opposition, or favour urban against rural interests.[16] Experience shows that the countries of SSA have not always been able to strike a balance between such conflicting objectives. This has not only impeded agricultural growth and depressed the living conditions of a large proportion of the population, but also reduced significantly the contribution of agriculture to the rest of the economy.

C. Main features of African agriculture

Policies designed for agricultural development and their effects on the overall performance of the economy are circumscribed by certain structural features of African agriculture. These include specific forms of production and a historical legacy of intersectoral dualism between agriculture and non-agriculture. Equally important is the nature of agricultural production, particularly its tradability. These issues are taken up in the following sections.

1. Forms of production

Agrarian production relations and institutions are very diverse in Africa, but in general it is possible to identify three forms of production. The first is "smallholder production", in which work is organized by households around a gender division of labour. Men and women have responsibilities for different crops, or for specific tasks at different stages of production of the same crops, but women, who provide a major part of the labour input, often do not have full control over the product of their labour. Access to land is mediated through indigenous systems of tenure in which membership of the local community is the primary basis for various land-use rights, although there are also land markets for buying and selling user rights, but not outright ownership of parcels of land.[17] Very little of the arable land area is irrigated and thus most producers are subject to the vagaries of the weather.[18] Owing to the dependence on rainfall there is strong seasonality in labour use, particularly in semi-arid areas, where about 70 per cent of labour is expended in a four-month period. In such areas labour shortages in critical periods of planting and harvesting can be particularly acute and coexist with underemployment during the rest of the year.

The second form of production is large-scale capitalist farming. Some farms are foreign-owned plantations, generally export-oriented; some are old colonial settler estates oriented to export or domestic markets; and some are new African estates, often set up by the newly emerging elites. There has been an expansion of this last type in the domestic cereals sector since the mid-1970s, but in some countries such African agribusinesses are also export-oriented.[19]

The third form of production – large-scale state-owned farms – was most strongly developed in the post-colonial period in the few African countries engaged in effecting a transition to socialism (for example, Algeria, Ethiopia, Guinea-Bissau and Mozambique). Following the privatization drive, public ownership of farms is now quite unimportant.

Although smallholder production is the dominant form of production in Africa, it coexists with large-scale capitalist farming. This coexistence has generally not been benign, though it has the potential for positive linkages in forms of contract farming where smallholders act as outgrowers for large agribusinesses. Large settler farms were generally established through measures which sought to reduce the profitability of more efficient smallholder production, constraining competition and ensuring the availability of a workforce. These measures restricted the access of smallholders to land, markets and infrastructure services, which eventually could result in soil erosion, the drying up of wells and exhaustion of pasture.[20]

Today smallholders include both small and medium-sized farm units. Although often described as "subsistence farmers", small units are often enmeshed in product markets, both selling and buying foodstuffs through the year on a seasonal basis and even producing cash crops for export. Larger units produce primarily for sale, hire labour and use manufactured inputs. Farmers in this category, who have variously been called "progressive", "commercial" or even "capitalist" farmers, are responsible for a large proportion of marketed output in many African countries. Those who are mainly involved in export crops are concentrated in areas of relatively high and regular

rainfall where infrastructure is also generally better. The commercially oriented food crop farmers have developed as a result of growing urban demand and with state support, particularly through the integrated rural development programmes of the 1970s which sought to provide seed, fertilizer, pesticides and low-cost credit, and to guarantee market outlets. It is these farmers which form the basis of what is now being described as Africa's maize revolution.[21] They are found in areas closer to major urban centres and with better agro-ecological conditions, but with less favourable rainfall than areas of export crop production.

A significant feature of both small and medium-sized farm units making up the "smallholders" is that an important part of their incomes is derived from non-farm employment in formal or informal activities. This, it is now realized, is widespread throughout Africa (see table 38). Indeed, recent estimates suggest that on average as much as 42 per cent of rural household incomes is derived from non-farm employment, as compared with 40 per cent in Latin America and 32 per cent in Asia.[22] This involves some rural employment, but it often entails the migration of male household members to urban centres. For rich farmers, who occupy the more lucrative niches in the labour market, off-farm earnings provide a source of investment in agriculture, while for the poor they mainly supplement consumption.

Selling labour time to other farmers does not appear to be a major source of earnings for smallholders. This reflects the relative underdevelopment of rural labour markets outside those countries in which capitalist agribusinesses are important. However, evidence suggests that non-monetized labour exchanges are an important form of interaction between rich and poor smallholders.[23] Moreover, the situation is changing, as with rising population densities some farmers are becoming land-poor with use rights over a plot of land not large enough to meet their subsistence needs. A process of concentration of control over different rights in land is occurring as land becomes scarce and commercially valuable. Moreover, some smallholders have become simply "too poor to farm" in the sense that, despite access to land, they cannot mobilize sufficient amounts of labour and other inputs to make a living.[24] Despite these trends, the intensity of landlessness in Africa is still less than in Asia or Latin America. Indeed, in most of rural Africa where indigenous systems of land tenure prevail, it is difficult even to speak of

Table 38

NON-FARM INCOME OF RURAL HOUSEHOLDS IN AFRICA: CASE STUDY EVIDENCE

Country	*Period*	Share of non-farm income in total income *(Per cent)*
Botswana	1974-1975	54
Botswana	1985-1986	77
Burkina Faso (fav.)	1978-1979	22
Burkina Faso (unfav.)	1981-1984	37
Burkina Faso (fav.)	1981-1984	40
Ethiopia (overall)	1989-1990	36
Ethiopia (lowland, fav.)	1989-1990	44
Ethiopia (highland, unfav.)	1989-1990	38
Ethiopia (pastoral)	1989-1990	38
Gambia	1985-1986	23
Kenya (central)	1974-1975	42
Kenya (western)	1987-1989	80
Kenya	1984	52
Lesotho	1976	78
Malawi	1990-1991	34
Mali	1988-1989	59
Mozambique	1991	15
Namibia (fav.)	1992-1993	56
Namibia (unfav.)	1992-1993	93
Niger (fav.)	1989-1990	43
Niger (unfav.)	1989-1990	52
Nigeria (northern)	1974-1975	30
Nigeria (northern)	1966-1967	23
Rwanda	1990	30
Senegal (northern, unfav.)	1988-1989	60
Senegal (central)	1988-1990	24
Senegal (southern)	1988-1990	41
South Africa[a]	1982-1986	75
Sudan	1988	38
United Rep. of Tanzania	1980	25
Zimbabwe	1988-1989	35
Zimbabwe (overall)	1990-1991	38
Zimbabwe (poor)	1990-1991	31

Source: T. Reardon, "Using evidence of household income diversification to inform study of the rural nonfarm labour market in Africa", *World Development*, Vol. 25, No. 5, May 1997.

Note: Non-farm income is income from local non-farm wage employment, local non-farm self-employment and migrants' remittances. The abbreviations "fav." and "unfav." denote favourable and unfavourable agro-climatic zones, respectively.

a Former homelands.

"landlessness" since members of the community have direct or indirect access to community land.[25]

2. Intersectoral dualism

There is a large gap in income per head between the agricultural and non-agricultural sectors in Africa. Value-added per worker in the latter sectors is between 7 and 8 times higher than in agriculture; in Asia and Latin America it is only between 2.5 and 3.5 times higher (table 39).

Table 39

INTERSECTORAL DUALISM: A REGIONAL COMPARISON

	Income ratio[a]			
	1950-1960	*1960-1970*	*1970-1980*	*1980-1990*
Africa	7.05	8.33	8.74	7.79
Asia	1.87	3.37	3.31	3.57
Latin America	2.42	3.00	2.81	2.51
Other	1.88	2.17	2.15	2.25

Source: D. Larson and Y. Mundlak, "On the intersectoral migration of agricultural labour", *Economic Development and Cultural Change*, Vol. 45, No. 2, 1997.

a Ratio of non-agricultural value-added per worker to that in agriculture.

This differential is one of the key indicators of "urban bias"in Africa, but this bias cannot be simply attributed to post-colonial pricing policies.[26] Intersectoral dualism has historical and geographical roots in colonial policies that sought to set up institutional barriers to rural-urban interaction, and in poor agro-ecological conditions. But it is ultimately based on lack of investment in African agriculture and the persistence of low agricultural labour productivity, features which will be examined below.

Intersectoral dualism has important implications for agrarian production relations and structural change. It implies that earnings potentials outside agriculture can be much higher, and it is this differential which, in general terms, underlies the attractiveness to farm households of "straddling" between the agricultural and non-agricultural sectors. Such straddling can have positive effects on agriculture because, as noted, non-farm incomes can provide an important source of farm investment. However, to the extent that off-farm employment opportunities are available, there is continual pressure for productive labour to be diverted from agriculture. Under these conditions, there may be little incentive to adopt high-yielding crop varieties, which can require greater labour inputs. Rather, the types of innovation which are attractive are those which save household labour time and thus enable the diversion of labour from the farm.

The implications of this situation depend on whether there is surplus agricultural labour, i.e. whether the withdrawal of labour will reduce output. In East Asia, at an early stage of industrialization, a combination of widespread surplus labour in agriculture with employment opportunities in the urban economy led to strong dynamic complementarities between agricultural and industrial growth. In such conditions, rapid growth of urban employment can reduce population pressure on land and increase agricultural labour productivity. But where population densities are low, land is not fertile and there are labour shortages in agriculture, the withdrawal of labour can lead to a decline in agricultural output.

The picture in Africa varies from place to place. But a number of astute observers have identified the absence of surplus labour as characteristic of African agriculture in the past, except perhaps in areas concentrating on exports.[27] Moreover, despite high rates of population growth, widespread labour shortages are still identified as a key constraint. Household studies in Southern Africa suggest that "contrary to orthodox thinking, withdrawal of labour from the African countryside tends to result in residual farm work forces which have a lower productive potential than they otherwise would have had".[28] Also, it is estimated that as many as 30 per cent of farm households in Southern Africa are female-headed households with limited productive assets.[29]

3. Export and food crops, and tradability

Whether governments should give priority to export or food crops has been a perennial issue in the debate on agricultural policy in Africa. In the 1970s both African governments and donors laid

emphasis on increasing food production. When export promotion became a central goal of policy reforms in the 1980s, priorities shifted in favour of export crops. It has been argued that the goal of national food self-sufficiency, to which many African governments were committed, was wrong-headed since rising food demand could be met through imports.

Three factors have been increasing the rate of growth of food demand in Africa. The first is the extremely rapid growth of population, which is estimated to have risen from 2.5 per cent per annum in 1960 to 3.2 per cent in the late 1980s. This is the fastest growth rate recorded in human history and contrasts with downward trends both in South Asia, where the rate dropped from 2.5 per cent to 2.1 per cent over the same period, and in Latin America, where it dropped from 2.9 per cent to 2.5 per cent.[30] Second, Africa is experiencing the most rapid rate of urbanization in the world, and it is estimated that the share of the urban population will reach 41 per cent by the year 2000. Third, in view of the prevailing low income levels, improvements in income tend to be spent on food. Estimates show that the overall income elasticity of expenditure on food is close to unity. As income increases, consumption of main staple coarse grains (sorghum, millet and maize) and roots and tubers also rises, but their share in expenditure falls, while for wheat, wheat products and livestock products both the level and the share of expenditure increase with income.

There are a number of difficulties in meeting this rapid growth of food demand through imports, the most important of which is that a major part of staple food in SSA consists of crops which are non-tradable internationally outside Africa. This problem is usually overlooked and agriculture is typically described as a fully tradable sector.[31] However, major domestic food staples over much of Africa, notably cassava, plantain, yams, millet and sorghum in West and Central Africa, and white maize in Southern and East Africa, are not traded internationally outside the region. There is little external demand for them and there are few other international sources of supply.

The extent to which national food demands are met through such non-tradable crops varies from country to country, but traditional food staples are very important in most countries. The major exception is North Africa, where the main source of dietary energy is tradable wheat. Tradable rice is also significant in a few West African countries (Gambia, Liberia and Sierra Leone) and also in Madagascar and (along with wheat) in Mauritius. But non-tradable roots and tubers provide an important part of total dietary energy supply in much of West and Central Africa, making up over 33 per cent of the total in 13 countries (Angola, Benin, Burundi, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Ghana, Mozambique, Nigeria, Rwanda, Togo, Uganda and United Republic of Tanzania). Of the other cereal crops, sorghum and millet are the key staples in some Sahelian countries and also Sudan, while white maize is consumed widely in Africa and is the main staple in East and Southern Africa (table 40). Yellow maize is widely traded internationally and can be substituted in diets for white maize, but it is considered inferior and its consumption is mainly a function of poverty levels. Moreover, transport costs for cereals are high, given current infrastructure and marketing systems, and this means that local prices in the cities of the landlocked countries (Burkina Faso, Chad, Malawi, Mali, Niger, Zambia and Zimbabwe) generally fluctuate in a range discouraging trade outside the region and sometimes even within the region.[32]

Another problem in shifting production to exports and relying on food imports relates to the volatility of export prices and the downward trend in the terms of trade. Indeed, foreign exchange shortages have often limited the ability of SSA countries to import food in adequate quantities, and swings in export earnings have been a major factor in large yearly fluctuations in food consumption.[33]

.

There is no simple answer to the choice between food crops and export crops. On the one hand, there is constant upward pressure on food prices because of rising demand. On the other hand, export crops face declining terms of trade and unstable prices. The development of the food sector has implications for poverty, and also has the political dimensions of food security and economic self-reliance. But, more importantly, it is a critical economic issue, with serious implications for overall growth and macroeconomic balances. Indeed, the competitiveness of exports is often conditioned by the factors which influence the domestic supply of and demand for food. In this respect, increasing productivity and food supply is crucial in improving international competitiveness, both in agriculture and in industry, because it helps to keep down wage costs without lowering workers' living standards.[34]

Table 40

SHARE OF MAJOR FOOD GROUPS IN TOTAL DIETARY ENERGY SUPPLY IN AFRICA, BY COUNTRY, 1990-1992

(Percentages)

Country	Roots and tubers	Main cereals			
		Maize	Sorghum and millet	Rice	Wheat
Total Africa	***14.9***	***14.6***	***10.2***	***6.8***	***15.2***
Dem. Rep. of the Congo	**56.2**	9.5	0.7	3.4	1.8
Ghana	**40.7**	15.0	5.4	5.3	4.1
Mozambique	**39.5**	23.5	4.2	4.2	4.1
Benin	**38.2**	20.0	6.8	5.2	3.0
Congo	**38.1**	4.5	0.0	3.8	13.5
Central African Rep.	**36.0**	9.0	3.8	1.9	3.9
Angola	**29.8**	16.1	2.6	6.0	6.5
Togo	**28.8**	22.0	14.0	5.0	6.6
Burundi	**28.4**	12.3	3.7	1.8	2.0
Rwanda	**28.2**	7.0	10.3	0.7	1.1
Uganda	**27.8**	7.8	9.5	0.9	0.4
Côte d'Ivoire	**27.2**	9.3	1.4	21.3	5.2
Nigeria	**26.0**	5.2	22.4	8.8	1.7
Gabon	**21.9**	8.6	0.0	6.9	9.8
Cameroon	**18.0**	14.3	13.0	4.8	6.1
Malawi	3.8	**67.5**	0.7	1.4	0.3
Zambia	9.9	**64.6**	1.3	0.4	4.0
Lesotho	0.7	**56.4**	2.9	0.5	16.4
Zimbabwe	1.6	**41.5**	5.9	0.5	10.9
Kenya	8.0	**40.4**	1.4	2.1	5.8
South Africa	1.7	**32.4**	2.1	3.1	15.9
United Rep. of Tanzania	24.6	**31.8**	4.9	7.0	1.9
Somalia	0.9	**23.5**	15.4	7.6	8.6
Ethiopia	4.2	**18.7**	11.4	0.1	16.1
Namibia	15.6	**16.9**	10.9	0.0	6.0
Botswana	1.5	**16.8**	12.0	2.5	12.6
Niger	3.6	0.3	**65.9**	4.7	3.4
Burkina Faso	0.9	12.3	**56.1**	5.8	1.4
Mali	1.9	8.6	**48.8**	12.7	1.8
Sudan	0.6	1.0	**38.4**	0.7	18.4
Chad	15.2	2.4	**35.3**	4.8	3.2
Madagascar	21.0	3.9	0.0	**48.9**	1.7
Sierra Leone	4.4	1.2	3.8	**45.2**	3.3
Liberia	22.3	0.0	0.0	**42.8**	1.7
Gambia	1.0	3.8	18.3	**38.1**	4.6
Guinea	13.9	3.1	2.7	**33.9**	5.0
Senegal	1.0	5.4	22.6	**27.2**	8.4
Mauritius	1.3	0.4	0.0	**22.5**	21.7
Tunisia	1.4	0.0	0.1	0.3	**52.0**
Algeria	2.2	0.2	0.1	0.4	**50.2**
Morocco	1.9	3.7	0.3	0.4	**44.2**
Libyan Arab Jamahiriya	1.7	0.2	0.0	4.2	**37.9**
Egypt	1.7	17.3	1.1	9.6	**36.4**
Mauritania	0.5	0.6	6.9	17.6	**30.0**
Swaziland	1.4	11.7	0.0	3.6	**26.4**

Source: FAO, *The Sixth World Food Survey* (Rome: FAO, 1996).

D. Trends in agricultural production, trade and productivity

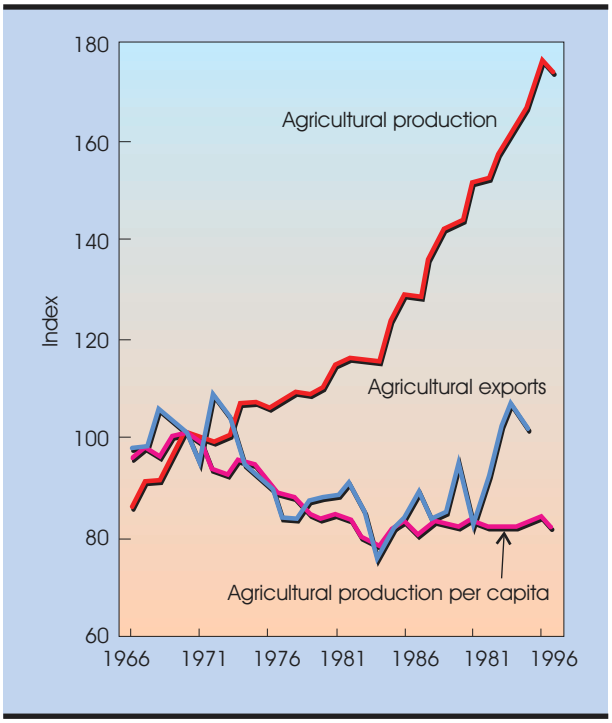
1. Production

As noted in the previous chapter, agricultural growth in Africa has generally been unsatisfactory. FAO statistics, which indicate the volume of agricultural and food output, suggest that this was particularly so in SSA during the 1970s and early 1980s, when output per capita fell. After 1984 agricultural growth accelerated: from 1970 to 1984, total agricultural output rose by 1.2 per cent per annum, and thereafter by 3.1 per cent. However, the recovery only halted the decline in per capita output (chart 12).

Chart 12

VOLUME OF AGRICULTURAL PRODUCTION AND EXPORTS IN SUB-SAHARAN AFRICA, 1966-1997

(1969-1971 = 100)



Source: UNCTAD secretariat calculations, based on FAO, *FAOSTAT* database.

This general trend conceals many differences between countries, regions and commodities. Table 41 compares the growth of agricultural production in the 1970s with growth since 1984. In a sample of 44 countries post-1984 agricultural growth performance was better in 22 and worse in 15 than in the 1970s. Whereas in the 1970s a total of 11 countries had growth rates in excess of 3 per cent, in the post-1984 period there was a total of 13 countries. During the 1970s in six of these 13 countries – Algeria, Chad, Ghana, Nigeria, Togo and Uganda – agricultural growth was less than 1 per cent per annum or negative. All the West African Sahelian countries improved their performance after 1984 compared with the 1970s. In contrast, there is a clear tendency for the countries whose performance worsened to be located in Southern or East Africa.

Overall trends in food production are similar to those for agricultural production. There was some recovery in the rate of growth of output after 1984 for the region as a whole, but again only enough to halt the decline in per capita food production. Regional disaggregation shows that in North Africa a rapid upward trend that had emerged in the mid-1980s was reversed in the early 1990s. In West and Central Africa, the trend since 1984 has been upward but weak, whilst in Southern and East Africa it has been downward (table 42). In the latter regions the downward trend is observed in countries both with and without civil unrest. Table 42 shows that within SSA the growth rate of food production was higher since 1985 than in the 1970s in 18 countries, and of these countries Benin, Burkina Faso, Chad, Ghana, Guinea, Mali, Niger, Nigeria, Togo and Uganda all achieved growth rates higher than 3 per cent per annum.[35]

2. Trade

Focusing on SSA, figures for the volume of agricultural exports indicate a similar post-1984 improvement. The volume of agricultural exports was actually declining from 1972 to 1984, but since

Table 41

COMPARISON OF TRENDS IN AGRICULTURAL PRODUCTION IN AFRICAN COUNTRIES DURING 1970-1980 AND 1985-1996

(Average annual growth of output)

		1970-1980					
		More than 4 per cent	***3-4 per cent***	***2-3 per cent***	***1-2 per cent***	***0-1 per cent***	***Negative***
1985-1996	***More than 4 per cent***			Benin Mali	Burkina Faso Niger	Togo	Ghana Nigeria
	3-4 per cent	Tunisia		*Developing country average*	Egypt Guinea *SSA average*	Algeria Chad	Uganda
	2-3 per cent	Côte d'Ivoire	Gabon Kenya	Central African Republic Guinea-Bissau	Dem. Rep. of the Congo Ethiopia[a] Morocco		Angola Namibia
	1-2 per cent		Malawi Sudan Zambia		Cameroon Congo Madagascar	Lesotho Mauritania Senegal	
	0-1 per cent	Libyan Arab Jam.	United Rep. of Tanzania	South Africa Zimbabwe	Burundi Sierra Leone	Mauritius	Botswana Mozambique
	Negative	Rwanda	Swaziland				Gambia

Source: UNCTAD secretariat calculations, based on FAO, *The State of Food and Agriculture* (Rome: FAO, 1997).
a 1985-1992.

then it has recovered, though with great variability and at a rate slower than that of the growth in the volume of agricultural production (chart 12). An important feature of the agricultural export trends is that during the first half of the 1970s there was actually a steep rise in unit value, which was more marked or more prolonged than in either Latin America or Asia. As a consequence, agricultural export earnings grew rapidly until 1977, even though the volume fell. But from 1977 to 1982 both the unit value and the total value of agricultural exports fell. Because of the continued decline in unit values from 1986 to 1993, a resumption in the growth of export volumes did not result in any increase in agricultural export revenue. However, the situation changed after 1993 owing to a steep increase in the unit value of agricultural exports and a continued rise in export volumes.

As in agricultural production, there have been marked differences in export performance among countries (table 43). In 24 countries out of a sample of 46 the growth in the volume of agricultural exports was higher during the post-1984 period than in the 1970s. In 13 countries the volume of agricultural exports continued to decline.

For individual export crops, it is difficult to identify a clear general pattern. For cotton and coffee, two main traditional agricultural exports,

Table 42

COMPARISON OF TRENDS IN FOOD PRODUCTION IN AFRICAN COUNTRIES DURING 1970-1980 AND 1985-1996

(Average annual growth of output)

		1970-1980					
		More than 4 per cent	***3-4 per cent***	***2-3 per cent***	***1-2 per cent***	***0-1 per cent***	***Negative***
1985-1996	***More than 4 per cent***			Benin	Niger	Burkina Faso	Ghana Nigeria
	3-4 per cent	Côte d'Ivoire Tunisia	*Developing country average*	Egypt	Guinea Mali Morocco *SSA average*	Algeria Chad Togo Uganda	
	2-3 per cent	Sudan	Central African Republic Gabon Kenya	Guinea-Bissau	Cameroon Dem. Rep. of the Congo Ethiopia [a]		
	1-2 per cent		Zambia		Congo Madagascar	Mauritania Mauritius Senegal	Angola Namibia
	0-1 per cent	Libyan Arab Jam. United Rep. of Tanzania	Swaziland	Malawi South Africa	Sierra Leone Lesotho	Burundi	Botswana Mozambique
	Negative		Rwanda		Zimbabwe		Gambia

Source: See table 41.
a 1985-1992.

the export volumes of the largest producers in SSA were about the same in 1995 as in 1970. For cotton, declines in export volumes in the 1970s were reversed during 1981-1989; for coffee there was no clear tendency. The volume of cocoa exports decreased in the 1970s, with an upturn in 1979. In contrast, tea and tobacco, which are of less importance, show an upward trend from 1970 which continued in the 1980s. For all traditional export commodities except tea, the world market share of SSA was lower in 1995 than in 1970.

Agricultural imports have also been growing, in large part on account of cereals. The increase was particularly rapid after 1976. With regard to crops and livestock, the trade performance ratio, i.e. the ratio of the agricultural trade balance (X-M) to total agricultural trade (X+M), fell from 0.51 in 1966-1968 to 0.44 in 1972-1974 and 0.18 in 1979-1981 (table 44). Subsequently, agricultural exports generally rose more slowly than imports. Consequently, net agricultural exports fell in all groups of countries; out of the seven subregions covered in table 44, four registered deficits in agricultural trade during 1993-1995. This worsening of the net agricultural export position of Africa was due to a rapid increase in food imports, exceeding the growth in earnings from export crops.

Table 43

COMPARISON OF TRENDS IN AGRICULTURAL EXPORTS IN AFRICAN COUNTRIES DURING 1970-1980 AND 1985-1996

(Annual average growth of export volume)

		1970-1980					
		More than 4 per cent	*3-4 per cent*	*2-3 per cent*	*1-2 per cent*	*0-1 per cent*	*Negative*
1985-1996	*More than 4 per cent*	Gabon		Sudan		Cameroon	Benin, Burkina Faso, Egypt, Ghana, Guinea-Bissau, Kenya, Libyan Arab Jam.[a], Namibia, Nigeria, Somalia[a], Togo, Uganda, U.R. of Tanzania
	3-4 per cent	Côte d'Ivoire		Zimbabwe			Tunisia
	2-3 per cent						Botswana, Mozambique, Zambia
	1-2 per cent			Chad			Madagascar, Morocco
	0-1 per cent	South Africa		Mali		Mauritius	Central African Republic, Guinea
	Negative			Malawi, Swaziland		Rwanda	Algeria, Angola, Burundi, Congo, D. Rep. of the Congo, Ethiopia[b], Gambia, Lesotho, Liberia[a], Mauritania, Niger, Senegal, Sierra Leone

Source: UNCTAD secretariat calculations, based on data from FAO Statistics Division.

a 1985-1995.

b 1985-1992.

3. *Productivity levels and trends*

Post-1970 trends in land and labour productivity are shown in chart 13, using wheat units as a measure of output. For sub-Saharan Africa as a whole, there was a dramatic decline in labour productivity during 1975-1984. A temporary improvement in the mid-1980s was followed by fluctuating but generally stagnant levels of productivity. On the other hand, output per hectare has continued to grow more or less at a constant rate from the 1970s onwards, with a slight acceleration in the mid-1980s.[36]

Different regional and country performances lie behind these average trends. The main contrast is between West and Central Africa, on the one hand, where an improvement in both yields and labour productivity has taken place since 1983, and the southern, Sudano-Sahel and eastern regions, on the other hand, where labour productivity has

Table 44

AGRICULTURAL TRADE PERFORMANCE, BY REGION, 1966-1995

Region	Ratio of trade balance to total trade in agricultural products[a]			
	1966-1968	1972-1974	1979-1981	1993-1995
Sub-Saharan Africa	0.51	0.44	0.18	0.10
Low-income countries in:				
West Africa[b]	0.34	0.18	0.09	-0.21
East and Southern Africa[c]	0.47	0.43	0.30	0.05
Middle-income countries in:				
West Africa[d]	0.38	0.26	0.13	0.08
East and Southern Africa[e]	0.27	0.31	0.11	-0.10
South Africa	0.42	0.49	0.50	0.09
Oil exporters[f]	0.25	0.08	-0.35	-0.56
North Africa[g]	-0.16	-0.23	-0.64	-0.65

Source: See table 41.

a The balance of the region's trade with agricultural products (X-M) divided by the sum of its agricultural exports and imports (X+M); forestry and fishery products are not included.

b Benin, Burkina Faso, Central African Republic, Chad, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Sao Tome and Principe, Sierra Leone, Togo.

c Burundi, Democratic Republic of the Congo, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Rwanda, Somalia, Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

d Côte d'Ivoire, Senegal.

e Botswana, Mauritius, Namibia, Seychelles, Swaziland.

f Angola, Cameroon, Congo, Gabon, Nigeria.

g Algeria, Egypt, Libyan Arab Jamahiriya, Morocco, Tunisia.

either been declining from the mid-1970s onwards or, at best, has remained stagnant. These regions register a much more modest improvement of yields.

Other studies show that the overall growth of total factor productivity in agriculture in 47 African countries was 1.3 per cent per annum between 1961 and 1991. But about one quarter of the countries experienced negative productivity growth, and another quarter positive growth but of less than 1 per cent. Examining countries in different regions and comparing differences in their performance in terms of total factor productivity provides evidence of convergence, in the sense that the countries with the lowest productivity within regional sets have higher rates of productivity growth. But this does not hold for the continent as a whole.[37]

How far are African productivity levels and trends determined by policy choices and how far by natural conditions? It will be useful to start addressing this question by means of a comparative intercontinental investigation of land, labour and capital use and of productivity differentials in agriculture.

The indicators in table 45 show that during the early 1990s average labour and land productivities in cereal production in Africa were much lower than in Asia and Latin America. There is, of course, considerable variation among countries in all regions. But even low-income Asian countries had higher cereal yields per unit of agricultural land than all African countries except Malawi; in some cases the yield differential was as much as one to four. Moreover, yields in Africa are sub-

Chart 13

LAND AND LABOUR PRODUCTIVITY IN SUB-SAHARAN AFRICA, BY REGION, 1969-1994

Source: M. Karshenas, "World agricultural output in wheat equivalent units" (London: School of Oriental and African Studies, 1998), mimeo.

Note: *Output* is measured in wheat equivalent units in 1980 world relative prices. *Land* covers arable land, land under permanent crops, and permanent meadows and pastures. *Labour* refers to the economically active population in agriculture. Regional groupings are as follows: ***Sub-Saharan Africa:*** all of the following; ***West:*** Benin, Côte d'Ivoire, Ghana, Sierra Leone; ***Central:*** Cameroon, Central African Republic, Congo, Democratic Republic of the Congo; ***East:*** Kenya, Madagascar, Uganda; ***Southern:*** Botswana, Lesotho, Malawi, Mozambique, United Republic of Tanzania, Zambia, Zimbabwe; ***Sudano-Sahel:*** Burkina Faso, Chad, Gambia, Mali, Mauritania, Niger, Senegal, Sudan.

Table 45

AGRICULTURAL PRODUCTIVITY AND ITS DETERMINANTS IN AFRICA, ASIA AND LATIN AMERICA, 1994

	Africa	*Asia*[a]	*Latin America*
Cereal yield (kg/hectare)	1 230	2 943	2 477
Cereal output per capita[b] (kg)	159	274	280
Land/labour[c]	5.9	1.3	24.8
Fertilizer/arable land (kg/hectare)[d]	19	126	63
Irrigated area/arable land (per cent)[d]	6.6	33.3	9.2
Tractors/arable land (no./1,000 hectares)[d]	290	804	1 165

Source: UNCTAD secretariat estimates, based on FAO, *Production Yearbook 1995*, and *Fertilizer Yearbook 1995.*

a Including China and Asian economies in transition, excluding Japan.

b Of total population.

c Ratio of the agricultural area (land under temporary and permanent crops and under permanent pasture) to economically active population in agriculture.

d Arable land includes land under temporary and permanent crops.

ject to much greater annual variation than in Asia (see chart 14).

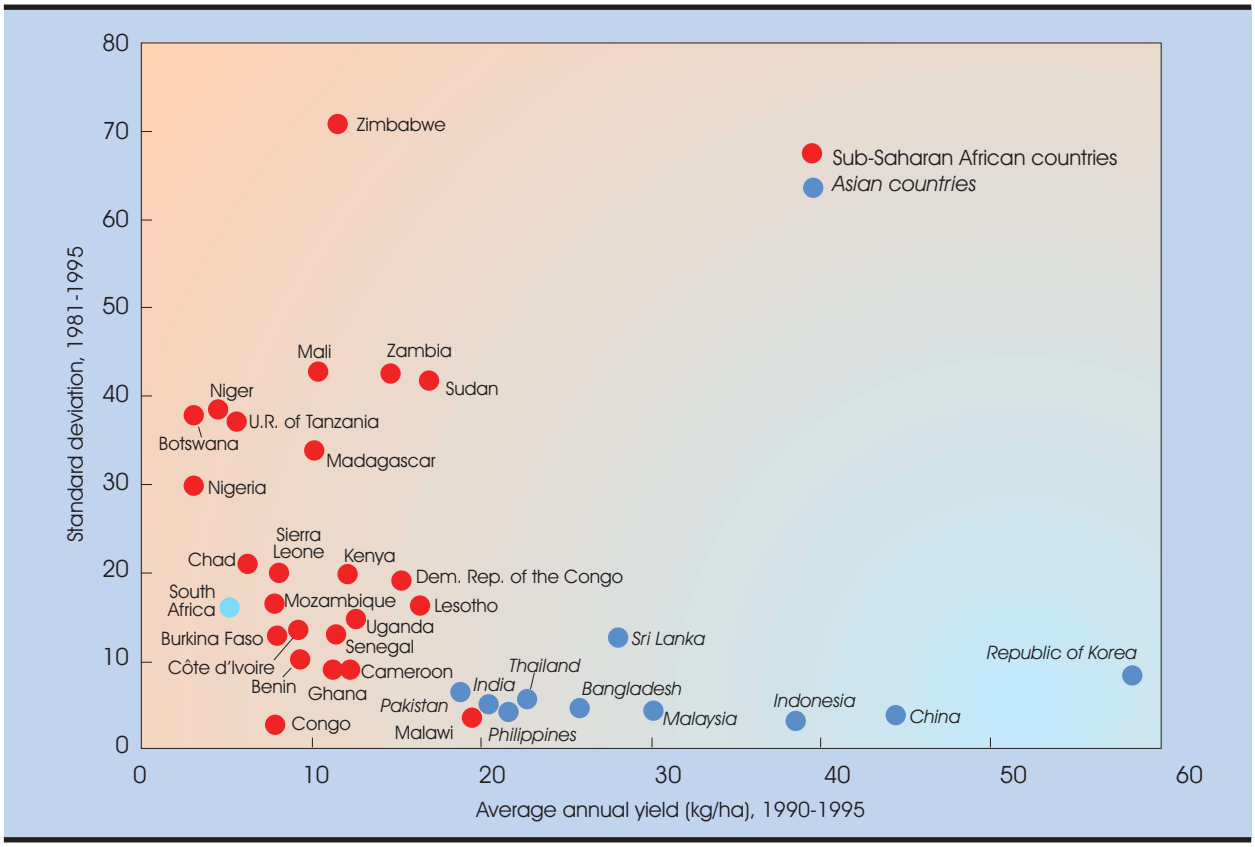
These differences reflect natural and technical endowments of agriculture. Agro-ecological conditions in Africa are difficult. In general terms it is estimated that 46 per cent of the continental land mass is unsuitable for direct rain-fed cultivation because the growing period is too short, in large part because of aridity. Of the land which is suitable for rain-fed cultivation, about half has been classified as marginal in the sense that, for a representative range of crops, yields are only between 20 and 40 per cent of the maximum attainable on the best land. As farmers move on to new areas there is a constant downward pressure on average yields. Also, there is a high risk of drought over 60 per cent of the land area of Africa. In particular, the Sahel, the Horn of Africa and the countries in Southern Africa around the Kalahari desert are characterized by high inter-annual and intra-seasonal rainfall variability. The shift into marginal land is also associated with increasing farming risks. In addition, many African soils are fragile, and inappropriate land use, poor management and lack of inputs can quickly lead to land degradation.[38]

Differing land/labour ratios, which measure the degree to which extensive production methods are used, also affect productivity indicators. Intensive and extensive production methods require different patterns of input use and capitalization. Intensive methods require fertilizers, insecticides, irrigation and improved varieties in order to improve yields per hectare. Extensive methods, on the other hand, allow investment in labour-saving machinery, and therefore tend to increase labour productivity.

Asian and Latin American indicators in table 45 are consistent with these propositions. But for Africa this is only part of the story. The land/labour ratios in Africa are lower than in Latin America but higher than in Asia. Disregarding ecological differences, *ceteris paribus*, the relatively more intensive African agriculture should be expected to achieve higher yields than in Latin America. However, African cereal yields are about one half of those in Latin America, mainly because of undercapitalization. The use of fertilizers and tractors is much more limited and irrigation less widespread in Africa than in other developing regions. Agricultural capital stock per hectare of agricultural land in sub-Saharan Africa in 1988-1992 appears to have been one sixth of the Asian level and less than a quarter of that of Latin America. The scope for economically viable small- and medium-scale irrigation is smaller in Africa and it has been used only to a very limited extent: only 28 per cent of the "irrigable" land is actually irri-

Chart 14

CEREAL YIELDS AND THEIR VARIATION IN SUB-SAHARAN AFRICA AND ASIA



Source: M. Karshenas, "Capital accumulation and agricultural surplus in sub-Saharan Africa and Asia", paper prepared for the UNCTAD project on African Development in a Comparative Perspective (Geneva, 1998), mimeo.

gated in Africa as a whole, and this proportion is less than 10 per cent in Central, East and West Africa.[39]

The undercapitalization of African agriculture is becoming increasingly serious because with rapid population growth land reserves of whatever quality, are being exhausted. This is occurring to different degrees in different parts of Africa. In the Mediterranean and arid North African region there is virtually no remaining land reserve. In Sudano-Sahelian Africa and humid and sub-humid West Africa, there are land reserves which are approximately equal in extent to the area under existing cultivation, but the reserves are of marginal quality and 75 per cent of the land reserve in the Sudano-Sahelian zone is concentrated in one country – Sudan. The main land reserves in Africa are located in humid Central Africa and sub-humid and semi-arid Southern Africa. In both these regions there is unused land considered very or moderately suitable for cultivation (with yields over 40 per cent of the maximum attainable). But a further problem in such regions is infestation by tsetse flies and thus the prevalence of trypanosomiasis.

Projections of land/labour ratios suggest that by 2025 over 50 per cent of SSA will be in high-density conditions similar to those in South Asia.[40] This transition from land abundance to land scarcity has important implications. During the post-colonial era, the overall orientation in Africa has been towards extensive patterns of agriculture. Much of the expansion of production has been effected by bringing in new areas of land rather than by adopting yield-increasing technologies. Thus, for example, between 1961 and 1990, 47 per cent of the increase in cereal output in SSA was due to an increase in cultivated area, whilst 53 per cent was attributable to increasing average yields. In contrast, just 6 per cent and 14 per cent of the increase in East Asia and South Asia, respectively, was attributable to area increases,

whilst the rest was due to higher yields.[41] Already in the 1960s, expansion of cultivated area meant moving on to increasingly marginal land in many countries, something that partly explains the adverse labour productivity trends noted above. But as land reserves are exhausted it becomes necessary to shift from a pattern of agricultural growth based on area expansion to one based on intensification. A shift to more intensive agriculture requires significant investment by farmers and governments; otherwise, there will be strong pressures for a further acceleration of environmental degradation. Such new investment and resource use in favour of intensification involve irrigation as well as the implementation of new technologies (e.g. for the cultivation of high-yielding varieties) and higher levels of input utilization (e.g. fertilizers).

E. Conclusions

Poor agricultural performance in Africa is often portrayed as the outcome of the self-interested policy decisions of urban elites acting against the interests of the majority of farmers. But this view fails to recognize the difficult dilemmas faced by African governments in formulating agricultural policy. These are rooted in the trade-offs between the various important contributions which the agricultural sector makes to the overall growth process in low-income countries. All predominantly agricultural countries face these dilemmas, but they are particularly acute in sub-Saharan Africa for three reasons. First, an important part of agricultural output consists of goods which are non-tradable internationally outside the region. Second, agricultural production takes place in a difficult, risky and fragile natural environment and is seriously undercapitalized, particularly in the context of a transition from land abundance to land scarcity. Third, there is persistent and historically founded intersectoral dualism with very high differentials between output per worker in agriculture and other sectors.

The period since the middle of the last decade has witnessed intense policy efforts to reverse the poor performance during the 1970s. Indeed, in terms of a number of key indicators, including productivity, output and export volumes, the post-1984 period has generally been better than the 1970s and early 1980s. But the improvement has not been sufficient to increase per capita food production and net agricultural exports, or to sustain productivity growth. Moreover, the improvement has been patchy, with many countries faring worse in the later period while a few countries apparently turned their agriculture around. Only a few countries have managed to achieve rates of growth of agricultural value added in excess of 4 per cent. This continued weak performance of agriculture in Africa thus raises the question of the effectiveness of policies in removing impediments to agricultural development, including lack of incentives and structural bottlenecks. The next chapter takes up this question. ■

Notes

1 See, for example, World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action* (Washington, D.C.: World Bank, 1981) – the so-called Berg Report; and A. Singh and H. Tabatabai, "The world economic crisis and Third World agriculture in the 1980s", chapter 2 in A. Singh and H. Tabatabai (eds.), *Economic Crisis and Third World Agriculture* (Cambridge: Cambridge University Press, 1993).

2 See U.J. Lele, "Agricultural growth, domestic policies, the external environment and assistance to Africa: Lessons of a quarter century", MADIA Discussion Paper 1 (Washington, D.C.: World Bank, 1989.

3 For the latest approach to policy reform see J. Meerman, *Reforming Agriculture: The World Bank Goes to Market* (Washington D.C.: World Bank, 1997). For another view of the current official approach to agriculture and its relationship with earlier donor and African government strategies, see K. Cleaver, *Rural Development Strategies for Poverty Reduction and Environmental Protection in Sub-Saharan Africa* (Washington, D.C.: World Bank, 1997).

4 See C.P.Timmer, "Getting agriculture moving: Do markets provide the right signals?", *Food Policy*, Vol.20, No.5, 1995. The different priorities attached by aid donors and African governments to food and export crop production are just one indication of such policy complexity; see, in particular, OAU, *Lagos Plan of Action for the Implementation of the Monrovia Strategy for the Economic Development of Africa*, Addis Ababa, 1980; and Economic Commission for Africa, *African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation (AAF-SAP)* (E/ECA/CM.15/6/Rev.3), Addis Ababa, 1989.

5 J. W. Mellor, *Agriculture on the Road to Industrialization* (Baltimore and London: Johns Hopkins University Press, 1995), p. 5.

6 For agricultural growth linkages in Africa, see S. Block and C.P. Timmer, *Agriculture and Economic Growth in Africa: Progress and Issues*, Agricultural Policy Analysis Project Phase III Research Report No.1016 (Bethesda, Maryland, March 1997).

7 See J.C. Berthélemy and C. Morrisson, *Agricultural Development in Africa and the Supply of Manufactured Goods* (Paris: OECD Development Centre, 1989). For the role of such a vicious circle in an assessment of the breakdown in accumulation in the United Republic of Tanzania at the end of the 1970s, see M. Wuyts, "Accumulation, industrialization and the peasantry: A Reinterpretation of the Tanzanian Experience", *Journal of Peasant Studies*, Vol. 21, No. 2, 1994, pp. 159-193.

8 See FAO, *The Sixth World Food Survey* (Rome: FAO, 1996).

9 It has been estimated that 10-20 per cent of people in poor countries, mostly smallholders in Africa and labourers in South Asia, are too undernourished and unhealthy to work more, even if incentives are provided for them to do so. See World Bank, *Poverty and Hunger: Issues and Options for Food Security in Developing Countries* (Washington, D.C.: World Bank, 1986).

10 See S. Jaffee, "Enhancing agricultural growth through diversification in sub-Saharan Africa", in S. Barghouti, S. Garbus and D. Umali (eds.), *Trends in Agricultural Diversification: Regional Perspectives*, Technical Paper No.180 (Washington, D.C.: World Bank, 1992).

11 Block and Timmer, *op. cit.*

12 R.H. Bates, *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies* (Berkeley: University of California Press, 1981). In some cases, such as Uganda in the 1950s, the contribution was as high as 90 per cent, whilst in others, such as Kenya in the 1960s, it was as low as 10 per cent.

13 R.C. Riddell, *Manufacturing Africa: Performance and Prospects in Seven Countries in Sub-Saharan Africa* (London: James Currey, 1990), pp.34-35.

14 See *TDR 1997*, Part Two, chapter VI, pp. 182-183. For the relationship between import-substitution industrialization and the development of manufactured exports in Africa, see S. Wangwe, *Exporting Africa: Technology, Trade and Industrialization in Sub-Saharan Africa*, UNU/Intech Studies in New Technology (London and New York: Routledge,1995).

15 For the use of agricultural policy as part of an implicit distributional social contract, see T.S. Jayne and S. Jones, "Food marketing and pricing policy in Eastern and Southern Africa: A survey", *World Development*, Vol. 25, No. 9, pp. 1505-1527. For a discussion of the politics of inclusion in Africa see D. Rothschild and W. Foley, "African States and the politics of inclusive coalitions", in D. Rothschild and N. Chazan (eds.), *The Precarious Balance: State and Society in Africa* (Boulder, Colorado: Westview Press, 1988).

16 See Bates, *op. cit.*

17 A penetrating discussion of African land tenure is to be found in H.W.O. Okoth-Ogendo, "Some issues of theory in the study of tenure relations in African agriculture", *Africa*, Vol. 59, No. 1, 1989, pp. 6-12. A balanced account of gender relations is provided by A. Whitehead, "Rural women and food production in sub-Saharan Africa", in J. Dreze and A. Sen (eds.), *The Political Economy of Hunger* (Oxford: Clarendon Press, 1990). See also A. Tibaijuka, "The cost of differential gender roles in African agriculture: A case study of smallholder banana-coffee farms in Kagera Region, Tanzania", *Journal of Agricultural Economics*, Vol. 45, No. 1, 1994.

18 At present only 7.5 per cent of arable land is irrigated, and six countries (Egypt, Madagascar, Morocco, Nigeria, South Africa and Sudan) account for 75 per cent of total irrigated land. See FAO, "Food production and the critical role of water", Technical Background Document No. 7 for the World Food Summit, Rome, 13-17 November 1996.

19 For a discussion of the estate sector in Malawi and Kenya , see U.J. Lele and M. Agarwal, "Smallholder and large-scale agriculture in Africa: Are there tradeoffs between growth and equity?", MADIA Discussion Paper 6 (Washington, D.C.: World Bank, 1989).

20 See K. Deininger and H. Binswanger, "Rent-seeking and the development of large-scale agriculture in Kenya, South Africa, and Zimbabwe", *Economic Development and Cultural Change*, Vol. 43, 1995, pp. 493-522. On contract farming, which has been important in the expansion of non-traditional agricultural exports, see G. Porter and K. Phillips-Howard, "Comparing contracts: An evaluation of

contract farming schemes in Africa", *World Development*, Vol. 25, No. 2, 1997, pp. 227-238.

21 See D. Byerlee and C. K. Eicher, *Africa's Emerging Maize Revolution* (London and Boulder, Colorado: Lynne Rienner, 1997).

22 T. Reardon et al., "The importance and nature of rural nonfarm income in developing countries with policy implications for agriculturalists", in *The State of Food and Agriculture 1998* (Rome: FAO, 1998). These estimates are based on a review of about 100 farm household surveys undertaken from the 1970s to the 1990s.

23 See, for example, M. Mamdani, "Extreme but not exceptional: towards an analysis of the agrarian question in Uganda", *Journal of Peasant Studies*, Vol. 14, No. 2, 1987, pp. 191-225.

24 In Malawi, which has a large population in relation to the area of cultivable land and where the development strategy of the 1970s was founded on African estate production, it was estimated that at the end of the 1980s, 56 per cent of households on customary land (approximately 3.6 million people) were working less than one hectare of land and that their holdings were insufficient to meet their basic food needs. The phrase " too poor to farm" is taken from A. Whitehead, *Poverty in Northern Ghana*, Report to ESCOR (London: Overseas Development Agency, 1986). See also P. Hill, *Rural Hausa: A Village and a Setting* (Cambridge: Cambridge University Press, 1972).

25 For countries such as Kenya, where ownership of land is individually registered, it is possible to speak of the emergence of a landless population, and estimates of rural landless in the early 1980s range from 200,000 to 410,000 households, some 12 per cent of households in some provinces. Women and young men may not have direct access to land under the indigenous communal system, and on this basis it has been estimated, for example, that the number of landless men between the ages of 16 and 30 is 40 per cent in some areas of Zimbabwe. See J. Testerink, "Land relations and conflict in Eastern and Southern Africa", Occasional Paper No.4 (Perth, University of West Australia: Indian Ocean Centre for Peace Studies, 1991).

26 An extended argument regarding the relationship between agrarian conditions and wage rates in Africa and Asia, and their consequences for intersectoral dualism, is to be found in M. Karshenas, "Capital accumulation and agricultural surplus in sub-Saharan Africa and Asia", paper prepared for an UNCTAD project on African Development in a Comparative Perspective (Geneva, 1998), mimeo. For mineral economies, "Dutch disease" phenomena have been identified – see T. A. Oyejide, "Food Policy and the Choice of Trade Regime", and T. B. Tshibaka, "Commentary on the trade regime", in J.W.Mellor, C.L.Delgado, and M.J. Blackie (eds.), *Accelerating Food Production in Sub-Saharan Africa* (Baltimore: Johns Hopkins University Press, 1987).

27 See, in particular, J.W. Mellor, "Determinants of rural poverty: The dynamics of production, technology, and price", chap. 4 in J.W. Mellor and G.M. Desai (eds.), *Agricultural Change and Rural Poverty: Variations on a Theme by Dharm Narain* (Baltimore: Johns Hopkins University Press, 1986). Even W. Arthur Lewis, who first explained how economic development could take place with unlimited supplies of labour, excluded Africa from his discussion of the labour-surplus economy. J. Stiglitz argued that labour was not in surplus in most African economies, but sought to identify various conditions in which the withdrawal of labour did not result in falling output. See "Rural-urban migration, surplus labour, and the relationship between urban and rural wages", *East African Economic Review*, Vol.1, No.2, 1969. S. Berry argued that the labour-surplus model of development was not relevant for Africa, and focused on the absence of automatic reinvestment of profits in the nascent capitalist sector, and on the role of government; see "Economic development with surplus labour: Further complications suggested by contemporary African experience", *Oxford Economic Papers*, Vol. 22, No.2, July 1970, pp.275-287. For a recent assessment of the labour constraint in African agriculture see K. Saito, "Raising the productivity of women farmers in sub-Saharan Africa", World Bank Discussion Papers, Africa Technical Department Series, No.230, 1994, chap. 6.

28 A. Low, *Agricultural Development in Southern Africa: Farm-Household Economics and the Food Crisis* (London: James Currey, 1986), p.188.

29 R. Bush, L. Cliffe and V. Jansen, "The crisis in the reproduction of migrant labour in southern Africa", in P. Lawrence (ed.), *World Recession and the Food Crisis in Africa* (London: James Currey, 1986).

30 The increasing death rates associated with the spread of AIDS lend some uncertainty to population projections. However, it is estimated that the African population will double in the next 20 years if the current trend persists. With a fertility decline of 2.75 per cent a year over the period 1990-2020, the projected increase is from about 500 million in 1990 to 1,100 million in 2020. There are, of course, differences between countries, but one classification of countries according to their population growth rates over the period 1980-2000 indicates that 34 per cent of the 1980 African population were living in countries with very high population growth rates (over 3.5 per cent per year) and only 16 per cent in countries with rates of under 2.5 per cent a year.

31 The importance of the non-tradability of agriculture has, however, been particularly stressed by C.L. Delgado in his "Why domestic food prices matter to growth strategy in semi-open West African economies", *Journal of African Economies*, Vol.1, No.3, 1992, pp. 446-471; and "Agricultural diversification and export promotion in sub-Saharan Africa", *Food Policy*, Vol. 20, No.3, 1995, pp. 225-243. For an analysis of the reasons for non-tradability, see S.C.

Kyle and J. Swinnen, "The theory of contested markets and the degree of tradeability of agricultural commodities: An empirical test in Zaire", *Journal of African Economies*, Vol. 3, No. 1,1994, pp. 93-113.

32 See, for example, Delgado, 1995, *op. cit.*.

33 This has been analysed in C. Kirkpatrick and D. Diakosavva, "Food insecurity and foreign-exchange constraints in sub-Saharan Africa", *Journal of Modern African Studies*, Vol. 23, No. 2, 1985, pp. 239-250.

34 The economic importance of increasing the productivity of food producers is emphasized by O. Aboyade, "Growth strategy and the agricultural sector", in Mellor, Delgado and Blackie (eds.), *op. cit.*, and also by Delgado, 1995, *op. cit*.

35 See S. A. Salih, *Food Security in Africa*, UNU/WIDER World Development Studies, No. 3 (Helsinki, 1995).

36 The use of "wheat units" allows cross-country and inter-temporal comparisons of productivity without reference to prices. For an earlier application of this approach in Africa see S. Block, "The recovery of agricultural productivity in sub-Saharan Africa", *Food Policy*, Vol. 20, No. 5, 1995, pp. 385-405. This study covered the period 1963-1988, and identified a recovery in agricultural productivity in the period 1983-1988, which was particularly marked in West Africa, though not necessarily sustainable. The present results, which are based on a new data set on wheat units, indicate that there was a similar recovery in labour productivity in the mid-1980s and that it has not been sustained.

37 See A. Lusigi and C. Thirtle, "Total factor productivity and the effects of R&D in African agriculture", *Journal of International Development*, Vol. 9, No. 4,1997, pp. 529-538; and A. Lusigi, J. Piesse and C. Thirtle, "Convergence of per capita incomes and agricultural productivity in Africa, *Journal of International Development*, Vol. 10, No. 1, 1998, pp. 105-116.

38 FAO, *African Agriculture: The Next Twenty-Five Years* (Rome: FAO, 1986), annex II: "The land resource base".

39 The estimates of irrigation potential are taken from FAO, 1996, *op. cit.* Aggregate capital stock estimates for 1988-1992 are from FAO, *Investment in Agriculture*, Technical Background Document No.10 for the World Food Summit, Rome, 13-19 November 1996, table 3. They cover investment in land development for arable cropping, planting tree crops, irrigation, building up and housing livestock, and mechanization and farm implements. Expressed in relation to area of agricultural land, they are as follows: sub-Saharan Africa: $157 per hectare; Latin America and the Caribbean: $665 per hectare; and Asia: $913 per hectare.

40 Estimates of land reserves are from FAO, 1986, *op. cit.* Projections of land/labour ratios are those of H. Binswanger and P. Pingali in "Technological priorities for farming in sub-Saharan Africa", *World Bank Economic Research Observer*, Vol. 3, No. 1, 1988, pp. 81-98.

41 Saito, *op. cit*., table 2.3.