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Changing Food Consumption Patterns in Sub-Saharan Africa

Abstract

Food consumption in Sub-Saharan Africa is shifting from traditional staples, such as coarse grains, roots and tubers, to non-traditional staples, such as rice and wheat. Local supply has not and probably cannot meet these changes in demand. These patterns contribute to other aspects of Africa's economic crisis.

Income and urbanization are major determinants of these food consumption changes. Commercialization of subsistence agriculture and food aid from the industrialized countries are secondary determinants. Future trends in food consumption depend on the relative impact of these and other variables. Consumption patterns are not likely to adjust smoothly on their own to continued economic recession in the region. Policy measures may be needed to slow or reverse substitution toward imports, at least as long as current economic difficulties persist.

Parke Wilde
USAID FVA/PPM
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Section I. Introduction

For the last 25 years, food consumption in Sub-Saharan Africa¹ has followed a pattern of change consistent with the experience of successfully developing countries in other regions of the world. Traditional staples give way to preferred staples. Later, preferred staples lose much of their share to meat products. In many countries, these changes are unsurprising consequences of normal economic growth. In the context of economic recession and agricultural decline in Sub-Saharan Africa, however, these trends endanger the food security of the region.

Domestic production cannot easily supply the principal shift in staple food consumption from roots, tubers, and coarse grains to preferred rice and wheat in Sub-Saharan Africa. Because of climactic and technological constraints, most consumption growth of the latter commodities must be supplied by imports. This trend is not harmful in itself, just as food self-sufficiency is not in all cases necessary to food security. In an environment of stagnating exports and increasing national debt, however, every dollar of foreign exchange spent on food imports subtracts from other development priorities.

A central question is therefore how consumption patterns will develop in the next few years. Will current food trends continue if regional economic troubles are prolonged? In such a scenario, can and should the shift away from traditional staples be opposed? If so, by whom? These issues cannot be resolved without a better understanding of the causes behind consumption changes.

This analysis is particularly difficult in Sub-Saharan Africa. In most developing countries, similar changes in the composition of food consumption accompany normal economic development (Marks and Yetley, 1987). This development usually involves simultaneous

¹Sub-Saharan Africa here refers to all African countries, including the Sudano-Sahelian region, and excluding the region of North Africa and the country of South Africa.

income growth, urbanization, commercialization of subsistence agriculture, and technical progress. Little empirical research has been done to separate the effects of these variables, because the shift from cheaper foods to more desirable foods is straightforward enough in countries following a "normal" development route.

In Sub-Saharan Africa, the variables listed above have not moved in parallel. The urban population share increased by five percent per year, on average, from 1971 to 1986 (UN, 1987). Yet, because of economic recession, national income per person declined by 15 percent between 1975 and 1987 (World Bank, 1989). The share of agricultural production for commercial sale dropped in 11 African countries between 1968 and 1982, as farmers returned to growing basic food crops (von Braun and Kennedy, 1986). This region therefore requires an analysis that separates the impact of the various causes of consumption changes.

This paper reviews and evaluates the major hypotheses to date. Sections II and III consider income and urbanization, the most widely cited explanations for secular food consumption shifts. Each of these sections first describes the theory behind the explanation, and then surveys the often meager empirical evidence to assess its relative influence on consumption shifts. Section IV looks at miscellaneous other causes, including commercialization of subsistence agriculture and the influence of food aid. Section V draws some preliminary conclusions and offers some policy implications.

The remainder of this introduction will describe what consumption changes have occurred, and link them to more general aspects of the African food crisis.

Rapidly Changing Consumption Patterns

Before 1966-70, Sub-Saharan Africa was a net exporter of basic food staples (Paulino, 1986). In the late sixties and seventies, basic food production rose only two thirds as fast as consumption.

This shortfall has been made up by increasing food imports and food aid. Despite import growth, food consumption has not kept pace with population growth, resulting in declining food intake per capita (Table 1). Per capita food consumption peaked in 1967 and has fallen 27 percent since then (Brown, 1989). If these trends continue, the production shortfall will increase between 1980 and 2000.

The projections in Table 1 are relatively simple extensions of past trends (Paulino, 1986). The methodology of such studies is not fully satisfactory, however. The aggregated data used understates the food problems of the worst off consumers, and the data may contain systematic biases. For example, subsistence crops are under-reported, compared with crops sold in formal markets. More importantly, the assumption that current trends will continue may well be wrong. Therefore, such projections should not be accepted without a fuller understanding of the dynamics that lead to them.

This paper focuses mainly on one such dynamic: the changing composition of food consumption. An increasing dependence on imported food coincides with shifts from lower-cost to higher-cost calorie sources and from traditional to non-traditional staples. While other important commodities, such as meat, oils, and processed foods also reflect this shift, this paper principally considers the staple foods that predominate in the African diet.

Trends in staple food consumption run almost directly contrary to capabilities for agricultural production. The ongoing substitution is toward staples that face serious technical and climactic constraints, and away from the staples with the best prospects for future growth.

This pattern can be seen most clearly in cereals, which in 1981 supplied 53 percent of all calories consumed in Sub-Saharan Africa. Between 1961 and 1983, consumption of non-traditional grains, such as wheat and rice, grew much faster than consumption of coarse grains, such as maize, millet, and sorghum (Table 2,

Table 1 - Food Production, Food Consumption, and Population in Less Developed Countries, by Region

Average Growth Rates in Percent Per Year

| Region | 1961-1980 | | | | Projections, 1980-2000 | | |
|----------------------|------------|--------------------------|------------|---------------------------|------------------------|-------------|------------|
| | Production | Consumption (1966-80) | Population | Consumption per Capita | Production | Consumption | Population |
| Developing Countries | 3.1 | 3.2 | 2.4 | 0.8 | 2.9 | 2.1 | 1.9 |
| Sub-Saharan | | | | | | | |
| Africa | 1.7 | 2.5 | 2.8 | -0.3 | 2.1 | 3.5 | 3.3 |
| West | 0.8 | 2.7 | 2.9 | -0.2 | - | - | 3.3 |
| Central | 2.9 | 2.7 | 2.3 | 0.4 | - | - | 3.0 |
| South/ East | 2.4 | 2 | 3 | -1 | - | - | 3.4 |

Sources: Pinstруп-Andersen, 1986; Paulino, 1986; Paulino, 1987.

column 1). This growth has little foundation in patterns of production (columns 2 and 3). This incongruity holds, to a greater or lesser extent, for each of the major staples:

Wheat. "Perhaps the most revealing statistic of all," Byerlee and Morris write, "is that wheat consumption has been increasing rapidly in Africa, even as per capita food consumption has been falling." In the last two decades, wheat consumption has increased from a five percent share of total cereal consumption to over ten percent, while food consumption has declined about ten percent per capita (Byerlee and Morris, 1987). Wheat production, on the other hand, is almost negligible and concentrated in a few, cooler highland areas of Zimbabwe, Ethiopia, Kenya and Sudan. While new varieties offer some prospects for increased cultivation in other regions, production is unlikely to keep pace with consumption (Hiebsch and O'Hair, 1986).

Rice. Rice consumption also increased more than 5 percent per year between 1961 and 1983 (Table 2). Although rice can be grown more widely than wheat, production has only grown at 1.5 percent per year since 1970. The difference has been supplied by rapidly growing imports. World Bank projections based on 1970s trends suggest that Africa will purchase one third of the world's rice exports by 1995 (Singh, 1983).

Even the modest production growth that has occurred comes more from increased rice hectareage than from increased productivity. Rice crop area has grown 1.7 percent per year (Amin, 1987), 0.2 percent faster than total production. Expanded irrigation could increase land productivity, but at a high cost in capital and in reduced production of other crops (Adamu, 1989; von Braun, 1988).

Maize. The imbalance between maize production and consumption is not as high as that for rice and wheat. While total consumption growth is high, averaging 3.27 percent per year between 1961 and 1983, most of this growth is supplied by increased domestic production. Agricultural productivity for maize has not grown as quickly in Sub-Saharan Africa as in other developing countries

**Table 2- Growth Rates and Technical Barriers to
Production of Major Cereals in Sub-Saharan Africa**

| | Consumption 1961-1983 | Production 1961-1980 | Technical Barriers to Increased Production |
|---|----------------------------------|---------------------------------|---|
| | (percent per year) | | |
| Wheat | 6.23 | 1.8 | Cannot be produced in most regions. |
| Rice | 5.06 | 3.6 | Requires high rainfall or irrigation. |
| Maize | 3.27 | 2.7 | Requires modest rainfall. |
| Other Coarse Grains (Millet/Sorghum) | 1.40 | 0.7 | Ideal for semi-arid agriculture. |
| Total Cereals | 2.85 | 1.8 | |

Sources: Pinstrup-Andersen, 1986; Paulino, 1987; Hiebsch and O'Hair, 1986.

(Singh, 1983).

Other Coarse Grains. These traditional cereals are giving up much of their consumption share to wheat and rice. Millet and sorghum were Sub-Saharan Africa's principal grains in the early 1960s, but their production increased far more slowly than that of wheat, rice, and maize (Paulino, 1987). Food consumption of these coarse grains grew only 1.4 percent per year from 1961 to 1983, considerably slower than population growth.

Their poor performance stems from weak demand growth, and from scarce research funds invested in higher yielding varieties, rather than from natural barriers to increasing supply. Millet and sorghum are well adapted to large areas that are too dry for other crops. Sorghum requires less rainfall than maize or rice, and millet has a high potential for expansion in the vast semi-arid areas of Sub-Saharan Africa (Hiebsch and O'Hair, 1986).

Most research, both internationally and in Africa, is allocated to non-traditional cereals. For example, West African countries in the early 1980s employed between eight and 133 times as many scientists in rice and wheat research, compared with millet, sorghum, and maize research (Delgado and Reardon, 1987). Since the mid-1980s, international research institutes have increased their focus on traditional crops, but these efforts have not yet affected agricultural supply.

Other Staples. Other traditional staples face problems similar to those of coarse cereals. Roots and tubers, second only to cereals as a source of food energy, are also being replaced by imported foods. They currently provide 31 percent of the region's calories, and over half in the Central African Republic, Congo, Zaire, and Mozambique. Between 1969/71 and 1981/83,² per capita consumption of roots and tubers declined 4.9 percent per year in these four countries, and even faster in some countries where they are not the principal source of calories (Okigbo, 1986).

²The notation "1981/83" indicates the mean of the data for 1981, 1982, and 1983.

Thus, food consumption trends in Sub-Saharan Africa bear little relation to prospects for food production. These opposing demand and supply patterns contribute to Africa's worsening trade situation. Net food imports rose by an average of ten percent annually between 1970 and 1986 (Okigbo, 1986), although this high figure in part reflects low initial imports. Only 14 out of 38 countries in the region were self-sufficient in basic food in 1985. Of these, four more will lose their self-sufficiency by 1990, if trends from the early eighties continue (Taylor, 1985).

For countries with healthy exports of other products, which can finance food imports, food self-sufficiency may not be an important goal. Bede Okigbo (1986) explains, however,

Most African countries are experiencing . . . an unfavorable balance of payments, heavy debt burdens, and unstable prices of agricultural export commodities, which are the main sources of foreign exchange needed to pay for cereal imports.

The stated goal of many governments in Sub-Saharan Africa to be self-sufficient in food will be frustrated by further substitution toward imported foods, even if domestic production of traditional crops increases significantly." If the consumption shift continues, food for Sub-Saharan Africans must come increasingly from outside the region.

Section II. Income

Theory

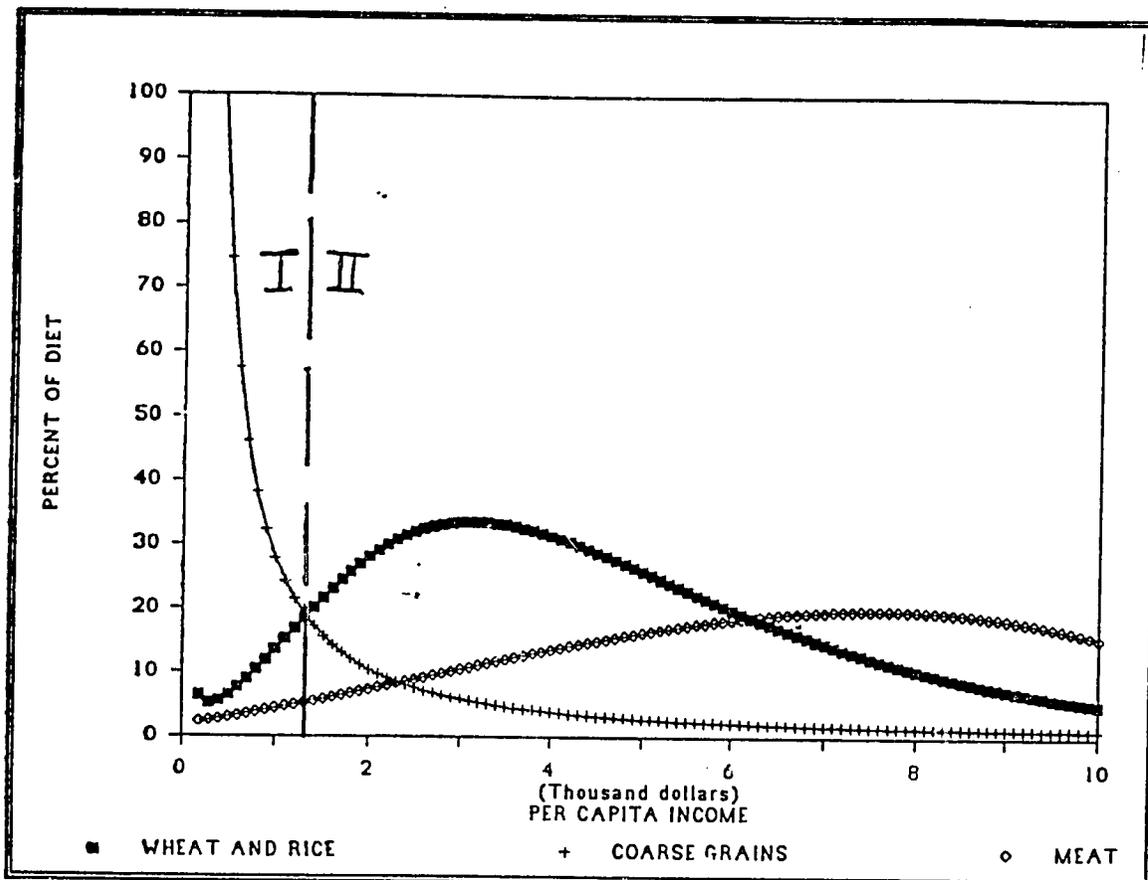
Income has long been known to influence consumption patterns. Over a century ago, Christian Lorenz Engel proposed the economic "law" that the share of income spent on food falls as income rises. Bennett's Law, a corollary to Engel's Law, stipulates that the proportion of starchy staples in the diet also decreases with increasing income. Both propositions have been widely tested and in most cases confirmed. As income grows, consumers choose to spend it on more desirable foods.

The "behavioral threshold" where this substitution takes hold has been used as a standard of perceived nutritional adequacy (Edirisinghe and Poleman, 1983). Intuitively, one would expect substitution to begin where chronic hunger and malnutrition end. This expectation has important policy implications. Timmer, Falcon, and Pearson (1982) write, "General hunger ... is not likely to be a priority for government intervention if poor people are not consuming 'inferior' starchy staples where they are available."

The threshold of substitution can be defined several ways. Poleman uses the income level beyond which total consumption of an inferior staple begins to decline. Marks and Yetley (1987) propose a more flexible classification of national economic development according to the stage of food substitution achieved. Fig. 1 illustrates the diet shares of three major food commodity groups at different levels of per capita income (as a proxy for development level). The three curves are best fits for data from 105 countries over 20 years.

The meat curve and the wheat and rice curve display a predictable change in food consumption patterns. At low levels of income, the diet shares of these foods increase as income increases. Because of this propensity, these foods are labelled "superior" for consumers in that income range. As consumers become able to afford more luxurious foods, the consumption shares of

Figure 1--Food Consumption/Percentage of Diet for Wheat and Rice, Meat, and Coarse Grains



Source: Marks and Yetley, 1987.

wheat and rice, and meat decline. Over this higher range of income, these foods are called "inferior" foods or "necessities." Coarse grains appear to be inferior foods across all development levels, at least when aggregated at the country level.

Marks and Yetley find that "the intersection of the coarse grains curve with the wheat and rice curve occurs at approximately 100 percent" of the FAO/WHO recommended daily allowance for calorie consumption. Therefore, they suggest that the border between "stage I" and "stage II" of fig. 1 represents Poleman's "behavioral threshold" of perceived nutritional adequacy. Beyond this point, consumers will spend a larger portion of their marginal income on improving food quality rather than quantity. Under this theory, increased income induces food substitution, once basic needs are met.

Evidence

Several studies in different parts of the world confirm that increased income induces greater consumption of more expensive foods, even for the poorest consumers (Poleman, 1981; Alves, et al, 1978; Shah, 1986; and Reutlinger, 1984). According to some studies, the average consumer spends almost none of his or her marginal income on increasing caloric intake (Chaudhri and Timmer, 1986; Behrman and Deolalikar, 1987). In Sub-Saharan Africa, Peter Svedberg finds that average consumers in many poor African countries spend over half their food budget on "high cost foods," such as meat, fish, vegetables, and fruits (Svedberg, 1987). Purchases of superior foods are said to indicate consumer preference for meeting other economic goals before further improving nutrition. These findings are consistent with the theoretical behavior of consumers whose basic needs are already met.

They are inconsistent, however, with reports of widespread malnutrition in Sub-Saharan Africa. Svedberg maintains that African consumers do not perceive themselves to be malnourished to

the extent found by nutritional and anthropomorphic measures. The focus on nutrition in most international development efforts toward Sub-Saharan Africa is misguided, according to Svedberg.

Caution should be used in evaluating this evidence, however. First, the aggregation of the data used can be misleading. Poleman warns that without highly disaggregated data, "threshold behavior could be confused with the differences in consumption patterns which occur between cities and the countryside, one region and another, and from one season to the next" (Edirisinghe and Poleman, 1983). Aggregate data can create the illusion that all consumers tend to change their consumption mix at the expense of calories, when poor or hungry consumers may in fact continue to consume low-cost traditional staples.

Second, both traditional and substitute foods differ from region to region. The commodity groups selected by Marks and Yetley may indicate the most widespread shift worldwide, but in some regions shifts between other commodities can be more important. Cassava is the most important traditional staple in parts of Africa, for example. Although a coarse grain, inferior in most regions of Sub-Saharan Africa, maize appears to be a superior food in some locations (Chaudhri and Timmer, 1986). Also, substitution can occur between different types of the same commodity. The important substitution between government subsidized rice and imported rice in Sri Lanka, for example, would be missed by the classification used above. Some foods may even be "inferior" during some seasons, and "superior" during others when food is in shorter supply.

Heeding both cautions is difficult. It is hard to quantify and compare shifts between different commodities and different populations. Two useful measures are the income elasticity of caloric intake and the income elasticity of food expenditures (Table 3). The former statistic measures the percentage change in caloric intake, in response to one percent increase in income.

Table 3— Sensitivity of Calorie Intake and Food Expenditure to Changes in Income

| Location | Study | Sector | Calorie Elasticity | Food Expenditure Elasticity |
|----------------------------|---------------------|---------------------|---------------------------|------------------------------------|
| | | | (percent) | (percent) |
| Sudan (Urban) | Alderman | | .30 | .74 |
| (Rural) | | Consumers | .33 | .84 |
| Nigeria | | of 1,750- | | |
| (Rural Funtua) | | 2,000 cal. | .94 | .89 |
| (Rural Gusau) | | | .94 | 1.04 |
| Gambia (wet season) | von Braun | low-income | .48 | .90 (avg.) |
| (dry season) | | | .37 | .90 (avg.) |
| Kenya | Greer, et al | poverty line | .64 | 1.03 |

Sources: Alderman, 1984; von Braun, 1988; Greer, et al, 1982.

The latter indicates the change in food expenditures in response to the same change in income.³ The difference between the two elasticities reveals the marginal share of income spent on food qualities other than caloric value. In effect, this difference reveals the propensity to substitute in response to income changes.

The calorie elasticities found in studies of different locations in Sub-Saharan Africa are well above zero (Table 3, column 1), contrary to reports that this statistic is close to zero for developing countries in general (Chaudhri and Timmer, 1986). The food expenditure elasticity is higher in most cases, however, confirming some substitution even among these low-income consumers.

The degree of substitution toward higher-cost food can vary between seasons, between rural and urban areas, and between provinces (Table 3, Gambia, Sudan, and Nigeria). Greer and Thorbecke (1982) observed the highest food expenditure elasticities among low-income consumers in the wealthy Central and Eastern provinces of Kenya. They suggest that these poor consumers, who are a minority in these provinces, tend to "adopt the diet of the richer reference group" where they live. In provinces where poor consumers are the majority, substitution may progress more slowly.

Even the modest level of substitution observed in Table 3 may be overestimated, though, because calorie elasticities may be underestimated in many parts of Sub-Saharan Africa. In areas where a high proportion of the population is involved in partial subsistence agriculture, improved nutrition may have an important recursive influence on the level of food production, as farmers consume enough energy to increase their labor time or quality. Ignoring this recursive effect "will lead to expenditure elasticities that show an illogical marginal propensity to consume

³For example, the food expenditure elasticity of .74 in urban Sudan means that a one percent increase in income would result in a .74 percent increase in food expenditure.

subsistence commodities of less than one"(Ferroni, 1982).

Despite these methodological problems, and despite the rough data for these estimates, the income elasticities above are generally consistent with the theory that income induces substitution beyond a certain threshold. The low-income consumers in these studies appear to spend some marginal income on food quality, but they have not yet reached the stage where the quality response surpasses the quantity response.

If such elasticity measures were disaggregated by income group and food commodity, the pattern of substitution might become clearer. Too few studies contained this breakdown for comparisons across Sub-Saharan Africa, however. The following findings from rural Nigeria and urban Sudan may or may not be representative.

In urban areas of the Sudan, meat and bread expenditures increase steadily with income strata (Table 4). Expenditure on other cereals rises and then falls or remains steady. Low-income consumers spend a much higher share of their marginal income on the cheaper cereals. Distinct rice and roots/tubers consumption patterns are not clear from the categories in this study (Sigma 1, 1983).

In Funtua and Gusau, two rural Nigerian districts, consumers in lower income strata also spend a higher portion of their income on coarse grains and roots and tubers (Table 4). Wealthier consumers spend a higher share on rice and wheat products, as expected. Estimated food expenditure elasticities for coarse grains generally decline as income rises, but this pattern is not as clear as expected. Similar elasticities for rice and wheat were not reported. In both urban Sudan and rural Nigeria, predictable consumption patterns are observed in the consumption shares of major foods, but the elasticity estimates do not appear as robust.

Aggregate national data and local surveys each have advantages and disadvantages in evaluating the effect of income on consumption patterns. National calorie and food expenditure elasticities suggest a trend toward higher-cost foods, as income grows. The

Table 4 Food Expenditure and Food Expenditure Response To Change in Total Expenditure for Selected Staples In Urban Sudan and Rural Nigeria

| Urban Sudan: | Average Expenditure (Sudan Pounds) by Expenditure Stratum | | | Expenditure Elasticity by Expenditure Stratum | | |
|-----------------------|--|--------|---------|--|--------|---------|
| | Lowest | Middle | Highest | Lowest | Middle | Highest |
| | 25% | 50% | 25% | 25% | 50% | 25% |
| <u>1978/79 Survey</u> | | | | | | |
| Bread | 6.18 | 7.67 | 8.20 | .592 | .412 | .377 |
| Other Cereals | 5.45 | 6.08 | 6.08 | .531 | .390 | .212 |
| Meats | 14.05 | 18.76 | 26.84 | 1.238 | .838 | .593 |
| Fruits/Veg | 13.93 | 18.04 | 22.62 | .849 | .682 | .457 |
| Other Food | 20.06 | 28.17 | 42.92 | .898 | .920 | .565 |
| <u>1982 Survey</u> | | | | | | |
| Bread | 15.60 | 20.63 | 21.34 | 1.211 | .904 | .875 |
| Other Cereals | 13.40 | 15.27 | 13.34 | .773 | .501 | .567 |
| Meats | 24.23 | 35.96 | 50.45 | .949 | 1.059 | .749 |
| Fruits/Veg | 26.01 | 41.80 | 53.16 | .809 | .724 | .803 |
| Other Food | 38.06 | 55.33 | 73.57 | .910 | .827 | .562 |
| | | | | | | |
| Rural Nigeria: | Average Expenditure Shares (percent) | | | Expenditure Elasticity | | |
| | Lowest | Middle | Highest | Lowest | Middle | Highest |
| | (of five strata) | | | (of five strata) | | |
| <u>Gusau 1976/78</u> | | | | | | |
| Wheat Products | 2.19 | 2.97 | 1.99 | - | - | - |
| Sorghum | 25.23 | 19.88 | 18.09 | .58 | .48 | .40 |
| Millet | 22.03 | 19.62 | 17.71 | .38 | .36 | .37 |
| Maize | .42 | .11 | .09 | - | - | - |
| Rice | .15 | .76 | .90 | - | - | - |
| Roots/Tubers | 4.81 | 2.43 | 3.22 | - | - | - |
| Meats | 8.15 | 11.36 | 11.74 | - | - | - |
| Fruits/Veg | 8.87 | 10.36 | 10.63 | - | - | - |
| Other Food | 11.28 | 12.13 | 18.71 | - | - | - |
| <u>Funtua 1976/78</u> | | | | | | |
| Wheat Products | .70 | 1.02 | 1.12 | - | - | - |
| Sorghum | 32.14 | 27.45 | 23.31 | .55 | .33 | .37 |
| Millet | 7.46 | 10.12 | 9.91 | .39 | .84 | .31 |
| Maize | 2.31 | 1.49 | 1.20 | - | - | - |
| Rice | .51 | .85 | 1.11 | - | - | - |
| Roots/Tubers | 1.55 | 1.52 | 1.12 | - | - | - |
| Meats | 15.41 | 8.29 | 9.24 | - | - | - |
| Fruits/Veg | 12.10 | 14.72 | 13.35 | - | - | - |
| Other Food | 10.71 | 12.33 | 15.73 | - | - | - |

Source: Sigma One, 1983; Kennedy, 1988.

data often rely on rough estimation techniques, however, and do not illuminate which commodities benefit or lose from the shift. Consumption surveys, such as those from Nigeria and the Sudan, make clear the substitution pattern away from traditional staples, but their relevance to other areas can only be assumed.

Implications

If income were the only determinant of food demand patterns, then changes in these patterns would be no cause for alarm. In this case, changing diets would be seen as an acceptable way to spend the fruits of successful economic development.

Conversely, it would be easy to predict the consumption response to a continued economic recession if income were the only factor to consider. One would expect increased consumption of less-expensive and locally grown traditional staples. Historical evidence shows this scenario to be possible, at least. In some sense, the higher consumption share of millet and sorghum during the "hungry season" in West Africa is an annual income-induced shift back toward the traditional staples.

The Philippines, where rice is the traditional low-cost food, offers a longer-term example. Income elasticities for rice decreased from 1968 to 1979, while per capita income increased. The elasticities turned slightly upward in the early 1980s, as income decreased during economic recession (Ito, et al, 1989). Philippine consumers appear to adjust their consumption patterns forward or backward, responding to swings in income.

Of course, income is not the only determinant of food composition in Sub-Saharan Africa. The next two sections consider other determinants that may in some cases have an equal or greater effect. Future trends in African food consumption depend on the relative impact of these variables.

Section III. Urbanization

Theory

A second class of explanations for food consumption changes centers on the rapid urbanization of Sub-Saharan Africa. The food sources for African cities are very different from those of rural areas. As cities grow in size and number, national food consumption patterns will increasingly reflect the nutritional behavior of urban consumers. Even if consumption behavior were unchanging for the average rural or urban consumer, changing shares of rural and urban population would still influence data on national food consumption patterns.

Urban price ratios that favor imported cereals are one possible reason for urban food substitution. These distortions could stem from government intervention and "urban bias," or they could simply reflect the superiority of international marketing and transportation systems over domestic infrastructure.

Even where prices are not distorted enough to make imports cheaper, urban consumers may purchase more non-traditional foods than can be explained by higher urban incomes. Until recently, most studies of this phenomenon focussed on the tastes and preferences of the allegedly more cosmopolitan urban consumers. These tastes are seen as guided, or misguided, by advertising and cultural influences, sometimes called the "international demonstration effect" (Chaudhri and Timmer, 1986).

A current literature has developed suggesting that urban preferences may stem from more rational economic decisions. Preparation of traditional staples can carry hidden costs in time and fuel, for example. These costs may have a greater effect on consumers in the cities.

Evidence

The urban population for all of Africa grew by five percent per year between 1971 and 1986. In East Africa the rate is 6.6

percent (FAO, 1989). These statistics reflect rural to urban migration, the natural growth of current urban populations, and the reclassification of rural lands as urban. The latter category may lead to overstating the pace of urbanization, but removing it would understate the change. In the past, Africa has had a lower percentage of urban population than other developing regions, but by 1980 urban areas contained 27 percent of total African population, almost equal to the average for all developing countries (FAO, 1989). At these rates, it will take less than fifteen years for the population of African cities to double.

While this rapid urbanization has its greatest effect on urban demand, it also affects agricultural supply. The proportion of the population in farming dropped five percent during the seventies, to 30 percent, in part because of large migration to the cities. These decreases translate into lower food production per capita, because labor is in many places the principal constraint on agricultural growth. Labor productivity has remained "extraordinarily low, with farm techniques often primitive" (Mellor and Delgado, 1987).

On the demand side, the difference between urban and rural food consumption patterns has been reported in several studies of Sub-Saharan countries, but the literature reviewed for this paper contained no empirical evaluation of these findings for the region as a whole. Even so, the consistency of the following reports makes a strong argument for the existence of a distinctly urban consumption pattern across the region:

*Wheat consumption in Sub-Saharan Africa is twice as high in urban areas as in rural areas. Countries with lower average incomes exhibit a greater difference between urban and rural consumption of wheat (Byerlee and Morris, 1987);

*In West Africa, urbanization and income both "appear to be associated with shifts toward wheat and rice consumption, although they do not explain the underlying substitution process." One analysis finds that a one percent increase in urbanization results

in a two percent increase in the proportion of rice in total cereal consumption (Delgado, 1985, 1987);

*In Burkina Faso, wheat constitutes nine percent of the average cereal budget for the urban poor, and 32 percent for the urban rich. It is "almost absent" from rural areas. Rice makes up 33 percent of the cereal budget in urban areas, and far less in rural areas (Reardon and Matlon, 1988);

*Also in Burkina Faso, Savačogo and Brandt report that the length of urban residence is significantly correlated with lower consumption of locally produced cereals, and with higher consumption of meat;

*Household budget surveys of Tanzania indicate that the budget share spent on wheat in cities was almost double, and that spent on rice over triple the share spent on these commodities in rural areas (Table 5);

*Okigbo (1986) attributes the decline in consumption of roots and tubers in Central Africa to their low share of urban consumption.

Price Factors. These differences can only partly be explained by higher average urban incomes. Price ratios often favor imported foods consumed principally in cities (Byerlee and Morris, 1987), in part because urban poor consumers carry more political clout than rural poor producers. Governments "subsidize urban consumption with low-priced, imported grain and overvalued exchange rates that make imports cheap relative to domestically produced coarse grains" (Delgado, 1985). While some countries, such as Nigeria, hope to substitute domestic wheat for imports at a later date, Gunilla Andrae and Bjorn Beckman (1985) argue that the required domestic production is unlikely to materialize.

Table 6 shows the extent of policy distortion in favor of imported wheat over local maize in selected African countries. Based on world prices, the ratio of wheat to maize prices should be around 2:1. Clearly, the actual ratio in these selected African countries is lower (column 5). Byerlee and Morris estimate that

Table 5--Percentage Composition of Cereal Consumption in Tanzania, 1969.

| | Rural Areas | Urban Areas |
|---------------------------------|-------------|-------------|
| Rice | 12.6 | 23.2 |
| Maize | 65.1 | 48.4 |
| Millet | 3.9 | - |
| Sorghum | 13.8 | 0.6 |
| Wheat | 1.6 | 6.0 |
| Other (includes baked products) | 3.0 | 20.7 |

Source: 1969 Household Budget Survey.

Source: Sigma One, 1982.

Table 6--Retail Wheat Flour and Maize Grain Prices for Selected Countries in Africa and Tropical Latin America

| | Wheat flour ^a (US cents /kg) | Maize grain ^a (US cents /kg) | Wheat: maize price ratio | Comments |
|----------------------|--|--|--------------------------|--------------------------|
| <u>AFRICA</u> | | | | |
| Ghana | 131 | 255 | 0.5 | Overvalued exchange rate |
| Cote D'Ivoire | 31 | 36 | 0.9 | Subsidy on flour |
| Kenya | 33 | 24 | 1.4 | |
| Lesotho | 43 | 26 | 1.7 | |
| Nigeria | 58 | 52 | 1.1 | Overvalued exchange rate |
| Zimbabwe | 31 | 22 | 1.4 | Subsidy on wheat, maize |
| <u>LATIN AMERICA</u> | | | | |
| Bolivia | 18 | 28 | 0.6 | Subsidy on flour |
| Costa Rica | 36 | 23 | 1.6 | |
| Dom. Republic | 40 | 40 | 1.0 | |
| Guatemala | 45 | 21 | 2.1 | Subsidy on maize |
| Ecuador | 26 | 62 | 0.4 | Subsidy on flour |
| Haiti | 59 | 26 | 2.3 | |
| Honduras | 48 | 23 | 2.1 | |

Source: Byerlee and Morris, 1987.

declining real prices of wheat "may explain half or more of the rapid increase in per capita wheat consumption in many countries during the 1970s."

Distortions from urban politics are not the only reason for low prices on imports, however. It is cheaper to supply some cities with imported cereals, due to the relatively low cost of international shipping and the high cost of domestic transportation, often over poor rural roads. The domestic transportation costs alone can be as high as the world market price (Delgado, 1989), particularly when that international price is kept low by what Kenneth Shapiro and Elliot Berg (1988) call the "beggar-thy-neighbor policies of industrial countries." Delgado (1989) estimates that rice prices in coastal urban areas could double if imported rice were eliminated.

Non-Price Factors. "It appears that incomes and relative prices generally explain only part of the difference" between rural and urban consumption patterns, according to Pinstrup-Andersen (1986). Even when prices of non-traditional foods are higher than domestic staples, a variety of forces encourages consumption of the former. Advertising and cultural influences were mentioned in the theory section above. No empirical evidence was found to assess this claim,⁴ but impressionistic reports are widespread (Andrae and Beckman, 1985; Delgado, 1985; Chaudhri and Timmer, 1986).

More importantly, major imported commodities such as rice and wheat have particular characteristics that make them more desirable. These cereals require less processing and laborious pounding than millet, sorghum, or cassava. Rice takes less time to cook, and purchased bread takes none at all. Because of its shorter cooking time, rice also requires less fuel. In rural areas, where fuelwood is gathered, this cost may be less important.

These economic considerations appear more important than tastes and preferences in the decision to purchase rice. Survey

⁴Anthropological studies may contain more data on this issue than the mostly economic literature reviewed here.

respondents in Senegal reported liking millet and sorghum better, although some mentioned that rice goes well with fish (Frankenberger, 1986). The respondents (correctly) considered the coarse grains more nutritious than polished rice. The reasons given for preferring rice included shorter preparation time, and easier processing.

The opportunity cost of food preparation time is higher in the cities. Urban women, who are more likely than rural women to work in the wage economy, will spend more on average to save a given amount of cooking time. Ben Senauer, et al (1986) find that the value of women's time in Sri Lanka, measured by average female wage levels, is correlated with a shift from traditional to non-traditional foods. They estimate that a ten percent increase in the value of women's time causes bread consumption to increase by 1.3 percent and more traditional rice consumption to decrease by 0.7 percent.

A comparable study of urban Sudan suggests that this relationship holds in at least that part of Sub-Saharan Africa as well. For all income strata, households with women in the labor force consume more bread than other households (Table 7).

The relative ease of food preparation also affects urban consumption patterns through convenience foods and street vendors. The urban poor tend to work farther from home and have less time to return for a home-cooked meal. They are more likely to consume ready-to-eat food purchased on the street.

A recent paper by Delgado and Reardon (1987) illuminates the sometimes opposite influences of urbanization and income (Table 8). In Ouagadougou, Burkina Faso, wheat and coarse grains follow a pattern consistent with income explanations: wheat consumption shares increase with rising income and those of coarse grains decrease. Rice consumption, however, is relatively higher for the poor.

This surprising pattern is due in large part to the higher share of street foods consumed by the poor. In Ouagadougou, food

**Table 7--Average Bread Consumption Per Person in Households
With and Without Working Women (kg/month)**

| Households | Expenditure Stratum | | |
|---------------------------------|---------------------|---------------|--------------|
| | Lowest 25% | Middle 50% | Upper 25% |
| With Women in Labor Force | 4.42 (12) | 8.98 (34) | 13.04 (21) |
| Without Women in Labor Force | 3.98 (79) | 7.70 (157) | 12.38 (71) |

Numbers in parentheses are sample sizes.

Source: Sigma One, 1983.

Table 8 Consumption Patterns by Income Category in Ouagadougou, Burkina Faso

Selected Ratios

| Ratios | Income Tercile | | |
|------------------------------|----------------|-----------|------|
| | Poor | Middle | Rich |
| | | (percent) | |
| Rice/cereals | 54 | 49 | 46 |
| Wheat/cereals | 9 | 20 | 23 |
| Millet, sorghum/ cereals | 27 | 23 | 18 |
| Cooked rice/ all rice | 32 | 26 | 8 |
| Cooked millet/ all millet | 60 | 68 | 38 |

Source: Delgado and Reardon, 1987.

at roadside stalls or from portable food sellers is most likely to be rice or millet, in that order (Table 8, rows 4 and 5). The poor consume a much higher proportion of these foods already cooked. If street foods were excluded, rice consumption would appear to follow the pattern predicted by income theories.

Implications

The impact of urbanization on consumption patterns in the face of continued economic contraction is not yet clear. The pace of urbanization is itself influenced by the overall economic situation. Migration to the cities is in part determined by relative economic conditions in urban and rural environments. As Brooke Schoepf (1986) writes, "...urban growth is itself an indication of rural despair." Urbanization is also partly independent of economic conditions.

Residence in cities and towns appears to affect consumption patterns, even controlling for income and prices (Delgado, 1989; Chaudhri and Timmer, 1986). To some extent, therefore, urban consumers will resist returning to local non-traditional grains as part of adjustment to changing economic conditions.

Section IV. Miscellaneous Causes

The introduction observed that income and urbanization are the most widely reported determinants of changing food demand patterns in Sub-Saharan Africa. This section adds two more causes to that list: structural changes in food supply, and food aid from developed countries. The influence of these factors cannot be generalized as easily as income and urbanization. In theory, they could push demand patterns either toward or away from reliance on imported food. Empirical research case by case is needed to determine the effect of commercialization and technical change on food supply and demand. The influence of food aid depends on the consideration programs give to possible consumption shifts.

Technical Change and Commercialization of Subsistence Agriculture

Changes in food demand patterns are particularly problematic when they take place independently of food supply. "Urbanization without increased rural-urban market integration," von Braun and Kennedy (1986) observe, "would lead to volatile dualistic structures and import dependence." This market integration cannot be taken for granted.

In many areas, only a small share of traditional food production is for commercial sale, at least in formal markets. In poor growing years, no surplus may be available. Even in successful years, sales may remain low. In rural Senegal, for example, increased millet stocks do not translate into increased millet sales. Farmers save the surplus from a good year to even out their consumption variation in the next (Josserand, 1982). In other areas, technical change and commercialization of subsistence agriculture have increased responsiveness to demand. Where rural production is integrated with regional markets, changes in demand patterns can produce changes in the composition of the next year's food production.

The total effect of commercialization and technical change is more complex than simply meeting urban demand with rural production, however. Because farmers still comprise a higher share of population than urban consumers, consumption side-effects of supply changes can be important. Nutritionists worry, for example, that commercialization will reduce rural consumption of traditional staples. In theory, a greater share of cash income to farmers from commercial food sales might be spent on non-traditional staples.

A study of commercialization in rural Kenya did not confirm this hypothesis. The introduction of sugar farming induced changes in consumption patterns, but these changes could be explained almost entirely by increased income to sugar farming households. However, if commercialization involves a transfer of farm income from women to men within households, some undesirable substitution toward non-traditional consumption is still possible (Kennedy and Cogill, 1988). Both of these results also held for rice farmers in the Gambia (Von Braun, 1988). More research would be needed to determine the relevance of these findings to other regions.

Technological change may also alter rural consumption patterns. In the Gambia, von Braun studied the introduction of new rice technology to an area that had grown a mix of coarse grains and rice by more traditional methods. Because labor was a principal constraint on production, the increased productivity of the new rice fields caused labor on other crops to drop by almost 20 percent. This substitution means that for a marginal dollar increase in rice income, 71 cents are given up in income from other crops (von Braun, 1988a). On the consumption side, "this will shift consumption more toward rice in the households which have access to the new technology.... To a large extent, one eats what one has grown"(von Braun, 1988b).

Thus, improvements in technology and market integration may encourage consumption shifts of their own. Technical improvements in rice and wheat can discourage production and consumption of traditional staples. Increased income from commercialization in

rural areas will increase demand for both local and imported foods. This increase will most benefit local food production if the commercialization benefits poorer small-holders. If the market integration takes place principally among larger land-owners, demand for imports may increase more.

Continued economic recession may discourage commercialization and market integration. Many low-income countries, including 11 in Africa, seem to have decreased the land share devoted to "cash food crops," and increased the share planted with "basic food crops" between 1968 and 1982. Only six African countries followed the reverse pattern (von Braun and Kennedy, 1986). Because 20 to 40 percent of "basic food crops" are also marketed, these figures may overstate the decline in cash-cropping. Still, this trend indicates that a domestic supply response to policies that aim to reverse consumption patterns cannot be taken for granted.

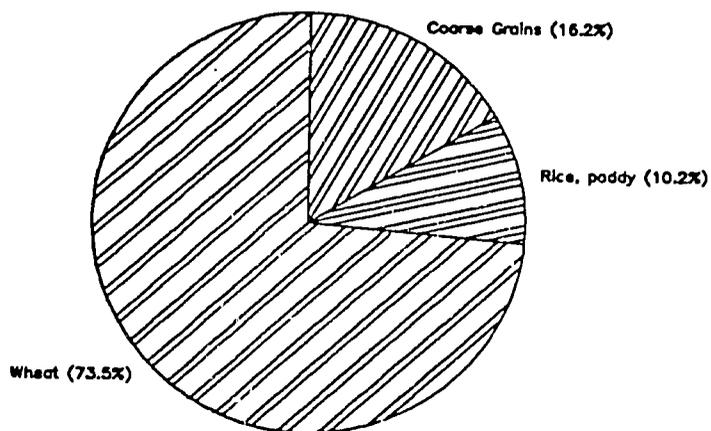
Food Aid

"The argument that food aid leads to dependency upon food imports has for some years been considered radical and not quite respectable," writes Philip Raikes (1986). In the last few years, this argument has fared better (Delgado, 1985; Byerlee and Morris, 1987), and even receives attention in literature from donor institutions (USAID, 1982; Clay and Singer, 1985). Food aid can have short- and long-term effects on the composition of food consumption, unless consumption effects are considered in designing aid programs. The importance of these effects, compared with the clear nutritional benefits of food aid, is widely disputed.

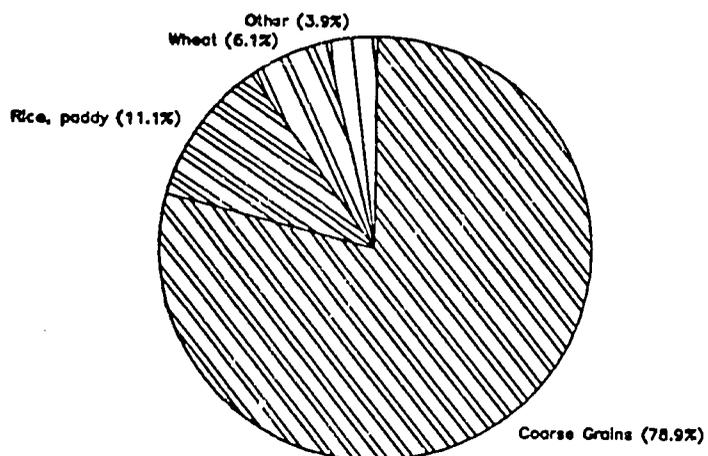
The composition of food aid is very different from that of Sub-Saharan food production (Fig. 2). Although food aid normally contributes only a small share of total food consumption in Sub-Saharan Africa, it makes up a larger share of marketed surplus of cereals. "This being so, cereals food aid could be an important factor, among others, in consumption shifts," according to Delgado (1985).

**Fig. 2— The Composition of International Cereal Food Aid
(including highly concessional sales)
Compared to the Composition of Cereal Food Production
in Sub-Saharan Africa**

Cereal Food Aid (1985/86)



Cereal Production (1986)



Source: FAO, 1987; USDA/ERS, 1987.

The greatest effect is on wheat consumption, because wheat is the food aid staple least produced in Africa, and because over 50 percent of cereal food aid is wheat or wheat flour. Food aid now contributes one-third of all wheat imported by Sub-Saharan Africa, and over half the wheat imported by a dozen countries in the Sahel and East Africa. This role suggests that food aid can exert "a major influence on wheat consumption patterns in Africa" (Byerlee and Morris, 1987).

In the short run, the composition of food aid means increased consumption of the non-traditional, donated commodities. To some extent, this consumption is "additional," meaning consumers receive food that otherwise they would have gone without. Unless the program food is sold at market prices, however, it can also compete with local staples, driving down their price and hurting local farmers.

In the longer run, the high short-term consumption of imported food can become entrenched in several ways:

- *Lower domestic food prices, if they occur, can discourage local agricultural production.
- *"Where food aid results in the introduction. . .of unfamiliar foods not capable of being competitively produced at home, . . .it may result in a change in tastes, shifting demand from local to imported food products" (USAID, 1982).
- *Aid "is often associated with overt market promotion activities by interest groups in exporting countries" (Byerlee and Morris, 1987).
- *Aid helps establish local food processing industries geared towards the imported commodities. Wheat import and processing infrastructure, for example, cannot be easily adapted to process local cereals.

While the premiss is widely accepted that food aid can alter consumption patterns under certain circumstances, little agreement exists concerning the extent of such influence. Reliable empirical evidence on the matter is scarce. Cross-sectional data from 40

tropical countries (20 of them in Sub-Saharan Africa) significantly links current wheat consumption levels to the cumulative amount of wheat imported as food aid between 1955 and 1975. Byerlee and Morris (1987) conclude from this correlation that for developed countries, the long-term strategy of donating food in order to establish commercial import markets "has apparently been successful."

A USAID program evaluation paper cautions, however, that such correlations are not conclusive on their own: "Although the shifts in taste away from traditional staple foods may go hand in hand with food aid, they are not necessarily causally connected." Some African countries that have not received much food aid have also experienced changing consumption patterns (USAID, 1982).

Furthermore, the possible harm from consumption shifts caused by food aid can only be evaluated in comparison with possible benefits. In the short run, the nutritional benefit of emergency relief can clearly outweigh the problem of food substitution. In the longer run, food aid can be used as a tool for economic recovery and development, including help for domestic food production. Because substitution toward imports becomes harmful in a context of economic recession and agricultural decline, any contribution food aid makes toward changing that context may offset its contribution toward consumption shifts.

The food deficit of many countries in Sub-Saharan Africa will increase unless the African economy improves considerably. The evidence reviewed here suggests that increased food aid to fill that deficit will encourage the consumption shift away from traditional staples. However, if future aid goes to strictly emergency consumption or to development projects that encourage local agriculture, the effect on food security should be positive.

Section V. Conclusions and Policy Options

When food consumption patterns favor imports in an environment of economic recession and declining terms of trade, food demand tends to come unhinged from food supply. The result is stagnating agricultural production, increasing imports, and scarce foreign exchange to pay for them. A central question in this research has therefore been whether these consumption shifts are likely to continue despite economic conditions that would seem to make them inappropriate.

The various determinants of these consumption patterns, reviewed in the previous sections, suggest contradictory answers to this question. For example, during economic recession, the income effect should in theory encourage consumption of traditional domestic staples, except where price distortions or transportation costs make imports cheaper. Urbanization, on the other hand, should encourage the consumption shift toward imports.

The relative impact of these causes varies by food commodity and location. Wheat appears still to be a "superior" food, even in cities, and its consumption is determined largely by price and income level. On the other hand, the high consumption of rice among the urban poor in West Africa and the Sahel is better explained by structural factors associated with urbanization.

Policy Options

These distinctions should inform policy decisions concerning whether and how to oppose unwanted changes in food consumption patterns. Different economic analyses have placed varied emphasis on price reform, for example, depending on the region and commodity studied.

In their study of wheat consumption across Sub-Saharan Africa, Byerlee and Morris conclude that price reform would reduce food imports in many countries. As a guideline based on world market prices, they suggest that the bread-to-rice price ratio should be

increased to 1.5 and the bread-to-millet ratio to around 3.0. They cite anecdotal evidence from Senegal, where bread subsidies were reduced and the bread-to-millet price ratio rose from 1.5 to 3.0. Senegal is one of only three countries in West Africa where per capita wheat consumption fell during the 1970s (Byerlee and Morris, 1987).

Current research at the International Food Policy Research Institute (IFPRI) reaches a different conclusion:

[R]elative prices may only play a minor role in driving West African rice and wheat consumption at both the household and national levels--with the possible exception of very high consumer subsidies to wheat in some countries. (Delgado, 1989)

Rice and wheat prices have been rising closer to world market prices in several West African countries during the 1980s, without slowing the consumption shift. Elasticity estimates based on annual data suggest that relative prices are less important determinants of rice and wheat consumption than other factors, such as income and urbanization. If these observations are correct, a large change in price would be required to produce a small improvement in consumption patterns (Delgado, 1989).

To some extent, the different conclusions reached in these studies may reflect substantive analytic disagreement. In part, however, they suggest that price and income policies are more effective in reversing wheat consumption trends than in reversing rice consumption patterns among urban populations.

Where price reform is deemed unlikely to be sufficiently effective, other explanations for changing consumption patterns suggest other policy measures to slow or reverse consumption trends toward imports:

Income. The difference between the food consumption patterns of different income strata offers an opportunity to affect consumption shifts while pursuing policies to improve the well-being of the poor. Where low-income consumers still have a high propensity to spend additional income on traditional staples, income transfers will help increase demand for local agriculture.

However, if the consumers tend to spend more marginal income on imports, the effect on consumption patterns will be negative. Policies intended to raise rural incomes must therefore be aware of which income strata benefit the most.

Urbanization. Slowing urbanization itself is a major goal of many countries in Sub-Saharan Africa. The large literature on population growth policies is beyond the scope of this research. Taking rapid urbanization as given, policy can still hope to modify the effect of urbanization on consumption patterns.

On the demand side, governments should be aware of their own influence on consumption patterns. The discussion of tastes in section III found some evidence that advertising and marketing have influenced consumers in favor of non-traditional foods. Government publicity and education might instead encourage consumption of traditional foods. On the supply side, domestic agricultural production could be processed and marketed much more to the tastes of urban consumers.

Marketing and Processing Research. The low research and development invested in making traditional cereals more convenient is an important reason for their failure in the cities. As early as 1973, E. O. Idosugie (1973) identified "an urgent need to introduce milled, pre-cooked or processed [local] legumes similar to wheat flour...." Efforts in this direction have met with only modest success.

Workable mixed flours have been developed using up to 40 percent of cassava, maize, sorghum, and millet. Bread made from such flour is not yet widespread, however. The few attempts to introduce mixed bread on a national basis have been unsuccessful. In Senegal, a program requiring all bread in the country to be produced with a mixed wheat-sorghum flour failed in 1980 when consumers responded negatively. Failures of similar programs were reported for Japan, Brazil, Costa Rica, Panama, and the Phillipines (UNCTAD, 1986). Mixed flours with a smaller proportion of the traditional staple would face less negative consumer response, but

as the proportion gets smaller, so does the benefit to domestic agriculture.

Greater success has been achieved in reducing the processing time for other (non-bread) millet and sorghum products. A small sorghum mill developed by the Botswana Agricultural Marketing Board and the International Development Research Center can save up to four hours of women's time each day. Thirty-six mills have been sold to date, with 11 orders outstanding (Whitby, 1989). If similar inexpensive mills widely replaced pounding with mortar and pestle, millet and sorghum would have a better chance of competing with rice and wheat for a higher urban consumption share.

To date, therefore, research has been more successful in lowering the hidden time costs of traditional staples than in developing urban foods that are as convenient as rice and wheat. One possible conclusion from this mixed success is that more research is needed in marketing domestic crops. Another possible conclusion, which might be dubbed the "bad luck thesis," is that rice and wheat are simply better able to meet urban demand, and the climactic constraints against these crops in Sub-Saharan Africa is a permanent misfortune. Under this thesis, successful African development will inevitably increase food imports, and the only debate should be over timing.

Production Research. Research in agricultural production should also be redirected. Greater priority should be given to coarse grains, and roots and tubers, rather than rice and wheat. Increased production and improved processing of traditional crops would improve the competitiveness of African food production over imports. Research into rice and wheat production is not harmful in itself, but it can prolong pipe dreams of replacing massive urban consumption of rice and wheat with domestic production. Evaluations of rice and wheat projects should consider not only whether they increase production, but whether the increase is greater than could have been achieved in other grains with a similar investment.

Research on Consumption Patterns. Much remains to be done in this field. To increase our general understanding of the determinants of food substitution in Sub-Saharan Africa, methodology similar to that used by IFPRI in West Africa should be applied to other regions. Ideal studies should include both urban and rural household consumption and market price surveys over time.

Also, the many influences on consumption patterns that do not fit simple economic explanations should not be tossed together under the heading "tastes," with its implication of irrationality. The recognition of time costs, of street foods, and of gender are improvements on more traditional economic analyses. Economic studies may need to borrow from the field of anthropology to sort out such factors.

Beyond this academic research, practical questions about consumption patterns should be investigated before a variety of government actions. Of course, major decisions in agricultural or food policy should give consideration to food consumption effects. Less obviously, any action that affects incomes, relative commodity prices, marketing structures, or exchange rates can influence food consumption patterns. Possible benefit or harm to nutritionally insecure populations should be considered.

Food Aid. The most important policy options for developed countries are changes in food aid policies. At least for the present, aid policies should encourage consumption of coarse grains, roots, and tubers over wheat and rice.

Since maize is a coarse cereal grown widely in both developing countries and Sub-Saharan Africa, maize donations are least likely to aggravate changing consumption patterns. Consumers, however, appear to prefer African white maize over donated maize, which is almost all yellow. Thomas Pinckney (1988) suggests that governments also resist yellow maize because it reminds citizens daily of the states' failure to meet their goals of food self-

sufficiency.

When only rice and wheat donations are possible, they can be sold at world market prices to avoid discouraging local agriculture. Profits from these food aid sales can be used for research on locally produced crops, or to import coarse grains from other Sub-Saharan countries (Delgado, 1985).

Both of these options face domestic political opposition in donor countries. Coarse grains other than yellow maize are not in excess supply in the U.S., and are therefore not available for food aid. When rice and wheat aid is sold at world prices, it is not "additional" to commercial sales. In other words, commercial sales drop by close to the amount of donated food. Both options are therefore opposed by domestic agricultural producers, who make up an important part of the political coalition that normally supports food aid.

This opposition is ironic, because an end to the African economic crisis is in the long-term interests of developed countries. At the very least, excessive national debt harms both developed and developing countries. This "debt crisis" is aggravated by food consumption substitution toward imports under current economic conditions.

Agriculture is essential to a "second start" at economic development in Africa. If changing consumption patterns can once be brought in line with food production, Sub-Saharan Africa may yet find some breathing space to pursue longer-term development goals.

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