

Food vs. Cash Crops in Africa†

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This article by Andrew Storey of the Economic and Social Research Institute compares the 'competition argument' that export crops crowd out food crop production with the 'complementarity' claim that there is a place for both kinds of production in the food policy of thirty-three sub-Saharan African countries. Empirical results indicate that export and food crop production can be complementary and can help to raise consumption levels provided adequate foreign exchange and agricultural services are directed towards food production.

Introduction

No one questions today the need to give greater priority in Africa to agricultural production, but there is considerable debate about the appropriate production strategy between advocates of food self-sufficiency, on the one hand, and of export promotion, on the other. This debate was heightened by the publication of the World Bank Berg Report *Accelerating Development in sub-Saharan Africa* in 1981. This report recommended an expansion of peasant exports, but was criticised by those who argued that food self-sufficiency should be the continent's first priority. Critics fear that the production of agricultural exports will increasingly be controlled by an expanded agribusiness, and thus lead to an increase in rural poverty and hunger through competition between food and export crops for scarce capital, land and other inputs, and through a growing consolidation of land ownership and control which would decrease the access of small farmers to the land and create a larger rural proletariat.

Two of these concerns are considered in this article. Section I examines the criticism that export crop production 'crowds out' the production of basic food staples. This will be referred to as the competition argument, to be contrasted with the complementarity argument, put forward by the proponents of export crop production, notably the World Bank. The complementarity advocates claim that export crop production need not affect food production levels negatively and that, in fact, the two forms of production are most likely to expand or decline at the same time in any one country.

There is also a sense in which those recommending export crop promotion regard the complementarity versus competition debate as a side-issue. They argue that if export crop production is undertaken on the basis of comparative advantage there is no problem even if it does displace domestic food production. This is because the foreign exchange earned should finance food

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imports capable of raising, or at least maintaining, domestic food consumption levels. Section II looks at the relationship between export crop production and food consumption in Africa.

We should define what is meant by export crop and food crop. African export crops are those for which over 50% of production is exported in over 50% of the countries surveyed. Six crops are thus identified from FAO production data – cotton, coffee, cocoa, tea, sisal and tobacco. Food crops consist of cereals, pulses, roots and tubers. The comparisons below are based on aggregated trends for both types of crops.¹

I Export food production and food crop production

THE ARGUMENTS OUTLINED

The competition argument seems intuitively plausible: countries with limited resources of land, labour and capital can only allocate those resources to a limited number of activities. If priority is accorded to export crop production then food production seems certain to suffer as a result. Land devoted to the production of coffee cannot be used to grow food staples.

There are, however, a number of factors which could allow production of export crops and food crops to be complementary. Let us take the example of small farmers engaged in subsistence food production who introduce a new export crop. Bearing in mind that agricultural production is a combination of land area and crop yield, food production can be prevented from declining if:

- (a) there is an increase in the total land area under cultivation;
- or (b) food crop yields rise sufficiently to compensate for the land area given over to the export crop.

How important each of these effects is in practice will depend on the resource constraints faced by the farmers. If land is in short supply then (a) is unlikely to operate. But there could, for example, be significant seasonal under-employment of labour in the area and this reserve could be called upon to help generate more intensive food production from a reduced food-producing area some of whose land is devoted to the new export crop.

At a formal level at least four factors could be expected to foster complementarities in production at a microeconomic level (World Bank, 1985).

- 1.** Extension, input supply, and marketing services built up around the export sector could simultaneously be used for the benefit of food producers.
- 2.** Fertiliser residues remaining from a commercial lead crop could directly benefit later food production.
- 3.** Farmers specialising in export crop production may themselves develop a food deficit, thus creating a market for local food crop producers which would likely be more secure and stable than distant urban markets.

4. The additional income earned through export crop production could allow producers to adopt productivity-improving inputs which could boost staple crop production even when labour is diverted. (This argument can be broadened to apply at the macroeconomic level – the foreign exchange necessary to sustain and increase food crop production may first have to be earned by agricultural production for export.)

On an *a priori* basis one would not expect the land use constraints which might cause at least some degree of crop competition to arise in the generally land-extensive environment of Africa. Nevertheless Lappe and Collins (1982) cite examples of such competition at work. In Kenya the development of a new variety of cotton meant that food crops could be no longer planted in the same field as the cotton crop – the new cotton was insufficiently hardy to adapt to these conditions. Similarly in Burkina Faso farmers were obliged by the government to plant a certain acreage of cotton and had to find a supplementary crop which could be planted later but still fitted into the short planting season – traditional food crops of sorghum and millet could not meet this schedule which forced the farmers to turn to the low-nutrition cassava crop. Similar substitution of cassava for other food crops is apparently taking place in Tanzania, in this case because cassava is relatively less labour-intensive than other food crops and labour is increasingly needed for seasonal tobacco production. For Kenya and Tanzania as a whole Lappe and Collins point to evidence collected by World Bank rural economist Uma Lele (1973) of substantial substitution effects between food and export crops (tea, cotton and tobacco) (Lappe and Collins, 1982, pp. 160-1).

The advocates of the complementarity argument respond by claiming that institutional factors are creating a degree of competition where none might necessarily have existed. Lappe and Collins themselves point out that much of the problem in Tanzania lies with the government's failure to transfer the agricultural extension techniques and incentive systems developed for the cash crop sector to the food crop sector. Thus the potential for complementary increases in production (along the lines of factor 1 above) is being neglected. This insight is borne out by Odegaard (1985) who shows that the great bulk of modern farming inputs – chemical fertilisers, pesticides, hybrid seeds, etc. – were made available only to the cash crop sector (e.g. tobacco) in Tanzania's post-colonial period. Research and developmental funding for food production has been disproportionately allocated to large-scale farmers while the peasant sector has largely been neglected. Odegaard suggests that the more widespread provision of modern inputs to the food-producing sector could improve productivity sufficiently to allow land to be freed for cash crop production without any negative effect on food production levels (Odegaard, 1985, ch. 6).

In a later work, Lele (1975) also suggests that it is often policy failure which prevents export cropping from being associated with positive rather than negative effects on food production. Her evidence is also drawn from Tanzania, and in particular, from tobacco-growing schemes in Uranbo and Tumbi. From 1964 onwards these schemes provided additional services to food production, including credit to help smallholders purchase seed and fertiliser for paddy and

maize production. The results were dramatic increases in food grain production and off-farm sales (Lele, p. 29).

PREVIOUS RESEARCH

The problem in assessing these conflicts is to know how extensive they are and whether they are inevitable. Much of the criticism of export cropping is based on anecdotal evidence. Arguments of this kind are seriously weakened if counter-examples can be cited. As far as the increase in cotton production in Burkina Faso is concerned one could equally well point out that those areas which do not engage in significant export crop production tend to be food deficit regions or are at best self-sufficient in food, while the cotton-producing areas continue to market substantial quantities of cereals (World Bank, 1985, p. 4). Between 1960 and 1983 cotton production did increase 32-fold for Burkina Faso as a whole but millet and sorghum production levels actually remained unchanged (George, 1984, pp. 72-3). This may be evidence of misplaced government priorities but it certainly lends no support to the competition argument. The same trends are identifiable in Mali yet both these countries are resource-poor, countries where one might most expect a trade-off between the two types of production to arise (World Bank, 1985, p. 4).

A more comprehensive examination of the trends in food and export crop production is clearly called for. Von Braun and Kennedy (1985) examine 78 less developed countries (LDCs) over the period 1968-82, looking both at their levels of food and cash crop production and at the proportions of land areas devoted to each. Their findings suggest that the majority of countries which managed to expand their *per capita* production of basic food staples simultaneously increased, rather than reduced, their share of land area devoted to cash crops. The opposite combination tends to hold for most low-income African countries: per capita food production levels stagnated or declined at the same time as the allocation of land shares to cash crops declined or remained constant.

This means that complementarity was being sustained by yield increases in food production at the same time as land was actually being switched away from such production. Most countries which cut back on land allocations to the cash crop sector ended up with production declines in both food **and** cash crop sectors.

"If there is a general message . . . it is probably that an appropriate agricultural policy permits joint growth in both the cash crop sector and the staple food crop sector, and that failure in agricultural policy affects both subsectors alike." (Von Braun and Kennedy, 1985, p. 32)

Another study looked at the food and non-food² production performances of 38 African countries over two periods: 1960-70 and 1970-82 (World Bank, 1985). Its main findings were that:

- in 25 countries (66%) *both* the rate of growth of food production and of non-food production fell in 1970-82 compared to 1960-70;
- in 6 countries (16%) the rates of growth in *both* types of production for 1970-82 registered an increase over the earlier period;

- in 5 countries (13%) the rate of growth in non-food production declined while that of food production increased;
- in 2 countries (5%) it was the rate of growth in food production which declined while that of non-food production accelerated.

Thus only 18% of the sample countries suggest the existence of a possible trade-off along the lines predicted by the competition argument. Interestingly none of the resource-poor Sahelian countries register a trade-off between the two types of production, while those which do show food production growth accelerating at the same time as non-food production growth slows down appear to have few resource constraints regarding land (e.g. Liberia, Central African Republic) or labour (e.g. Ivory Coast). This evidence also seems to cast doubt on the inevitability of a food crop – cash crop conflict. The study concludes: “The general point is that the benefits of a changing, dynamic agriculture are not restricted to a single crop or set of crops. When change accelerates, the productivity of the whole farming system also increases.” (p. 5)

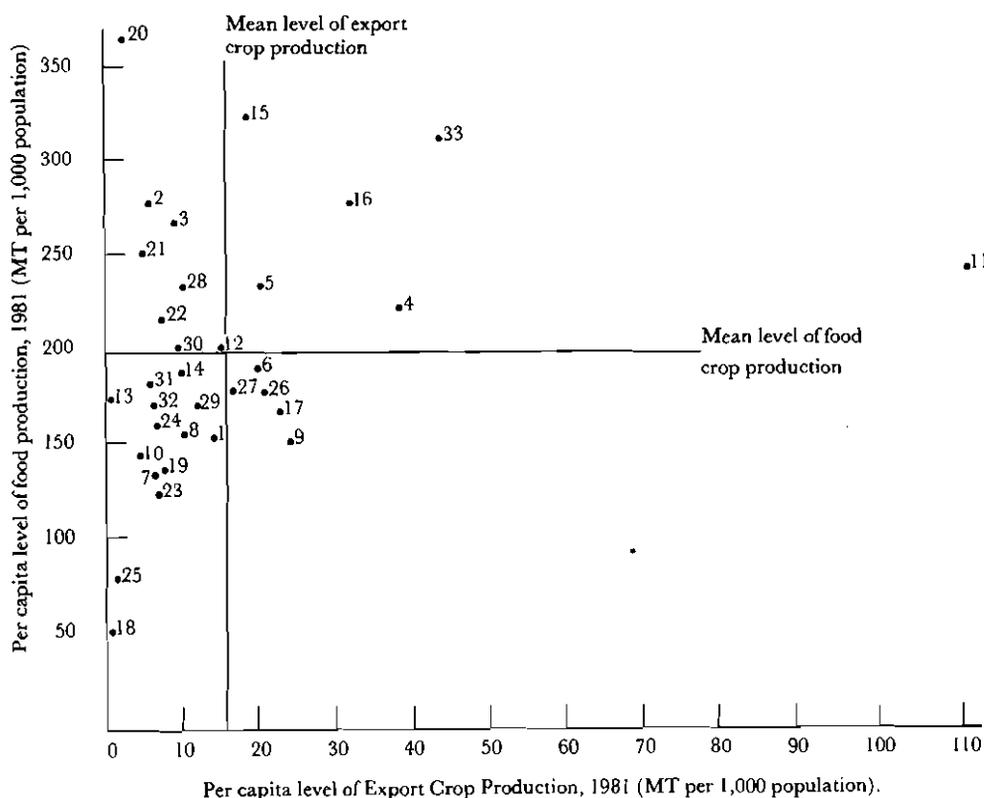
While these studies contrast food production performance with cash crop or non-food production performance they do not specifically address the issue of *export* cropping and its effect on staple food production. There is considerable overlap between the ‘cash’, ‘non-food’ and ‘export’ categories but it is nonetheless desirable to investigate the relationship between food and export crops for precisely defined sectors. This is done for 33 sub-Saharan African countries over the period 1963-1981 in the following sections.

The relationship between export crop production and food crop production in Africa 1981

Graph 1 plots the 1981 *per capita* levels of food crop and export crop production in each of the 33 countries. (See below for a guide to the country numbering system). This graph is divided into four quadrants based on the average *per capita* levels for both types of production for the continent as a whole to allow comparisons across countries:

- 6 countries (18%) had above-average levels of both export and food crop production: Cameroon, Central African Republic, Ivory Coast, Madagascar, Malawi, and Zimbabwe;
- 14 countries (42%) did relatively badly in both forms of production: Angola, Congo, Ethiopia, Guinea, Lesotho, Liberia, Mauritania, Mozambique, Senegal, Sierra Leone, Somalia, Uganda, Zaire, and Zambia;
- 5 countries (15%) had an above-average level of export crop production but performed relatively poorly in terms of food production: Chad, Ghana, Mali, Sudan, and Tanzania;
- 8 countries (24%) performed well in food production and poorly in export crop production: Benin, Burundi, Kenya, Niger, Nigeria, Rwanda, Togo and Upper Volta.³

Graph 1 Levels of Food Crop and Export Crop Production, 1981



Guide to country numbering system, used in graphs

- | | | |
|----------------------------|---------------|-----------------|
| 1 Angola | 12 Kenya | 23 Senegal |
| 2 Benin | 13 Lesotho | 24 Sierra Leone |
| 3 Burundi | 14 Liberia | 25 Somalia |
| 4 Cameroon | 15 Madagascar | 26 Sudan |
| 5 Central African Republic | 16 Malawi | 27 Tanzania |
| 6 Chad | 17 Mali | 28 Togo |
| 7 Congo | 18 Mauritania | 29 Uganda |
| 8 Ethiopia | 19 Mozambique | 30 Upper Volta |
| 9 Ghana | 20 Niger | 31 Zaire |
| 10 Guinea | 21 Nigeria | 32 Zambia |
| 11 Ivory Coast | 22 Rwanda | 33 Zimbabwe |

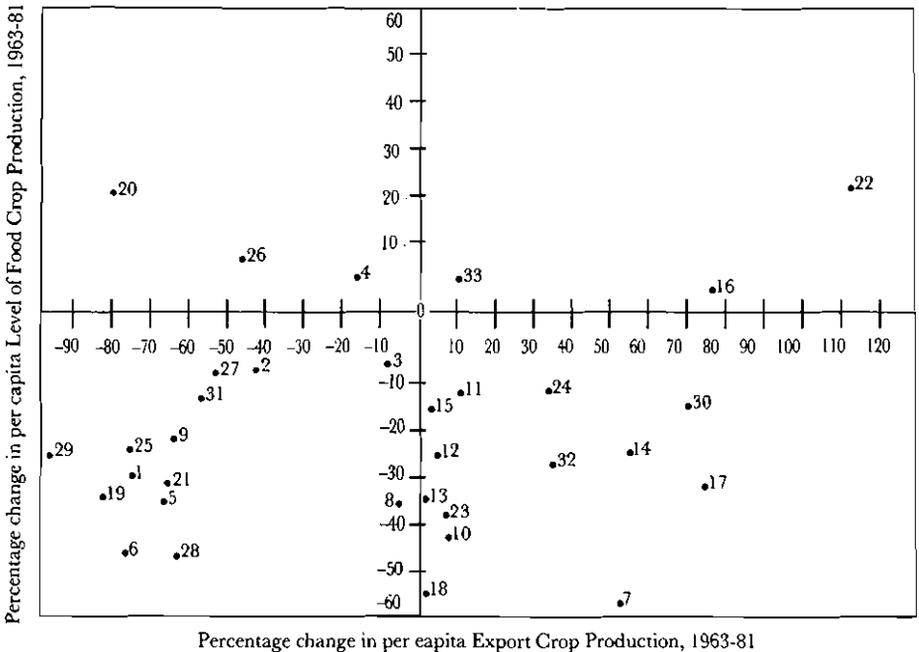
The export crop and food crop sectors thus tend to register similar performances, for better or worse, in 60% of the countries. These results are not, however, particularly conclusive as a sizeable minority of countries (33%) do suggest the existence of a trade-off between the two types of production. On the other hand there is no evidence that those countries with relatively high levels of export crop production achieved those levels at the *expense* of their food-producing sectors; in fact the 4 top export crop producers – Ivory Coast, Zimbabwe, Cameroon, and Malawi – were all above-average food crop producers.

The relationship between export crop production and food crop production in Africa 1963-81

Graph 2 shows the percentage changes in per capita levels of export crop and food crop production between 1963 and 1981. A country-by-country breakdown reads as follows:

- 3 countries (9%) achieved increases in both export crop and food crop production: Malawi, Rwanda, and Zimbabwe;
- 14 countries (42%) registered declines in both types of production: Angola, Benin, Burundi, Central African Republic, Chad, Ethiopia, Ghana, Mozambique, Nigeria, Somalia, Tanzania, Togo, Uganda, and Zaire;
- 3 countries (9%) increased their levels of food crop production but experienced declining levels of export crop production: Cameroon, Niger, and Sudan;
- 10 countries (30%) increased export crop levels but saw their food production performance deteriorate: Congo, Guinea, Ivory Coast, Kenya, Liberia, Madagascar, Mali, Sierra Leone, Burkina Faso, and Zambia.⁴

Graph 2 Changes in Per Capita Levels of Food Crop and Export Crop Production, 1963-81(%)



The most striking fact to emerge from these figures is that 72% of countries registered declines in their food crop production levels over the period examined. Of these 24 countries, 14 experienced declining export crop production over the same period, which would indicate a tendency towards poor performance in both rather than improvement in one at the expense of the other. Six countries did improve their levels of food production, and these were equally divided between those which did so in association with increases or decreases in export crop production levels.

The figures are once again inconclusive. Advocates of the competition argument will point to the fact that 10 countries increased their export crop production levels but did not enjoy the food production increases the complementarity argument anticipated. This evidence therefore offers ammunition to both sides of the debate.

To sum up on the relationship between export crop production and food crop production: writers such as Lappe and Collins have identified ways by which competition could arise between the production of food crops and export crops, and have cited examples of such competition in practice. One can, however, equally identify ways in which the two forms of production may be complementary, and blame many of the various forms of competition on a failure of policy to exploit this complementary potential.

Although previous studies tend to support the complementarity argument, the examination of sub-Saharan Africa carried out for this study suggests a weaker level of association between the two forms of production though it remains generally positive. There is insufficient evidence to warrant a strong conclusion in favour of one or other argument, but the competition argument of an inevitable conflict between export crops and food production has the least empirical support.

II Export crop production and food consumption

We noted earlier that for advocates of an export-oriented agricultural strategy for Africa it is the relationship between export crop production and food consumption which is the bottom line. We now turn to examine the evidence on the relationship between export crop production and domestic food consumption. The opponents of export crop promotion anticipate such effects to be negative owing to the alleged negative impact on food production levels (see Section 1), the supposedly limited and uncertain foreign exchange earning capacity of LDC export crops, the claim that those who receive most of the foreign exchange benefits – TNCs and domestic elites – use them for purposes other than food imports e.g. military expenditures and western-style consumer goods.

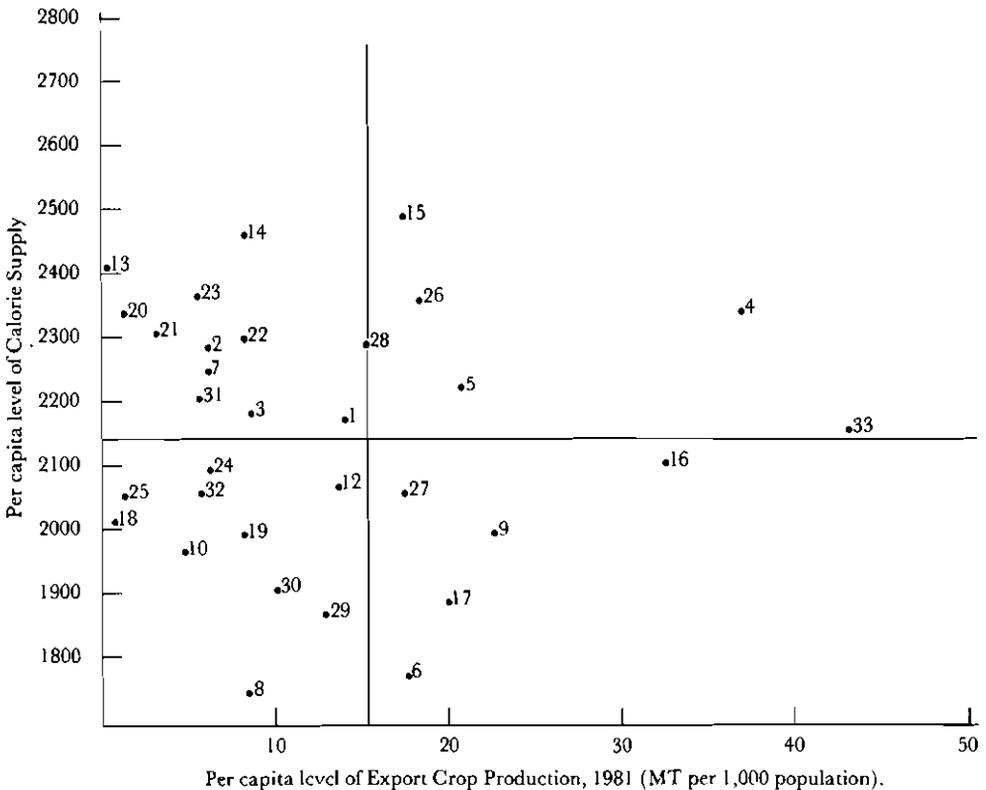
If these arguments are valid then one would expect increased export crop production to be associated with declining levels of per capita calorie supply, and those countries with the largest export crop sectors to be worst off nutritionally. As mentioned at the outset, the advocates of export crop production claim that such production undertaken on the basis of comparative advantage will generate sufficient foreign exchange to pay for food imports

which will stabilise or boost domestic food consumption levels i.e. there would be a positive relationship between export crop production and per capita calorie supply. Some argue that this applies regardless of the effect on domestic food production but, crucially, it does depend on the foreign exchange earned being used on food imports. These arguments are examined for the sample of African countries, firstly by comparing levels of export crop production and per capita calorie supply in 1981, and secondly by comparing trends in those two variables for the period 1963-81.

The relationship between export crop production and per capita calorie intake, 1981

Graph 3 plots the level of *per capita* export crop production and food consumption (calorie supply) for the 33 African countries studied. Vertical and horizontal lines are also drawn through the mean levels of each so that countries with above or below average performances can be identified.

Graph 3 Levels of Export Crop Production and Food Consumption, 1981



The following results emerge:

- 6 countries (18%) had above-average performances in both export crop production and food consumption: Cameroon, Central African Republic, Ivory Coast, Madagascar, Sudan, and Zimbabwe;
- 10 countries (30%) had below-average performances in both export crop production and food consumption: Ethiopia, Guinea, Kenya, Mauritania, Mozambique, Sierra Leone, Somalia, Uganda, Burkina Faso, and Zambia;
- 6 countries (18%) performed well in export crop production but relatively poorly in terms of food consumption: Chad, Ghana, Malawi, Mali, Tanzania, and Togo;
- 11 countries (33%) registered above-average levels of food consumption along with below-average concentrations on export crop production: Angola, Benin, Burundi, Congo, Lesotho, Liberia, Niger, Nigeria, Rwanda, Senegal, and Zaire.

This pattern would seem to indicate little if any correlation between the two variables, although there is a slightly positive statistical association. This positive result may be partially attributable to the fact that three of the countries which combined good performances in export crop production and food consumption were also those which had the *highest* per capita levels of export food crop production – Ivory Coast, Zimbabwe, and Cameroon – i.e. those countries which did best in export crop production suffered no negative nutritional effects.

What of those six countries which showed poor levels of food consumption despite (or because of?) good export crop production levels? In Togo and Malawi per capita *food* production performance was also above the African average so export crop production does not appear to have led to poor nutrition levels through its damaging displacement of food production. Chad, Ghana, Mali and Tanzania seem to offer greater support to the anti-export crop approach, especially Ghana which is a significant export crop producer. Of course third factors may be in operation here, e.g. Mali and Chad are known to have extremely poor infrastructures which could be held responsible for unnecessary resource competition and/or poor food supply to the country.

Advocates of food self-sufficiency might also draw support from the eleven countries which showed relatively good food consumption levels but below-average export crop production levels. However, six of these countries also exhibited poor performances in food production so that the anticipated benefits of a lower concentration on export crop production do not appear to have been realised. Benin, Burundi, Niger, Nigeria, and Rwanda do not exhibit higher than average levels of food production and consumption, in association with relatively low levels of export crop production. Nigeria at least is a special case owing to its high foreign exchange earnings from oil and mineral resources but countries such as Niger have poor natural resource bases, so that their relatively high levels of food consumption can only be explained by their success in domestic food production.

No discernible pattern is evident in the ten countries which did badly in both food consumption and export crop production except, not surprisingly, that all

but two also performed poorly in food production. One of the exceptions on this front is Kenya which would generally be regarded as a 'success story' in the context of African agriculture. Its inclusion in this quadrant at all probably indicates the dangers of drawing any strong conclusions from a study focussed on a single year.

The apparent inconclusiveness of these findings should not be a particular source of surprise as country-specific features make the drawing of general conclusions a hazardous exercise. On the whole, though, there is a positive correlation between food consumption levels and export crop production for the period 1979-81 so that the balance of the evidence *need not* lower the nutritional status of the population.

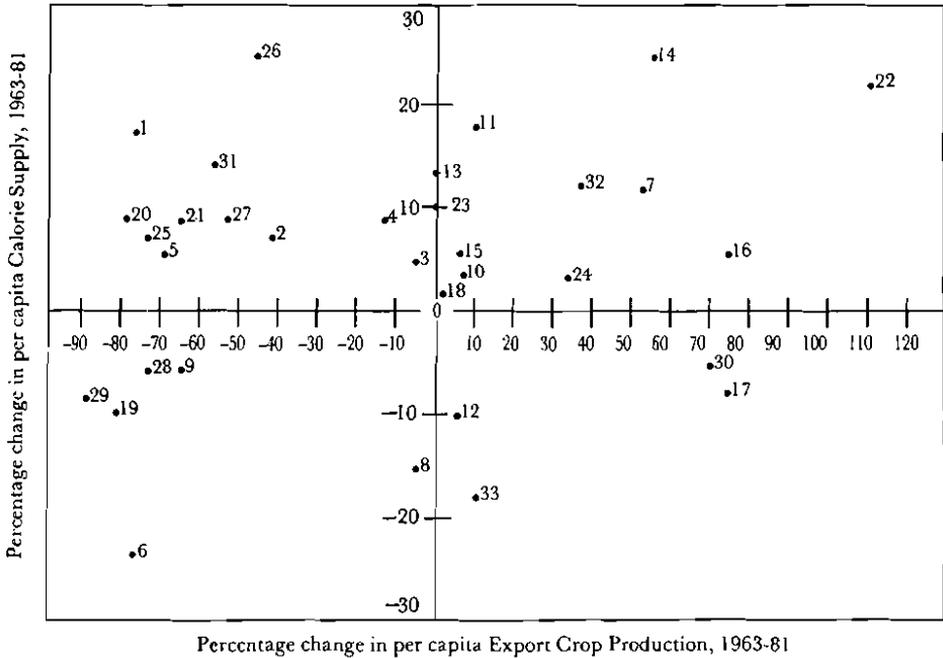
The relationship between export crop production and per capita calorie intake, 1963-81

Graph 4 plots the percentage changes in *per capita* export crop production and food consumption over an 18-year period for the 33 African countries studied. The most immediately striking feature of the graph is its apparent lack of any specific pattern, an observation confirmed by a very slight statistical association. The following is a breakdown at the level of individual countries:

- 9 countries (27%) combined increases in export crop production with increases in food consumption: Congo, Guinea, Ivory Coast, Liberia, Madagascar, Malawi, Rwanda, Sierra Leone, and Zambia;
- 6 countries (18%) registered decreases in both export crop production and food consumption: Chad, Ethiopia, Ghana, Mozambique, Togo, and Uganda;
- 4 countries (12%) improved their export crop performance but experienced deteriorating nutrition levels: Kenya, Mali, Burkina Faso, and Zimbabwe;
- 11 countries (33%) improved food consumption levels at the same time as their levels of export crop production declined: Angola, Benin, Burundi, Cameroon, Central African Republic, Niger, Nigeria, Somalia, Sudan, Tanzania, and Zaire.⁵

Graph 4

Changes in Levels of Export Crop Production and Food Consumption, 1963-81



Some interesting inferences can be drawn from the distribution of observations. The most notable is that of the thirteen countries which increased export crop production, only four experienced negative nutritional effects. Of the nine which did not, only two – Malawi and Rwanda – increased their levels of food production, which implies that their increased food supply was derived from other sources (presumably food imports). This implies that increasing export crop production, even when it is associated with declining food crop production, does not necessarily lower levels of nutrition.

Of the eleven countries which improved their food consumption levels as their export crop sectors declined, only two – Cameroon and Sudan – did so by improving their food production levels. The consumption improvements in the other countries can only be explained by some other factor, again presumably food imports, which may have been made all the more difficult to pay for by declining agricultural production for export. The suggestion that one can improve the level of national nutrition through a diversion of resources away from the export-producing sector and towards the food-producing sector is not supported by this evidence.

To recap on the relationship between export crop production and per capita calorie intake: there was a positive association between levels of export crop production and levels of per capita calorie supply for thirty-three sub-Saharan

countries in 1981. Observation of the trends in these variables between 1964 and 1981 also suggests that a positive (though weak) relationship exists. A breakdown of these results does not appear to yield any significant regional or other pattern. Two particular observations are worthy of emphasis:

- the 3 countries which had the highest per capita levels of export crop production in 1981 also enjoyed above-average levels of food consumption;
- 9 of the 13 countries which increased their levels of export crop production between 1963 and 1981 also enjoyed improvements in food consumption levels.

These observations lend support to the claim that expanding export crop production can boost national levels of food consumption, and has done so in the past. However, the potential of export crop production to bring about this result is dependent on the appropriate utilisation of foreign exchange earnings.

Conclusion: Policy Implications

The empirical results offer at least partial support to the proponents of export crop production – export crop and food crop production can be complementary, and expanding export crop production can be associated with improved levels of food consumption. However, the achievement of these results remains dependent upon the implementation of at least two specific policies:

- the transfer of services, such as extension, input supply, research and development, and non-discriminatory pricing, traditionally concentrated on the export-producing sector to the food-producing sector, along the lines of the Tanzanian tobacco schemes referred to above;
- the use, where necessary, of the foreign exchange earned by export crops for the purchase of appropriate food supplies for the domestic population.

Failure to meet either or both of these conditions may result in declining levels of both domestic food production and consumption as resources are increasingly devoted to export crop production. Those concerned with food consumption levels in Africa should devote more attention to the fulfilment of these conditions than to the advocacy of perhaps undesirable levels of food self-sufficiency.

Finally, it must be emphasised that national-level analysis such as this may say little about the welfare of the poorest sections of society, frequently the rural majority. The effect of export crop production on these groups depends upon factors such as changes in land ownership and control, and the generation of employment in rural areas. Such distributional implications of agricultural production strategies merit a separate discussion in themselves.

Footnotes

¹In order to determine aggregate trends in food and export crop production an appropriate weighting system is required – we cannot, for example, add together a ton of tobacco and a ton of coffee. The weighting system employed is based on the differing primary objectives of export and food crop production, to earn foreign exchange and to feed the domestic population respectively. Export crops are thus assigned a weight according to their foreign exchange-earning capacity over the period of time examined (average export unit values, 1963-1980), while food crops are weighted according to their relative calorific content (roots and tubers accorded one-third the weight of cereals and pulses).

²The 'cash crop' and 'non-food' categories used by the Von Braun and Kennedy and World Bank studies respectively do not perfectly correspond to the export crop category under examination. However, there tends to be a considerable overlap between categories of this sort.

³Two countries (7%) had exactly average levels of food crop production and below-average levels of export crop production.

⁴Three countries (9%) showed no significant export crop production changes over the period while their food production performance deteriorated.

⁵Three countries (9%) showed no significant change in export crop production levels while improving their food consumption levels.