Food consumption and food prices in Kenya: a review

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Food and Nutrition Studies Programme

Food Consumption and Food Prices in Kenya: a Review

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LIST OF TABLES , FIGURES AND MAPS

TABLES

1.	Official Retail Prices for Selected Food Commodities; 1975-84	16
2.	Average Yearly Increases in Official Prices of Selected Foods; 1975/76 - 1983/84 (percentages)	17
3.	Average Yearly Price Change of Selected Foods and Average Yearly Rate of Inflation during 1975-1984	19
4.	Average Real Producer and Real Consumer Prices of Selected Foods; 1972-1981 (indices)	20
5.	Kenya Maize Prices 1972-1983	22
6.	Official and Parallel Market Shares in Total Marketed Output by Province 1974-1975 (percentage)	26
7.	Maize Price Differentials Between Selected Markets, 1977	29
8.	Average Quarterly Retail Maize Prices by Province, 1978-1982	32
9.	Official Maize Consumer Prices, 1978-1982	33
10.	Seasonal Variability of Market Prices; Maize 1978-1982	34

FIGURES

1.	Monthly Price Fluctuations in Selected Markets in Eastern Province; Kenya (maize)	30
2.	Monthly Price Fluctuations in Selected Markets in Rift Valley Province; Kenya (maize)	31

MAPS

1.	District of Kenya	4
2.	Markets sampled in the 'Market Information Service' of the Central Bureau of Statistics	47

MAP 1

Districts of Kenya

SUMMARY

This report reviews governments' policies concerning (consumer) food prices in Kenya. Intervention in the food sector by the government has a long tradition and is extensive. Consumer prices of a number of food commodities are set by the Ministry of Finance and also the marketing of food (in particular maize, Kenya's staple food) is subject to numerous government regulations. The National Cereals and Produce Board (NCPB) is assigned a near monopolistic position to distribute maize and ensure stable supplies throughout the country.

As to official food pricing, Kenya can be labelled as a country pursuing a 'cheap food' policy. It was found that most foods falling under price control measures, showed less price increases than the average rate of inflation during recent years (1975-1984). Moreover, when compared to international prices, the data reveal that domestic maize prices were kept well below comparable world market prices for this commodity.

Official food pricing policy, however does not reach the majority of the Kenyans who live in the rural areas. Here, consumer prices are determined by market forces, that is by varying local supply conditions. A review of studies analysing food price movements in the rural areas, reveals substantial price variations, both seasonal and regional even between adjacent rural markets. These large price differences during the year occuring concurrently with price differences between markets are considered to be harmful to the food security position of, particularly, the low-income population groups. There exists a consensus among researchers of Kenya's 'informal food sector', that the government's policy of stringent regulations concerning food transports across district boundaries, have even aggravated these rural price variations.

It was therefore widely recommended that the (maize) food sector be liberalised by lifting movement controls and allowing private traders to participate in maize trading operations.

INTRODUCTION:

The Food and Nutrition Studies Programme (FNSP) is a joint activity of the Food and Nutrition Planning Unit of the Ministry of Planning and National Development, Nairobi, Kenya and the African Studies Centre, Leiden, The Netherlands.

As part of this programme, studies are planned on various aspects of Kenya's agricultural policies.

The first (completed) study analysed the scope and effects of *producer pricing* policies. Major issues of discussion were policy effects on the size of national agricultural production and on the level of producer prices for the main agricultural commodities (Meilink; 1985).

The present study is concerned with the *consumer side of the 'food system'* and addresses the following topics:

A) Consumption patterns in rural and urban Kenya: evidence from surveys;
B) Official food prices for consumers: effects of pricing policy and
C) Price changes in the rural markets.

Two observations are central to the discussion:

1. The co-existence in Kenya, of an official (controlled) food pricing system next to a system of food prices determined by supply and demand forces, notably operating in rural areas (parallel markets).

2. The significance of food *prices* (in combination with household income) in determining the actual level of food consumption in the household.

ad 1) It is widely observed, that variations in food availability during the year in rural areas are great and occasionally give rise to sudden price increases in local food markets. The official marketing organisation (NCPB) is apparently unable to balance surplus and deficit regions in the country, which would have the effect of stabilizing prices in these local markets. In addition, the practiced policy of restrictions on private food transports across district boundaries is thought to aggravate price fluctuations in the rural markets. The officially set prices of foods (in particular maize) are not enforced in these markets and prices emerge which may extensively deviate from the official ones (Cox, 1984; Schmidt, 1979; World Bank, 1982; Booker/Githongo, 1983; Olsen, 1984; Ateng, 1984; and Kliest, 1985).

ad 2) It is recognized that individual food consumption is influenced by factors other than price and income variables. These include for example, total supply of food, the efficiency of the distributing and marketing structures, public expenditures on sanitary and health provisions, cultural habits and intra-household decisions on food distribution etc. (Kennedy/Pinstrup-Andersen, 1983; and Hoorweg/Niemeijer, 1986). It should also be noted that lower food prices or higher household incomes do not 'automatically' result in more food consumption. Increases in income may be spent on purchase of non-food commodities, or be used for payment of school fees or outstanding debts (Food Seminar, 1981).Nevertheless, there is widespread agreement that prices of food and household income are among the crucial factors determining a households' ability to meet its food requirements. -A further argument for studying food prices (and food price policy) is that even farmers producing their own food, still rely on monetary purchases of food for a surprisingly large part of their needs. In Kenya, according to the Integrated Rural Survey of 1974/75, on average 15 to 40% of total (maize) consumption was estimated to have been based on purchases. Thus farmers (by far the majority of Kenyans) are

dependent on food markets as both sellers and buyers at different times of the year (Smith, 1978; Schmidt, 1979, Maritim, 1982; Cowen, 1983 and Olsen, 1984).

1. FOOD CONSUMPTION PATTERNS

1.1 Data from surveys

Current knowledge of Kenya's food consumption patterns is mainly derived from two surveys:

= the Integrated Rural Survey I, 1974-75

= the Urban Food Purchasing Survey of 1977.

Using data from these surveys, Shah and Frohberg (1980) carried out a detailed food consumption analysis and presented information on 'per capita food consumption' for different rural and urban income classes as well as for each of the six provinces in Kenya. The following findings are drawn from their study:

- food expenditure as a percentage of total expenditure is high and varies from 77,2% for the average poor rural household to 66,7% for the average "rich" rural household (food expenditure inlcudes the imputed value of home-consumed production). Corresponding percentages for the urban population are much lower: 49,6% and 31,1% respectively (Shah

and Frohberg; 1980, p. 6). This finding is in accordance with Engel's law, asserting that as total expenditure (or income) increases, a decreasing proportion of total income is spent on food commodities.

- the *average rural small-holder* obtained a large share of the daily calorie intake from only a limited range of foods: maize flour, millet and sorghum (together 61%); starchy roots (English potatoes, sweet potatoes, cassava and yams) 12%; beans 5%, sugar 5% and milk 4%. These foods respresented 87% of total daily calorie intake (Shah and Frohberg; 1980, p. 45; see also McCarthy and Mwangi, 1982, p. 20/21).

- for *the average urban dweller* the food basket is more diverse: maize flour, millet and sorghum contribute 45% to the daily calorie intake, starchy roots 4%, beans 5%, sugar 9%, wheat (bread and flour) 12%, rice 3%, meat 4.5%, milk 3,5% and fats and oils 6.5%. Together, these foods accounted for 92,5% of total daily calorie intake of this group (Shah and Frohberg, 1980, p. 67 and McCarthy and Mwangi, 1982, p. 20/21).

1.2 *Food poverty line studies*

Apart from studies describing the composition of food baskets in Kenya, some researchers used IRS I data for the purpose of constructing a "food poverty line". This line is defined as a minimum food diet (and associated expenditures) yielding a recommended daily allowance (RDA) of 2250 calories per adult equivalent. This RDA is subsequently compared with the actual consumed calories per adult equivalent small-holder (for which IRS I gives data).
The 2250 RDA for the 'reference Kenyan adult small-holder' was arrived at, taking into account 'average body size and effort levels' of Kenyan smallholders (Greer and Thorbecke, 1984, p. 21).

With this method, the incidence and distribution of 'food poor households' in Kenya could be assessed. A number of recent studies have applied this food poverty line concept (see Crawford and Thorbecke; 1978, Collier and Lal; 1980, Crawford-Thorbecke; 1980, VanderMoortele-Van der Hoeven; 1982 and Greer and Thorbecke; 1984). Findings of the most recent study (Greer and Thorbecke; 1984) indicate that Western and Rift Valley Provinces show a high proportion of small-holder households, consuming less than the recommended daily allowance of calories, i.e. 45.9% and 44.7% respectively. The Coast and Nyanza Provinces had somewhat lower percentages of respectively 41.5% and 41.0% and Central and Eastern Provinces accounted for the relatively lowest number of food poor households resp. 32.7% and 32.4% (Greer and Thorbecke; 1984, table 3.4 p. 40). Estimates of *the overall magnitude* of food poverty among Kenyan smallholders, however show large differences. Although all the above mentioned studies used IRS I data as their source of information, and also assumed the reference food poverty line of 2250 RDA, estimates varied from 25% (Crawford-Thorbecke; 1980) to over 40% (Greer and Thorbecke; 1984) of Kenyan small-holders belonging to food poor households. Differences in estimates were largely due to the fact that 'food poverty' is essentially a normative and therefore arbitrary concept. In the process of selecting a food poverty line, a number of normative assumptions have to be made which greatly influence the end-results. Methodological problems encountered in food poverty line studies are numerous and extensively discussed in Greer and Thorbecke (1984).

It must be pointed out that, apart from these methodological problems, the above mentioned studies are all based on data generated by only two surveys. Because of limitations in the design of the surveys, however, conclusions about consumption patterns and the measurement of food poverty in Kenya, should be interpreted with caution. For a discussion of these survey limitations, see Annex I on page 45.

Conclusion:

The foregoing discussion of previous national surveys, demonstrates that the available knowledge of actual amounts of foods consumed and actual prices, paid in rural as well as urban Kenya is still inadequate. The surveys do not provide information on such basic data as actual prices paid for purchased foods, nor actually consumed quantities of different foods [1)]

2. KENYA'S FOOD PRICING POLICY

Introduction

While implementing a food price policy, *any government* is confronted with a fundamental dilemma. On one hand, producer prices to farmers should be high enough to make food production remunerative (the more so if a position of self-suffiency is the objective). On the other hand, food prices to consumers should be kept low to ensure that poor groups of the population have adequate access to food. In many instances, this dilemma is 'solved' in favour of the urban food consumers. A policy of 'cheap food' had been a common feature among African countries in the past decade (Word Bank; 1981). In this section Kenya's position in this respect will be examined.

2.1 Policy objectives

After the events of 1979/80, when Kenya suffered a nationwide foodshortage, the government published a paper in which food policy objectives were explicitly formulated. This 'Sessional Paper No. 4 on National Food Policy' (1981) outlines various programmes and policy measures to be introduced by the government in order to achieve 'food security and a nutritionally adequate diet for every member of the population' (GOK, 1981, p. 2). Specific objectives were stated as follows:

= maintain a position of broad self-sufficiency in the main foodstuffs in order to enable the nation to be fed without using scarce foreign exchange on food imports;

= achieve a calculated degree of security of food supply for each area of the country;

= ensure that these foodstuffs are distributed in such a manner that every member of the population has a nutritionally adequate diet (GOK, 1981, p. 2).

A recent governmental policy paper also stressed the need for adequate food security (GOK, 1986). According to this document, self-sufficiency for basic food commodities (maize and milk in particular) is aimed at by implementing a policy of increasing land productivity and an extensive programme of artificial insemination which is expected to double production levels of both commodities by the year 2000. Improved technology, intensification of input use in combination with sound pricing and marketing policies will be the central instruments of future policy (GOK, 1986; p. 71/71).

2.2 Scope of intervention

Government intervention in the food sector in Kenya, has traditionally been extensive. The major policy instruments are the pricing of foods and marketing regulations.

Consumer prices for a number of food products are gazetted by the 'price controller' in the Treasury. These foods include: maize, wheat flour, rice, milk, sugar and cooking oil and until recently beef. When confronted with the list of the nine most important food products in Kenya - maize, wheat, rice, sugar, potatoes, beans, sorghum/millets, beef and milk - it is evident that official price intervention covers a considerable number of Kenya's major food commodities. (Kerr; 1981; p. 82).

Government intervention in marketing is also large. Major food commodities have their own statutory marketing organisations and there exist stringent regulations with regard to movements of any significant quantities across district or provincial borders. This applies especially to maize, the country's staple food. The National Cereals and Produce Board (NCPB) is officially assigned a near monopoly position to trade in maize and to ensure stable supplies throughout the country throughout the year.

Many marketing regulations stem from the colonial period when the settlers sought the assistence of the government for the commercialisation of their agricultural produce. After indepence, the marketing system was largely retained and in some cases government involvement was intensified.

In addition to maize, the NCPB also acts as a marketing board for *wheat* which is grown by large and medium scale farmers. The demand for wheat is rapidly growing but domestic production has not kept pace and imports have been growing steadily over the years. These imports also fall under the monopoly control of the NCPB.

Rice is grown almost entirely on irrigation schemes falling under the direction of the National Irrigation Board (NIB). Marketing of rice is carried out by the NCPB on behalf of the NIB. Although demand for rice is growing, imports are discouraged by the government and are made dependent on "the prevailing balance of payments situation and the availibility of supplies on concessional terms (GOK; 1981, p. 21). Rice is not included in the list of seven basic commodities selected as central to agricultural and food security policy goals: coffee, tea, maize, wheat, milk, beef and horticulture (GOK, 1986, Ch. 5).

Sugar cane is produced by large-scale farmers and small-holders, cooperative societies and factory estates. The government is the major shareholder of nearly all estate sugar factories. Sugar cane is marketed through cooperatives or (for the larger part) directly to the factories. The distribution of wholesale white sugar is under government monopoly, with the KNTC (Kenya National Trading Corporation) acting as marketing board.

Milk is produced by the great majority of small-holders, but marketed volumes are highly concentrated: 20% of the producers account for 80% of total milk sales by small-holders. Since the introduction of the school milk program, demand for milk has increased rapidly. The Kenya Cooperative Creameries (KCC) and some licensees of the Dairy Board are the official channels through which milk in the rural areas is marketed. KCC's major suppliers are the cooperatives, although in Nyanza and Western provinces most milk sales are direct to the consumers.

Government intervention in the marketing of *livestock* is also extensive. The Kenya Meat Commission (KMC), another parastatal body, supplies the urban centres of the country and a second parastatal organisation, the Livestock Marketing Branch is responsible for buying cattle in the range or pastoral areas in the northeast. Next to these parastatals, the government has authorized a number of private abbattoir firms to purchase livestock. Over the years the

KMC has lost a significant part of its market share in livestock procurement to these private firms.

2.3 Consumer price setting procedure

In order to determine consumer food prices, the government has divided the country into several regional zones (Kisumu, Eldoret, Nakuru, Nairobi, Thika, Nyeri, Voi and Mombasa). Consumer prices for controlled foods should be similar within these zones, but they may differ between zones. Price differences between zones are caused by costs of (rail)transportation and the marketing margins allowed to the NCPB and licenced traders. Eldoret is taken as the base zone for calculation purposes. Usually, the Price Controller also takes into account the operation costs of food processors. Margins for processors of food (maize milling for example) are also set by the government. Enforcement of set prices is supervised by price inspectors of the Control Division of the Treasury who are authorized to prosecute any offenders. For some foods, the governments sets a variety of consumer prices: for *maize* there are 'whole grain' prices, both at wholesale and retail levels and also 'maize meal' prices, again at both wholesale and retail levels. Whole grain (unprocessed) maize is mainly consumed in the rural areas, whereas maize meal (processed) is typically part of the urban diet. For wheat, ex-mill flour prices and retail prices of bread are set by the government. All prices are derived from the basic producer prices for foods which are likewise set by the government. (Meilink, 1985).

3. OFFICIAL PRICES OF CONTROLLED FOODS

3.1 Trends in official prices

Information on retail prices of major food commodities is published in the various issues of 'Statistical Abstract' of the Central Bureau of Statistics.

Table 1. shows the average yearly prices for selected foods, prices of which are controlled by the government for the period 1975-1984.

Data reveal a general trend of rising prices during the period under review, although different patterns occur when individual foods are examined. For example, maize (whole grain) prices show considerable higher price increases when compared to maize flour (posho). The latter type of maize is of crucial importance in the diet of the urban poor.

Table 1. Official Retail Prices for Selected Food Commodities; 1975-1984

prices (ksh/kg)	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Maize (posho; unsifted flour)	1.19	1.20	1.51	1.45	1.46	1.65	1.65	1.92	2.30	2.78
Maize; grain	1.00	1.18	1.28	1.27	1.25	2.69	4.17	4.10	4.19	4.91
Wheat; flour	2.50	2.52	2.74	2.79	2.88	3.12	3.45	4.21	4.51	5.13
Rice; local grade	3.00	3.06	3.00	3.32	4.48	4.29	5.72	7.56	8.17	6.35
Sugar	3.50	4.50	4.50	4.50	4.50	4.50	4.84	5.75	6.30	6.90
Milk; tetra pack; 0,5 litre	0.95	0.95	1.24	1.30	1.30	1.38	1.63	1.95	2.13	2.45
Beef, low grade	7.40	7.40	8.20	10.13	10.52	13.00	13.22	15.60	18.44	18.70

Source: Statistical Abstracts; 1983; 1984 and 1985.

The *percentage* price increase from year to year for the same price controlled food items is presented in Table 2.

There appears to be no uniform pattern in the movement of prices. Government price setting tends to be commodity-specific taking into account the varying supply and demand conditions of the products concerned.

Consequently Kenya's food policy should be analysed in a commodity-wise manner because the many inter-product differences make it difficult to draw general conclusions on the implementation of food price policy.

Table 2. Average Yearly Increases in Official Prices of Selected Foods; 1975/76 - 1983/84 (percentages)

Percentages	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Maize (posho)	0,8	25,8	- 4,0	0,7	13,0	0,0	16,4	19,8	20,9
Maize (grain)	18,0	8,4	- 0,8	- 1,6	115,2	55,0	- 1,6	2,2	17,2
Wheat (flour)	0,8	8,7	1,8	3,9	8,3	10,6	22,0	7,1	13,8
Rice; local grade	2,0	- 1,9	10,6	34,9	- 4,2	33,3	32,2	8,0	- 22,3
Sugar	28,5	0,0	0,0	0,0	0,0	7,5	18,8	9,6	9,5
Milk; tetra pack									
0,5 liter	0,0	30,5	4,8	0,0	6,1	18,1	19,6	9,2	15,0
Beef, low grade	0,0	10,8	23,5	3,8	4,5	1,7	18,0	18,2	1,4

Source: calculated from table 1.

One criterion for a 'cheap food policy' used here, is that set prices for controlled foods show lower increases than the average rate of inflation during the reviewed period.

In order to assess whether Kenya has pursued a policy of 'cheap food' the price increases of individual products were compared with the average rate of inflation during the period 1975-1984.

The data in Table 3 reveal that for (almost) all food items under price control, consumers have indeed been protected from inflationary developments: average price increases were less in comparison with the average rate of inflation in the period concerned. For maize grain however, the opposite is the case. Price increases for this type of maize, which is widely traded in Kenya's rural areas, has far exceeded the rate of inflation in the 1975-1984 period.

Table 3. Average Yearly Price Change of Selected Foods and Average Yearly Rate of Inflation during 1975-1984.

	Average yearly price change (percentage)		Average yearly rate of inflation 1) 1975-1984
Maize (posho)	+	10.4	
Maize (grain)	+	23.6	
Wheat (flour)	+	8.6	
Rice	+	10.3	13,3% 2)
Sugar	+	8.2	
Milk (tetra pack)	+	11.5	
Beef	+	9.1	

1) Rate of inflation is defined as a composite index of lower, middle and upper income indices of the Nairobi Consumer Price Index, Economic Surveys: various issues.

2) Inflation rates for individual years were: 1975: 17,8%; 1976: 10,0%; 1977: 12,7%; 1978: 12,5%; 1979: 8,4%; 1980: 12,8%; 1981: 12,6; 1982: 22,3%; 1983: 14,6%; 1984: 9,1%. (Economic Surveys; various years).

This finding concurs with the conclusions reached by Ghai and Smith (1983) who calculated a 'measure of the real price of food' for a number of African countries. Defining the real price of food as the ratio of the food price index to the consumer price index, they found Kenya to be in the category of those countries where food prices rose less in comparison with the general consumer price index (Ghai and Smith; 1983, p. 5).

Another indication of the implementation of a 'cheap food policy' in Kenya is provided by Sharpley (1984), who compared food producer prices with food consumer prices for major (price-controlled) foods in the period 1972-1981 (Table 4).

Table 4: Average Real Producer and Real Consumer Prices of Selected Foods; 1972-1981 (indices; 1972=100).

Commodity	Average Index of Real Producer Prices	Commodity	Average Index of Real Consumer Prices
Maize	96	Maize (posho)	94
Wheat	116	Wheat; flour	97
Rice paddy	113	Rice	98
Sugar cane	108	Sugar	103
Whole milk	78	Milk; tetra pack	73
Beef; low grade	96	Beef, low grade	81

Source: J. Sharpley; OECD; 1984.

Prices were deflated by the Nairobi Lower Income Consumer Price Index, excluding rent.

For all the foods examined, the average Index of Consumer Prices turned out to be lower (in the case of beef and wheat much lower) than the corresponding Index of Producer Prices.

This finding implies that rises in producer prices since 1972 were not 'passed on' to the consumers to the full extent. Part of it was obviously 'charged' to the respective marketing board, which in turn had to rely on the government budget to compensate for the operational losses incurred as a result of diminished trade margins. A study by the Economic Commision for Africa on trends of Kenyan agricultural prices indeed observed narrowing NCPB gross margins for maize in the 70's. Between 1972 and 1980, the differences between NCPB buying and selling prices in the 8 consumption zones dropped from an average 12.34 Ksh/bag in 1972 to 2.25 Ksh/bag in 1980. Kisumu and Eldoret even had negative gross margins in 1980 (E.C.A., 1983, Annex 5).

3.2 Kenyan food prices in relation to international prices

How do Kenyan consumer food prices compare to international (import) prices? Answering this question is not a simple matter. Generally speaking, the calculation of the correct import price is fraught with statistical and methodological problems. Some of these concern product quality differences, different sales taxes, subsidies (world market prices are *not* free market prices), varying trade margins and differences in shipping costs. Furthermore, "overvaluation" of the national currency may create difficulties in finding the appropriate rate of exchange in order to arrive at the "import border price". This border price, then has to be adjusted for internal handling and transportation costs to finally arrive at the 'import parity price', which is used in domestic/world price comparisons. Import parity prices are thus location-specific which in a situation where food consumers are geographically widely dispersed, may also give rise to comparison problems.

Bearing this in mind, the following findings should be interpreted with caution. Sharpley (1984) found that Kenyan consumer prices for milk, bread, rice and beef were generally lower than world prices in the period 1972-1978. Domestic maize meal (posho) also tended to be lower in price than world cornmeal prices in that period. But Kenyan wheat flour prices were somewhat higher compared to UK white wheat flour. A general conclusion is that for urban low income households more than 50% of all money expenditures on food was bought at lower than world market prices (Sharpley; 1984, p. 41/42).

As to maize, table 5 presents data for import parity prices and domestic prices for the more recent 1972- 1983 period.

Table 5 ***Kenya maize prices*** 1972-1983; *Ksh/1000 kg*

	Import Parity Price a)	*Official Consumer Price (posho) b)*
1972	750	700
1973	1103	700
1974	1455	950
1975	1461	1190
1976	1551	1200
1977	1472	1510
1978	1532	1450
1979	1778	1460
1980	1918	1650
1981	2424	1650
1982	2517	1920
1983	3013	2300

a) Source: Olsen; 1984: table 14. USA Corn meal data were used.

b) Source: see table 1; 1972, 1973 and 1974: Statistical Abstract; 1978.

These data show that between 1972 and 1983 the Kenyan government pursued a maize price policy to consumers, that kept domestic prices (posho) well below comparable world market prices. This again is an indication of the preference for a 'cheap food' policy on the part of the Kenyan Government.

Conclusion:

Available data tend to show that the Kenyan government in the 1972-1983 period protected food consumers against inflationary developments in the economy. This was achieved by allowing food prices to increase at a lower rate than the general rise in consumer prices as measured by the Nairobi Consumer Price Index. Increases in the official producer food prices were not entirely passed on to the consumers, but instead financed through the government's budget which in actual fact boils down to a subsidy to food consumers.

So far, we have discussed official prices as they are set by the government. But numerous food consumers in Kenya, in particular those who purchase their food at rural markets are confronted with prices sometimes largely different from the official (gazetted) ones. There is evidence that in rural Kenya wide regional and seasonal price variation occurs. The next section reviews some of the available data.

4. ACTUAL FOOD PRICES IN RURAL MARKETS

The basic source of information for food price movements in local markets is the CBS 'Market Information Bulletin' which provides weekly prices of selected foods in about 80 sample markets, collected since 1977 (see map Annex II). Although the MIB covers a range of foods (for example maize, beans, millet, sorghum, potatoes, tomatoes, cassava etc.), more or less complete price series are available only for *maize and beans*.
Consequently most of the existing studies, analyzing local market prices, are confined to *maize* (and beans) price developments.

Before turning to actual food prices in rural markets, it seems therefore appropriate to first review the main characteristics of Kenya's maize market structure.
Maize is grown throughout the country by both large and small farmers. Yields and production levels, however, show large variations in different areas. Western Kenya (Provinces of Nyanza, Western and Rift Valley) is the main surplus region supplying an estimated 2/3 of Kenya's total maize production. Deficit areas, where demand exceeds local output, are situated in Eastern and Coastal Kenya.
Consequently, in order to balance surplus and deficit regions, a continuous flow of maize in an easterly direction (as well as to major urban centres) is required.

The marketing (and pricing) of maize is strictly regulated by the government. The National Cereals and Produce Board (NCPB), a government parastatal, holds a nation-wide monopoly position in buying, distributing, selling and the international trading of marketed output. It is illegal to transport maize in quantities of more than 2 90-kg bags across district borders and more than 10 bags within districts without a permit issued by the NCPB.

NCPB operates through over 40 depots and (since 1980) around 400 buying stations where farmers can make their deliveries. Apart from these market outlets, the NCPB works via cooperatives and private traders, licenced by the board as buying agents.
The NCPB, while implementing the government's food policy, faces the challenge of stabilizing both prices and consumption in the face of highly variable domestic maize supplies.

The Integrated Rural Survey of 1974/75 indicates that out of an estimated maize production of 19.1 million bags in that year, some 7.3 million bags (that is about 38%) entered the marketing channels. Of this amount, 5.53 million bags (or 76%) came from small-holders and 1.75 million bags originated from large scale farmers (24%).
Relative shares of small and large scale farmers vary over the years depending mainly of the size of the harvest, but generally it is assumed that in recent years small-holders contribute around 70% and large farmers around 30% to the total of maize quantities entering the marketing system.

Out of the total volume of marketed maize, the proportion purchased by the NCPB is estimated to be 40 to 50%. Here, we encounter an important feature of the maize marketing structure: **its duality.**
Officially, the marketing board is authorized to handle all volumes of marketed maize in the country, but in practice the official system 'captures' only about 50%, leaving the other half (that is 3.5 to 4 million bags of maize) to the rural 'unofficial' markets.
Thus, the number of people facing market-determined food prices is far greater than those who confront officially controlled prices.

Table 6 shows the share of both types of maize markets by province (1974/1975 IRS data).

Table 6. Official and Parallel Market Shares in Total Marketed Output by Province, 1974/75 (percentages)

Province	NCPB	Rural markets	Total
Central	51.5	48.5	100
Coast	-	100.0	100
Eastern	27.1	72.9	100
Nyanza	8.1	91.9	100
Rift Valley	72.2	27.8	100
Western	42.3	57.7	100
National Av.	39.8	60.2	

Source: Maritim; 1982, p. 21.

The table reveals that NCPB purchases are regionally concentrated in Western Kenya and Central Province where the surplus areas are located. In the Eastern part of Kenya and in Nyanza Province, marketed quantities are largely traded through the rural parallel market.

Large maize farmers sell a large part of their marketed output (70%) directly to the NCPB. Of small-holders *marketed* output, on the other hand, only an average 30% finds its way to the official (NCPB) depots.

Theoretically, the NCPB has the task to provide the deficit regions with maize purchased in the (western) surplus areas. But in reality, over 90% of all quantities sold by the NCPB were deliveries to the maize milling factories (in the 9-year period of 1970 to 1978 the average percentage was 93%; Maritim; 1982, p. 50).

After processing in the mills, the maize meal distribution in the country is not controlled by the NCPB.

Another noteworthy characteristic is that virtually all Kenyans are, in one way or another, participants in the maize market. The great majority of small-holders are involved both as sellers and buyers of maize. They sell (have to sell) maize after the harvest to meet pressing cash requirements (school fees; debts etc.) and often buy maize later in the year to meet their food consumption needs. Estimates show that between 15 and 40% of total maize consumption in Kenya is purchased in the market (Olsen; 1984, Schmidt; 1979, Maritim; 1982).

In conclusion, it appears that a large part of Kenya's rural population depends on unofficial rural markets when they sell or buy maize. Prices received and paid in these markets are determined to a large extent by the market forces of (varying) supply and demand conditions which may result in price levels very much different from the officially set ones.

What follows is a review of empirical evidence of spatial and seasonal price variation in the rural food markets of Kenya.

4.1. Local market price variation

Schmidt (1979) examined prices in 65 rural markets in 1977-1978, as part of a study on the effectiveness of formal and informal marketing systems (maize and beans). His aim was to assess the degree of 'interregional pricing efficiency' of rural maize markets. To this end the correlation coefficient between price movements in markets in Central and Western Kenya (areas best covered in the MIB, see map p. 47) was calculated.

The overall conclusion is that 'interregional pricing efficiency in maize and beans marketing is seriously lacking' (p 99). Price differentials were much higher than could be explained by transport costs of maize between the markets concerned. According to Schmidt *movement controls*, which impede arbitrage activities, are largely responsible for this situation. This conclusion is supported by the finding that for those food crops which are less subject to movement controls (that is beans), or not subject to any kind of marketing regulations (for example white and red potatoes), price differentials between markets are far less.

As for maize, the following numerical examples (drawn from Schmidt; 1979) are illustrative: prices in Meru district (markets of Maua, Kianjai and Ishiara) fell to 45 Ksh (per 90kg bag) when moving from March to May 1977 and remained Ksh 45 to Ksh 55 up to September/October of that year. In the same period, maize prices at Machakos and Kitui districts (markets of: Mwingi, Migwani, Tala and Tawa) rose to KSH 90 to KSH 100, thus a price spread of around Ksh 50 per bag, a 100% difference.
In Western Kenya, a similar situation was observed. In the same period during which maize prices in Kisii district fell to 50-30 Ksh per bag, prices in Kakamega, Siaya and Busia districts (markets of Luanda, Bondo, Sio Port and Bumala) ranged from Ksh 90 to Ksh 150 per bag. These price differentials of Ksh 40 to Ksh100 per bag, far exceeded the transport costs, estimated at Ksh10 to Ksh30 per bag between the markets considered.

Seasonal price differences were also found to be substantial in rural markets. Schmidt used a 'seasonality index'[2)] as a measurement of seasonal variation in the local markets. Seasonal price fluctuations were much greater than the storage costs for the period between seasons would suggest. For example, price spreads during the same year of Ksh100 per bag in Bondo market (Siaya district; Western-Kenya) and Ksh 180 per bag in Matiliku (Machakos, Eastern Province) were observed. When compared with the storage costs of around Ksh22 for maize (8 months) and of Ksh43 for beans (8 months) per bag, this clearly demonstrated the large magnitude of seasonal price variation.

Maritim (1982) studied the structure and the performance of the maize marketing system on the basis of two surveys: Market Survey 1976/77 carried out by the 'Market Development Project' of the Ministry of Agriculture and the 'Price Information Survey 1977/78' conducted by CBS and covering price movements in some 62 rural markets. Computing 'price correlation coefficients' among provincial markets, he found a 'low degree of market integration' indicating 'significant price inefficiency in rural markets in Kenya' (p. 165). Evidence of wide *regional* price differences between markets even in one province is presented in Table 7. Maize prices in Kutus market (Eastern Province) in April 1977 were Ksh 69 per bag. In the same month, the price of maize in Karatina market, only 26 km away from Kutus, amounted to Ksh 126 per bag, a difference of almost 83%. The transports costs of a bag of maize between these two markets was only Ksh 2.35 at the time.

Maritim also concluded that "the controlled maize market does not protect rural consumers from seasonally fluctuating supplies and its associated price patterns" (p. 25).

Table 7 Maize Price Differentials Between Selected Markets in April, July, September, and December in Kenya, 1977 (Ksh/bag)

Region	Markets	April	July	Sept.	Dec.	Transport costs
Eastern Kenya	Kutus - Karatina	57.00	3.80	22.50	23.40	2.35
	Kandara - Mwingi	-	45.90	35.10	42.30	13.35
	Kandara - Karatina	87.30	21.60	39.60	53.10	5.70
	Sagana-Karatina	32.40	18.00	24.30	12.00	2.10
Western Kenya	Fort Ternan - Ahero	20.70	29.80	6.40	-	4.65
	Fort Ternan - Mumias	52.60	31.50	5.40	18.00	9.90
	Kapsabet - Ahero	18.00	25.20	5.40	16.20	5.25
	Kapsabet - Mumias	49.90	26.10	4.5	12.60	11.00

Source: Maritim; 1982, p. 168.

Evidence of **seasonal price variation** in rural markets in two provinces (Eastern and Rift Valley) are shown in figures 1 and 2. Markets in Eastern province represent maize deficit areas and Rift Valley markets are located in surplus regions. The time period examined was January 1977 to July 1978.

Fig. 1

Monthly maize price fluctuations in selected markets in Eastern Province, Kenya

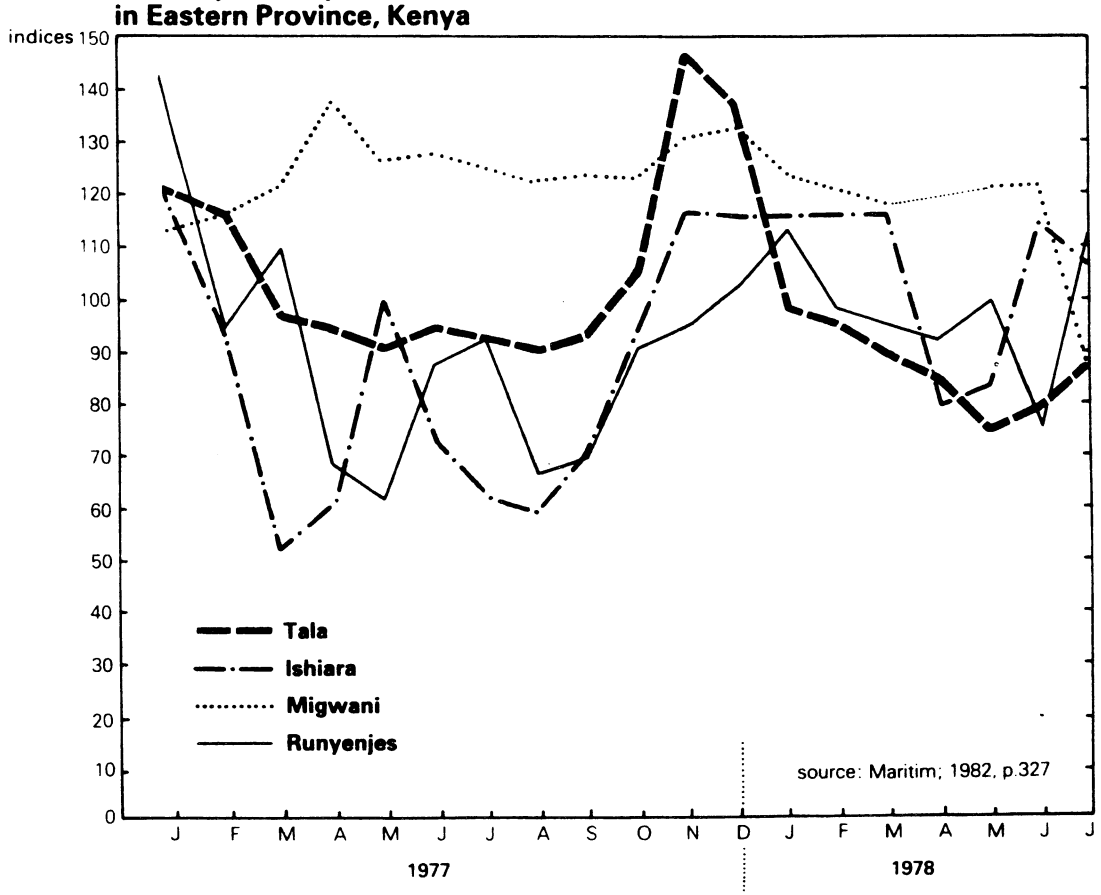
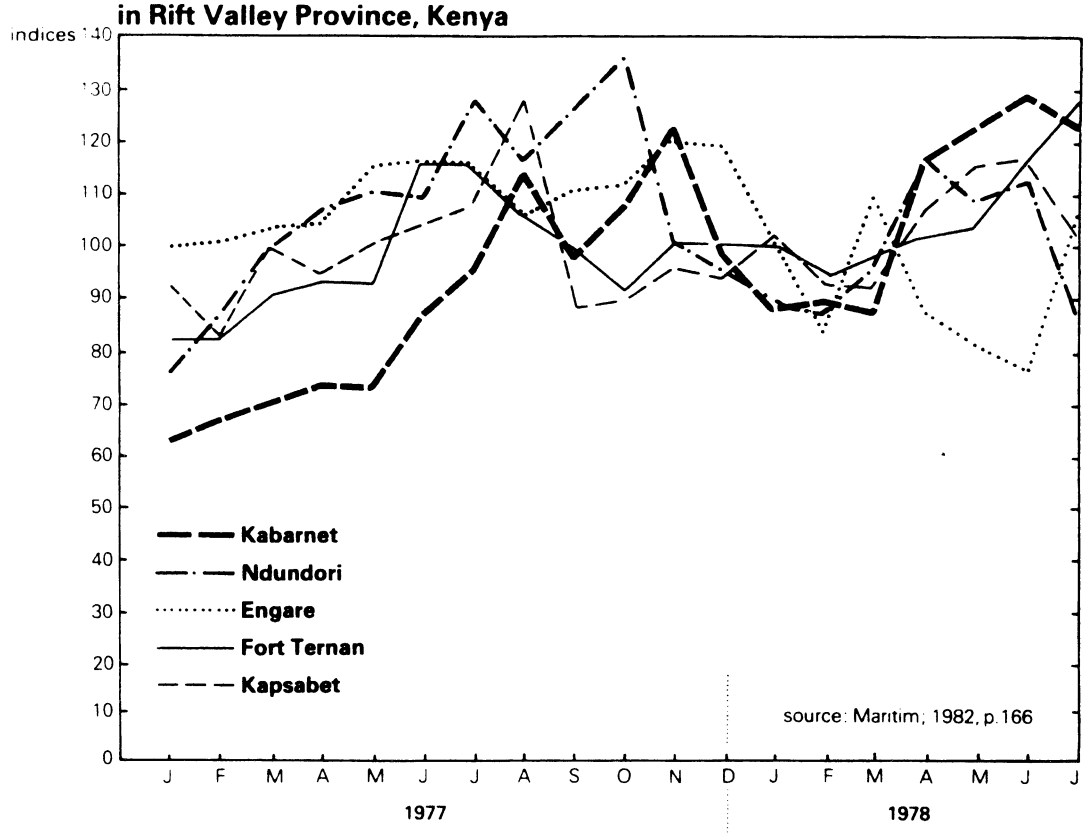


Fig. 2

Monthly maize price fluctuations in selected markets in Rift Valley Province, Kenya



Visual inspection of the graphs suggests the following important conclusions:

1) price variation through the year is substantial in virtually all markets examined and

2) price movements do not reveal any systematic year to year pattern, which implies that the timing of peaks and lows during the season is rather unpredictable.

3) the extent of seasonal price variation in the typical deficit markets of Eastern Province seems greater than in the surplus markets of the Rift Valley.

Olsen (1984) has analyzed maize prices in local markets, including the 3 Nairobi markets (Kawangware, Wakulima and Burma) for the period 1978-1982. One of her major conclusions is that 'restrictions on inter-district trade has artificially surpressed prices in the producing areas and inflated them in the consuming areas' (p. 8).

This conclusion is derived from comparing provincial quarterly maize prices in local markets with the official maize consumer price in the same quarter of the year. She notes that *if* the government's objective of *price stabilization* had been achieved, much smaller price differences between provinces than the actual ones, would have occured. Again, the observed provincial price differences are much greater than the 'normal' differences due to transport costs (see Tables 8 and 9). Data in these tables show that 'typical consuming' markets like the Nairobi ones, have higher quarterly prices than the official ones, while the 'typical producing' surplus markets of the Rift Valley show, on the average, depressed prices when compared with the official consumer prices.

Table 8 Average Quarterly Retail Maize Prices by Province; Ksh/per Kg

	Nairobi	Central	Eastern	Nyanza	Rift Valley	Western	National Average
1978	1.20	0.92	0.91	1.06	0.67	1.26	1.00
	1.16	0.92	0.85	1.16	0.69	1.25	1.01
	1.20	0.95	0.96	0.87	0.66	0.96	0.93
	1.19	0.96	1.08	0.86	0.70	0.94	0.96
1979	1.26	0.98	1.05	0.98	0.66	0.91	0.97
	1.11	0.85	0.87	1.02	0.53	1.06	0.91
	1.05	0.80	0.87	0.93	0.69	0.87	0.87
	1.25	1.01	1.04	1.26	0.81	1.12	1.08
1980	1.92	1.52	1.54	1.85	0.97	1.77	1.60
	2.61	2.19	2.49	3.34	1.42	3.26	2.55
	2.92	2.85	2.95	1.78	1.75	1.58	2.31
	3.12	2.34	3.39	1.78	1.60	1.75	2.33
1981	3.34	2.64	2.49	1.93	1.14	1.93	2.25
	2.69	2.09	2.00	1.93	1.27	2.13	2.02
	2.44	1.92	1.95	1.37	1.39	1.51	1.76
	2.42	1.60	1.88	1.43	1.35	1.52	1.70
1982	3.31	1.61	1.88	1.59	0.95	1.78	1.85
	2.57	1.69	1.69	1.89	1.05	2.30	1.87
	2.19	1.65	1.69	1.39	1.10	1.65	1.61
	2.26	1.41	1.37	1.40	1.22	1.65	1.55

Source: CBS Market Information Bulletin, various issues. Summarized in Olsen (1984); table 2.

Table 9 Official Maize Consumer Prices; a) 1978-1982 (Ksh/kg)

Year	Quarter	Price	Year	Quarter	Price
1978	1	1.19	1981	1	1.45
	2	1.19		2	1.45
	3	1.19		3	1.64
	4	1.19		4	1.64
1979	1	1.00	1982	1	1.64
	2	0.98		2	1.64
	3	0.98		3	2.01
	4	1.10		4	2.01
1980	1	1.22			
	2	1.22			
	3	1.34			
	4	1.45			

Source: Olsen; 1984, table 6.

a) These prices differ from those presented in table 1 of this paper. Olsen used NCPB-selling prices which are not exactly equal to gazetted (official) consumer prices.

With respect to **seasonal** price variations in local markets, Olsen reached the conclusion that 'intervention by NPCB in the maize market has caused much more price variation than the 15% to 30% that one might expect on the basis of storage costs'. (p. 9/10). The evidence is taken from calculations, carried out in the well-known Booker/Githongo report (1984). In this report, a sample of 27 CBS local markets were studied (among other things) and seasonal price variations (defined as the difference between peak and trough levels) were computed for selected markets in different provinces (see Table 10).

Table 10 Seasonal Variability of Market Prices Kenya Maize, 1978-1982

	Nairobi	Central	Eastern	Nyanza	Rift Valley	Western	Total
Number of CBS Markets:	2	9	6	5	2	3	27
Ranges of Seasonal Variation, 1978-1982: (Particular Markets)	48%	52%	39%	40%	31%	100%	
	20%	51%	68%	39%	33%	49%	
		79%	18%	80%		50%	
		70%	53%	64%			
		60%	84%	50%			
		49%	36%				
		47%			Average from		
		72%			27 markets:		53%
Unweighted Average Range of Variation:	34%	53%	50%	55%	32%	66%	

Source: Olsen; 1984; table 4.

The data in table 10 show great inter- as well as intra-provincial seasonal price variations. There is no uniform pattern with respect to the range of variation. In only two cases, did the

seasonal variation remain in the 15% - 30% range, namely Burma market in Nairobi and Mwingi market in Kitui district.

A further, albeit somewhat premature conclusion which can be drawn from the data in this table is, that the two Nairobi markets seem to experience less seasonal variation in prices than many other markets in rural Kenya. This would support the idea that in urban areas, prices are more stable compared to those in the rural regions.

Ateng in his dissertation on 'a food policy for Kenya' (1984) analyzed, among other things, the movement of food prices in 4 rural markets for a period of 3,5 years (June 1977 - December 1980). The markets selected are: Karatina and Gakindu in Nyeri district, Central Province and Tala and Kikima in Machakos district, Eastern province. The former two markets were chosen to represent high potential agricultural areas and the latter two are in areas of marginal potential agricultural lands.

In contrast to other studies, Ateng widened the scope of commodities of which price developments were studied. In addition to maize; beans, potatoes, tomatoes and cabbages were also included.

His conclusion is of little surprise by now: all 5 foods considered, exhibited erratic price fluctuations during the (43-months) time period (Ateng, p. 100). Illustrations are: the price of beans was Ksh 1.87 kg in September 1977 at Karatina market. It rose to Ksh 3.50 kg in October of that year, falling again to Ksh 1.90 kg in November and rose to Ksh 2.53 kg in December of 1977. And at Tala market, the price of tomatoes increased from Ksh 1.40 kg in February 1978 to Ksh 3.08 kg the next month in that year. The large price differentials between markets and during a single season are a reflection of the variation in the availability of basic foods in the local marketing centres (Ateng, 1984, p. 101). Once more, this author puts the blame on the system of movement controls: 'the disintegrated marketing system resulting from the movement controls must account for a large measure of the price differentials', (Ateng, p. 120).

But Ateng reached another important conclusion. Prices of maize, beans and potatoes had a strong tendency to rise or fall *together* in each of the 43-months period considered (although the magnitude of price changes was not identical).
This finding has far-reaching consequences, for it implies that the possibilities of substituting one food commodity for another, as prices change, is reduced and that at time of rising food prices the costs of feeding the household will probably increase. The more so, if income sources remain fixed or rise at a lower rate.

However, Ateng might be too hasty in drawing such a conclusion. The average Machakos and Nyeri household food basket is surely much more diversified than just maize, beans and potatoes. It probably includes a range of other foodstuffs like vegetables, fruits, sugar, beverages and maybe some meat and dairy products. For more definite conclusions, a fuller coverage of the consumed foodstufs and their possible substitutions is needed.
Nevertheless, Ateng's finding points to the danger for an individual household's food security, when the price of crucial foods (like the ones examined by Ateng) undergoes substantial increases.

Finally, mention should be made of the **'Food Supply Monitoring Project' (1984),** which is a joint research effort of the Central Bureau of Statistics and the "Food Studies Group' of Oxford University. Crops analyzed are maize and beans. Prices for these foods provide the longest and most complete time series. One or two markets were selected from each province (except Coast Province) resulting in an analysis of 9 rual markets[3)] each for maize and beans during the period January 1977 to September 1985.

Certain (preliminary) outcomes of this research are available and of interest since they confirm other findings:

- seasonal patterns in (maize and beans) prices are clearly present and are related to harvest times,

- peak and lowest price levels in markets do not always occur in the same months of the year. They may vary within the same quarter of the year.

- over the period, a general upward trend in prices could be observed: in 1985 price levels were 2 or 3 times higher than they were in 1977.

- in times of national food shortages (1980; 1984) prices in rural markets also showed sharp increases. (Food Supply Monitoring Project; Seminar, 1985, p. 7).

Conclusion

The overall picture emerging from this literature review is evident. There is wide spread agreement among researchers that in Kenya:

= controlled prices of foods are not effective in the rural markets,

= consequently, a large part of the population is confronted with substantial food price variations during the year, resulting from fluctuations in the supply conditions in rural regions,

= price variations (both seasonal and regional) are aggravated by the government's policy of stringent food movement regulations, which impedes the balancing of surplus and deficit rural markets. The NCPB fails to play an arbitrage role in Kenya's maize marketing structure.

5. DISCUSSION AND POLICY RECOMMENDATIONS

When comparing the conclusions of the different studies that analysed rural market price movements, one is struck by the consensus view on one important policy issue. The substantial regional and seasonal food price variation in rural Kenya is thought to be aggravated (if not caused) by the governments' policy of stringent movement regulations.

International organisations (e.g. the World Bank) hold a similar view, as illustrated in the following notion: "Central Bureau of Statistics data[4)] from Kenya clearly demonstrate the common finding that price differences between surplus and deficit areas are larger during periods of more vigorous restriction of informal market traders. When traders are inhibited, prices are artificially depressed in surplus areas and inflated in deficit areas, simultaneously raising the profitibility of trade while placing restrictions on it" (World Bank; Schuh, 1986: 84).

Hence it is widely recommended that the government should lift food movement controls and allow private traders to participate in maize trading operations.

Clearly, *the implicit assumption* is, that without government movement controls, regional (and probably also seasonal) price variations will diminish. Private traders could then

manipulate stocks across seasons and regions and so adequately balance supply with demand throughout the country.

Lesser price variation is desirable because this improves the food security of, particularly, the low income consumers, who in the event of large price fluctuations may be priced out of the market at certain times of the year.

On paper, the recommendation of easing food movement controls has already been accepted by the Kenyan government. The National Food Policy Paper of 1981 stated: "Existing restrictions on inter-district and inter-regional movements of maize and other produce impede efficient nationwide distribution by private traders and add to marketing costs and consumer prices"..... The long term aim, as defined in the current Development Plan, is to simplify the marketing system by removing these articificial movement restrictions and employing the NCPB as a buyer and seller of last resort" (Government of Kenya; 1981, par. 4.49, p. 37).

In practice however, the government has been very reluctant to implement its own policy intentions. At present, private traders are still banned from maize marketing activities and movement controls continue to be in effect.

The question is why the government is so unwilling to introduce policy reform measures which clearly would serve its own stated policy objectives?

The explanation is probably more of a political than economic nature. Theoretically, there are arguments both against and in favour of movement controls on food.[5)]

Those who are against controls argue that:

a) uncontrolled prices in surplus areas are depressed and prices in deficit regions are inflated implying a disincentive for producers and a greater obstacle to maize consumers; (see World Bank's argument above)

b) transport costs are increased since only small quantities may legally be moved without an official permit. This eventually raises the price faced by consumers;

c) because movements controls lead to excessive price differentials, this may enable those who have obtained movement permits to realize windfall profits and make room for corruption in the state marketing organisation.

Arguments in favour of continued movement controls:

a) the government must keep control over the food security situation of the population;

b) the government should prevent speculative and destabilizing activities on the part of private traders and also prevent possible domination of food trade by non-indigenous Kenyans (i.e. Asians);

c) the government should not allow the increased price fluctuations caused by the above mentioned fore-seen developments.

Although the economic arguments for easing the maize movements regulations are strong, political considerations apparently are given more weight. Fear of shortages in food supply as a (supposed) result of private traders' participation in marketing and the possible domination of trade by non-indigenous Kenyans are probably among the main political objections to a 'free' maize marketing system.

Apart from the governments' motivations for not decontrolling the maize market, there is another topic in the ongoing discussion which the present writer would like to pay attention to.

It is surprising to see that researchers and also international donors, such as the World Bank, uncritically accept the 'automatic' advantages resulting from a free trade system in maize. However, it remains to be seen whether allowing private traders to operate in maize marketing will indeed contribute to a better balancing of supply and demand nationwide and thus lead to less fluctuating food prices in rural Kenya.

Maize cultivation in kenya is still predominantly a rainfed-type of agriculture and due to the wide diversity of ecological conditions, characteristic of the country, rainfall varies greatly between regions producing wide variations in regional yields.
Moreover, in a given area rainfall tends to vary, sometimes greatly, from year to year. The resulting yearly fluctuations in local supply may even turn a surplus area into a deficit area the following year.
Thus, the erratic changes of local maize output from one year to the other, are the underlying cause of (short term) large fluctuations of prices. These cannot be eliminated by advocating (in a dogmatic way) the 'blessings of the free functioning of the market forces'.
Basically, it is an increase in the productivity of the land (higher yields per hectare), still relatively low, particularly in the small scale sector, that should be the focus of attention.
In the end, the interests of food consumers (and producers) are best served through high and stable production levels and less dependency upon the whims of climatical conditions.

FOOTNOTES

1)New information is now becoming available through 2 recent surveys:
- the CBS Rural Household Budget Survey 1981/82 and
- the FNPU/CBS Kenya Urban Household Budget Survey 1982/83.
Unfortunately, at the time of writing, end-results of these surveys were not yet available.

2)The seasonality index was defined as the standard deviation of the trend adjusted and seasonally fitted (13 weeks moving average) time series.

3)Markets covered: Kiambu; Limuru; Engineer (Central Province), Ndundori; Engare (Rift Valley Province), Bondo (Nyanza Province), Mumias; Luanda (Western Province) and Mwendantu (Eastern Province).

4)Unfortunately, it is not indicated to which C.B.S. data Schuh is referring.

5)For a more elaborate discussion of the pros and cons of food movement regulations see Maritim, 1982; Peterson, 1986 and Clift, 1986.

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ANNEX I

SURVEY LIMITATIONS

IRS I data refer exclusively to small-holders. This is justified by the fact that this population category respresents such a large proportion (around 80%) of Kenya's total population. But there are also other population groups whose food consumption may give reason for serious concern. These groups include: pastoralists, the landless, migrants to dry lands, squatters and the unemployed or underemployed urban poor (see UNICEF/CBS; 1984, section 1, p. 65). IRS I data did not cover those smallholders living in the Northeastern Province and there is some evidence that the Rift Valley Province may not have been adequately represented (McCarthy and Mwangi; 1982).

Furthermore, the sample size for IRS I is considered adequate only for generalisations at the province or agro-ecological zone level, but not at the district level. The high level of aggregation (provinces) may have smoothed out important differences in food consumption patterns observable at the district level.

Another limitation of IRS I is that the survey *did not record actual amounts of foods consumed* by the households, but instead assessed the value of 10 pre-listed food items consumed from own production and in addition the value of 8 pre-listed purchased food *groups*. As to the latter, food researchers had to disaggregate these food groups and estimate the share of the individual food commodity within each group presented.

But by far the most important reason for caution, lies in the fact that IRS I gives *all food consumption data in value terms*. Information on the *prices paid for various foods* was not collected. This is understandable since IRS I was never designed specifically as a food consumption survey, but was mainly organised with the aim of collecting data on farm

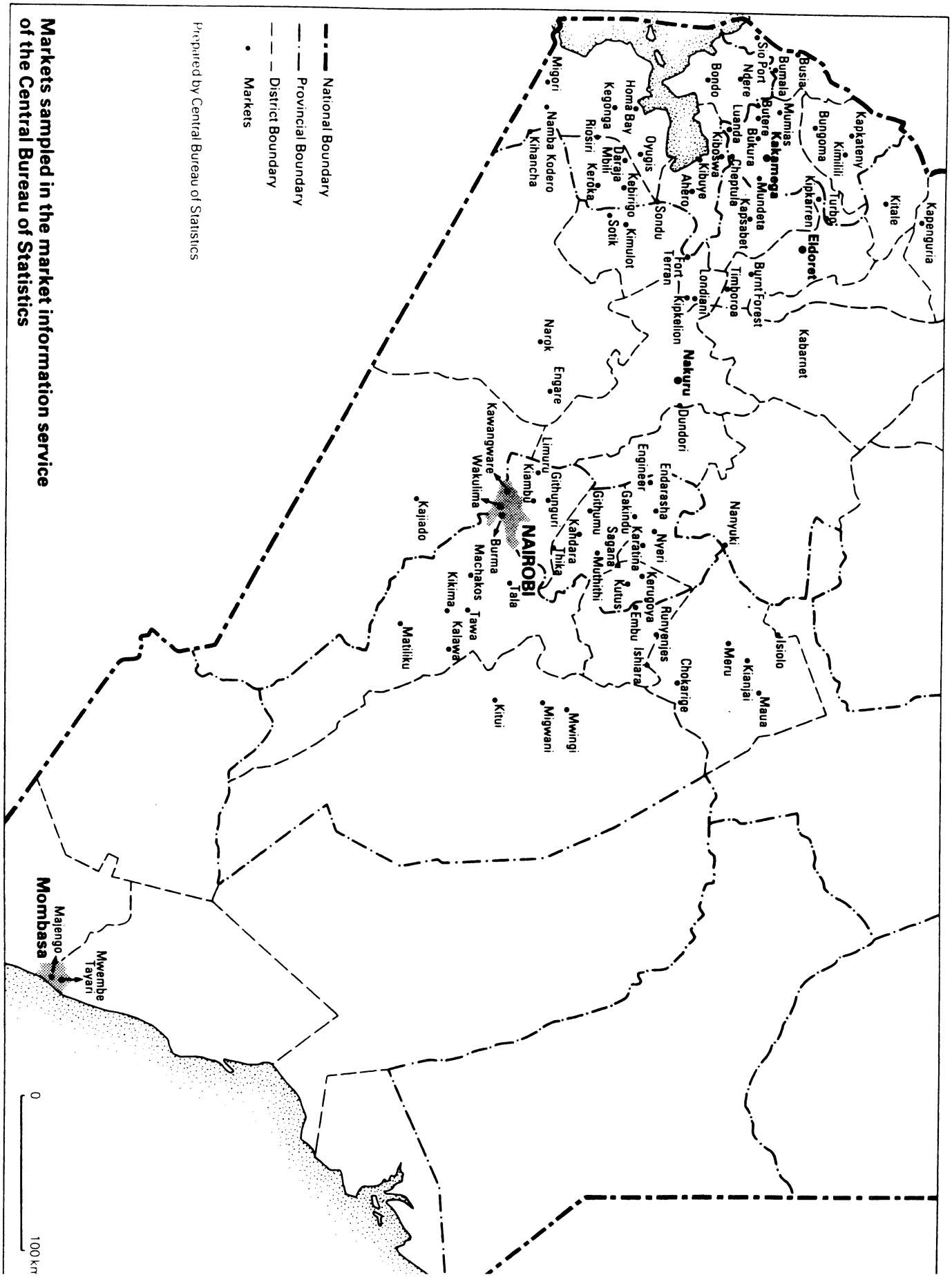
production, input use and crop disposal for agricultural planning purposes (Greer and Thorbecke, 1984).

Thus, in order to assess the quantities of foods consumed (and subsequently calculate calorie content), the given 'value of household consumption' for different foods, provided by IRS I, had to be divided by the prices of the foods concerned. The choice of prices, used in the calculations, differs however from one researcher to the other. Some used 'average district prices' derived from selling prices in local markets, others assumed official gazetted consumer food prices. Some made assumptions with respect to inter-provincial price differences, others did not.

However, *the choice of food prices* used in the calculations, in *the determining factor* in the ultimate conclusions drawn on the quantities of foods consumed by the households and therefore on estimates of food poverty in Kenya.

The Urban Food Purchasing Survey, 1977 was limited to households with incomes below Ksh 2500 per month, that is, to the lower and middle income classes. These groups represent about 85% of the urban population in Kenya (Shah and Frohberg, 1980, p. 4). Basic data is the 'value of food consumption' for 4 income classes in each of the 4 urban centra (Nairobi, Mombasa, Nakuru and Kisumu). As in the case of the IRS I survey, there is no information on prices of foods purchased. Shah and Frohberg used the 1977 retail price (gazetted) in their calculations. Under normal supply conditions, it is indeed likely that the official consumer food prices are effective in the urban centra and therefore may represent actual prices that urban consumers paid for various foods. But this remains an assumption, prices really paid by consumers were not provided by the survey.

ANNEX II


Markets sampled in the market information service of the Central Bureau of Statistics
National Boundary
Provincial Boundary
District Boundary
Markets
Prepared by Central Bureau of Statistics
Busia
Bumala
Mumias
Sio Port
Ngere
Bondo
Luanda
Kibos
Kisumu
Kibuye
Migori
Namba Kodero
Kihancha
Homa Bay
Kegonga
Mbita
Riosiri
Kendu
Oyugis
Kebirigo
Kimulot
Sotik
Sondu
Ahero
Kericho
Kakamega
Mundeta
Butere
Bukura
Cheptulu
Kapsabet
Kapenguria
Kitale
Kapkateny
Kimilili
Bungoma
Turbo
Kipkaren
Eldoret
Timboroa
Burnt Forest
Londiani
Fort Terran
Kipkelion
Nakuru
Kabarnet
Narok
Engare
Dundori
Limuru
Kiambu
Kawangware
Wakulima
Githunguri
Thika
Kahdara
Githumu
Engineer
Gakindu
Endarasha
Nyeri
Karatina
Sagana
Kutus
Muthithi
Kerugoya
Embu
Runyenjes
Nanyuki
Isiolo
Meru
Kianjai
Maua
Chokarige
Ishiara
NAIROBI
Tala
Kajiado
Burma
Machakos
Kikima
Tawa
Kalawa
Matiliku
Kitui
Migwani
Mwingi
Majengo
Mombasa
Mwembe Tayari
0
100 km

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