Food and Nutrition Studies Programme

Agricultural Pricing Policy in Kenya: Scope and Impact

Henk A. Meilink

AGRICULTURAL PRICING POLICY IN KENYA: SCOPE AND IMPACT

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INTRODUCTION

There are few countries in the world where governments do not, in one way or another, intervene in the price-setting mechanism of agricultural products.

Price intervention may take different forms. Export crops may be taxed, food imports may be subsidized or, alternatively, inputs used in agriculture may be taxed or subsidized. Margins in trading or processing of agricultural produce may equally be subject to governmental control. The most crucial form of intervention however is straightforward setting of producer and consumer price levels. In practice, to arrive at the desired agricultural price levels, governments usually apply a combination of different control measures.

The rationale behind intervention practices is, of course, closely related to government development objectives. A government may wish to stabilize prices for export crop farmers by shielding them against excessive fluctuations in the world market. Or alternatively may wish to tax export crops in order to generate revenues for investment purposes in other sectors (industry) of the economy. Income redistribution considerations may be another justification for (price) intervention: producer prices may be supported in order to raise farm incomes and rural welfare or alternatively consumer (food) prices may be kept low with the aim of improving real incomes of the (urban) poor.

Producer prices may also be raised to provide incentives for enlarged marketed production of certain crops or products. Furthermore governments may wish to curb or eliminate supposed exploitative activities by middlemen and private traders through price-setting measures.

The effects of direct price-setting, subsidies and taxes may have far-reaching income implications for different socio-economic groups in the country such as producers, processors, traders, consumers and the government itself. Likewise, the structure and growth rate of the agricultural sector may be strongly affected by pricing policies. Moreover

other policies, in addition to agricultural pricing policies, may equally have a bearing on what happens in agriculture. For example, an over-valued exchange rate holds down the prices received by export crop producers in terms of the local currency, and may therefore hamper incentives to grow export crops.

Industrial policy, in particular the widely pursued "import-substitution strategy", has in many cases also adversely affected agriculture: industrial protection (tariffs and import restrictions) afforded to local industries have often induced higher prices for locally manufactured goods than otherwise (without excessive protection) would have been the case. Consequently there has been a tendency for the "terms of trade" to move against agriculture.

In analysing the overall impact of different forms of pricing policies, the (few) available studies are surprisingly similar in their negative conclusions. The following quotation puts it rather strongly:

> "There is substantial support for the view that pricing policies are a root cause of the food and agricultural crisis in Africa" (World Bank; 1981a)

Agricultural pricing policies in Kenya have not been the subject of extensive research (1). This is in contrast to marketing problems, especially maize marketing (2), which have been discussed in a stream of studies, and by numerous commissions and consultancy missions.

By and large, problems of (maize) marketing are well known and also recognized in Kenya's official policy documents.

This paper is concerned with agricultural pricing policies in Kenya. It reviews the findings of available studies and reports which are thought to be of relevance to policy makers. The discussion is subdivided into the following sections:

Section 1 addresses the institutional framework and the criteria used in the price-setting procedures. Furthermore, the scope and the objectives of Kenya's agricultural pricing policies are discussed.

Section 2 examines what pricing policies 'have done to agriculture'. It describes to what extent the agricultural sector has been taxed or alternatively protected as a result of the administratively fixed pricing method. Subsequently the evolution of the 'terms of trade' for agriculture is discussed. This is an important indicator of the economic position of the sector in relation to the other sectors of the economy.

Section 3 concentrates on the effects of pricing policies on the (marketed) supply of agricultural production and the importance of 'relative prices' in the production decisions of Kenyan farmers.

1. PRICE INTERVENTION IN KENYA

1.1. Scope of pricing policies.

Kenya has a long tradition, stemming from the colonial period, of price control and market regulations in the agricultural sector. The colonial government supported the large farms of the white settlers with a variety of policy measures, in particular during the difficult years of the 1930s. The state provided agricultural services, subsidized transport and regulated markets for European farmers. Initially, domestic marketing boards were set up with the aim of operating a monopolistic pricing policy in favour of the large farmers (Heyer, et. al., 1976). In the 1930s the Wheat Board was established, followed by the Kenya Meat Commission, the Maize Board, and the Kenya Dairy Board which were set up in the 1950s.

Today's involvement of marketing boards and other statutory authorities both in the food and export sector of agriculture, can be traced back to those early times. Boards vary in regulatory and marketing functions, depending on the government's objectives with the crop or product concerned. Apart from marketing tasks, some boards (coffee, tea, pyrethrum) also undertake development activities by supplying inputs, extension services and conducting agricultural research. Furthermore, the government intervenes in marketing in an indirect way through licensing of traders and producers, controls of movement of produce (notably maize) across district and provincial borders, and storage and quality control.

But the most critical type of intervention is straightforward price determination. In general there are three types of price-setting:
a) - fixing producer prices
b) - setting consumer (retail) price and
c) - input subsidies, export levies or dispensations.
(a) and (b) represent forms of direct price-setting and (c) is an indirect type of price formation control.

Although inputs have been subsidized occasionally and export crops are being taxed to some extent, producer and consumer price determination are the major forms of price intervention in Kenya.

Producer prices are set by the government for a range of 'scheduled crops and animal products', many of which fall into the category of food items. These include: maize, wheat, paddy, sugar cane, beans, milk, beef, cotton, tea (in so far as supplied to the internal market), cashew nuts, sunflower and pyrethrum. For some crops, maize for example, margins for processors (millers), distributors and traders are likewise set by the government.

Producer prices for fruits, vegetables and potatoes are determined by supply and demand forces without government regulation. Tea, coffee and sisal prices follow international market prices. Producers receive export prices minus marketing costs, levies and taxes. Barley and tobacco prices to producers are set by Kenya Breweries and British American Tobacco (BAT) respectively, who have obtained a monopoly position in these markets.

Under the provisions of the "Agricultural Act", the Minister for Agriculture is required to review annually the prices of scheduled crops and animal products before December 15th. The analytical work for the review is carried out by the "Development Planning Division" (DPD) of the Ministry of Agriculture and Livestock Development, but as the review proceeds, participation is broadened to involve the major ministries concerned and eventually the Cabinet. The DPD prepares detailed reviews of each crop and livestock product covering the present domestic supply situation, local and world market prospects and price-related policy issues. These reviews are discussed by a "Price Review Committee" comprising respresentatives from the Ministry of Agriculture and Livestock Dev., the Ministry of Finance and Planning and the Office of the President. The committee determines the producer prices to be recommended. These are incorporated in a formal price review paper drafted by the DPD. Once approved by the Price Review Committee, this paper is submitted to a group of Permanent Secretaries drawn from the same

ministries as the committee. The P.S's determine the producer price recommendations to be submitted to the Cabinet for approval. The result is a uniform price throughout the country, without seasonal or regional differentiation.

As regards consumer prices, price recommendations are formulated inter-ministerially and subsequently gazetted by the Price Control Division of the Ministry of Finance and Planning for a range of food commodities (maize, milk, beef, bread, sugar, coffee, tea and edible oils) and a number of other consumer goods as well.

These prices are derived from the basic producer prices and, for some products (e.g. maize and sugar) the processing and trade margins and transport tariffs are equally fixed by the ministry.

For cereals, consumer prices are not fixed at a uniform level for the whole country. There are eight administrative zones with different price levels depending on transportation costs (taking Eldoret as the base zone) and the trade margin allowed to the National Cereals and Produce Board or appointed traders. Observance of these price levels is supervised by price inspectors of the Control Division, who have been authorized to prosecute any price offenders.

In summary: the setting of producer and consumer prices are the major instruments for the Kenyan government through which pricing policy objectives are being pursued. Commodities for which prices are fixed are typically within the food items category.

1.2. Objectives of pricing policies

The government's aim of agricultural pricing policies are the following:
For producers:

- to reduce erratic price fluctuations between seasons and over the years and thus stabilize farmers' incomes;
- to provide price incentives to increase agricultural output;
- to assure reliable and remunerative outlets to producers and prevent exploitation by intermediaries in the market.

For consumers:

- to increase market efficiency and to reduce marketing costs in order to maintain reasonable prices to consumers and to prevent drastic price fluctuations and inflationary tendencies within the economy;
- to prevent consumers' exploitation by distributors in the form of excessive profit margins;
- to ensure equitable supply and distribution of commodities to all regions of the country.

It is evident that pricing policies cannot serve the interests of different socio-economic groups to the same extent. Moreover, policy objectives are conflicting (e.g. improving prices to producers and at the same time maintaining fair, that is low, prices of food to consumers). Therefore, the outcome of political price-setting has different implications for such groups as producers, processors, distributors, traders and consumers (as well as for the government in case of marketing or export losses).

Setting producer prices is a complex and delicate exercise. Not only because conflicting interests are involved, but also because marketed supplies are in practice highly unpredictable due to factors outside the scope of pricing policies as such. The supply of a crop or product is narrowly associated with a range of factors over and above its fixed price level: public and private investment in the agricultural sector, storage facilities, inputs provision, agricultural technology research, land policy, credit arrangements, marketing systems, timely payment and, not in the least, climatical conditions. All these are contributing factors to the incentives (or disincentives) of agricultural production. All interact with one another and neither (including the price) is a completely autonomous variable (apart from the rainfall, of course).

Maize is a good example: at the time of price determination, it is uncertain whether the set price level corresponds ex post to a situation of national surplus, or national deficit or may turn out to be the domestically equilibrium price level which balances national supply and demand of maize. Since the amount of marketed maize is heavily influenced by rainfall conditions, there is a great deal of uncertainty in price-setting

considerations. Moreover, when it is decided to use parity prices as the main criterion, (see next paragraph), there may be a wide range of possible producer price levels (between the limits set by import- and export parity) because of the high costs of transporting and handling of maize by the marketing board.

1.3. Criteria used in price-setting

A critical aspect of pricing policy is the criterion used in determining the level of producer and subsequent consumer prices.

The Kenyan government applies two major criteria:
-- costs of production
-- import and export parity prices

The government makes less and less use of the "costs of production" criterion and takes increasingly into account import and export parity prices when setting agricultural producer prices. For the majority of export crops, domestic producer prices automatically approximate export parity and for food crops, parity pricing is now an accepted part of national policy.

The costs of production criterion. There is no such thing as a single 'cost of production' for a particular crop or product given the wide variation in ecology from one area to the other. Moreover, skills and use of inputs are widely different among individual farmers which makes the calculation of average costs of production of little relevance to pricing policy. Another disadvantage of setting the producer price according to some 'average costs of production estimate' is the lack of price differentiation between crops which are produced efficiently and those which could be better imported when 'comparative advantage' considerations are taken into account.

International parity prices are relevant for commodities entering international trade flows (imports and exports). In Kenya, international parity prices are increasingly used as guidelines for setting domestic producer

prices. Using parity prices may indeed be appropriate for such commodities as maize, wheat, rice and meat all of which are (to different degrees) involved in international trade, through either exports or imports.

Parity prices as a basis for producer price-setting is justifiable on efficiency grounds (resource allocation). They measure the opportunity costs of a country's agricultural exports and imports. These parity prices (or world market prices) thus serve as a reference point, through which the most efficient allocation of national resources (land and labour, in particular) can be realized. However, three critical remarks should be made here.

Firstly, prices of agricultural produce in the world market are not 'free market' prices, but are themselves the outcome of highly interventionist and protective policies by western countries' governments (U.S.A. and the E.E.C., notably). Why should such a 'distorted price level' be taken as a reference point for the 'efficient allocation' of resources in developing countries.

Secondly, even if the usual static type of comparative advantage analysis indicates a net gain, to be captured through participation in international trade, there is no assurance that this will remain so in the long run. The dynamics of international trade are such that international prices change (fluctuate) rapidly, leading to a change in the 'comparative advantage' position of the country at some point in the future. This need not necessarily be so, but in any event with the use of parity prices, an element of dependency of outside markets and prices is introduced which makes the country more vulnerable and may turn national agricultural pricing policies into a by-product of international developments.

Thirdly, a government may wish to give less weight to the efficiency argument, and prefer a high rate of self-sufficiency in the production of its major foodstuffs. Evidently, a country need not be self-sufficient in all crops and products it consumes, but the shortcoming of the parity pricing method is that it leaves little room for policy considerations other than the efficiency principle. In practice, the Kenyan government does,

in some cases, favour other objectives. In recent years, considerations of self-sufficiency in maize, for example, have urged the government to set producer prices independent of world market prices.

Nevertheless, it is clear that world market prices have become increasingly important as a criterion in the Kenyan price-setting process. This will be discussed in more detail in section 2.

2. PROTECTION OF KENYAN AGRICULTURE AND THE 'TERMS OF TRADE'

Like many other developing countries, Kenya has pursued policies aiming at rapid economic growth through highly protected (import substitution) industrialization. In this development strategy, agriculture plays the role of the supplier of resources required for investments in infrastructure and industrial expansion. Research has shown that in Kenya there was indeed a large net capital outflow from agriculture in the 1964-1977 period (Sharpley, 1979). However, these agricultural surplusses have not been extracted from agriculture through 'expropriation' policies. Much of the net outflow was voluntarily transfered e.g. through saving deposits, reflecting the fact that private returns on investment are lower in agriculture compared to non-agricultural sectors of the economy (Sharpley, 1979). Consequently, commonly applied practices of extracting surplusses in agriculture by means of export taxes or accumulating marketing board reserves, are not characteristic for Kenya: export crop farmers receive export prices minus deductions for transport and handling. Levies and taxes for export crops do exist (e.g. coffee and tea) but cannot be considered a major government revenue source. And some of the larger marketing boards have run into big financial losses in their marketing operations (NCPB e.g.). Having noted this, the question remains what government pricing policies have done to agriculture. Here, economic theory provides two analytical instruments: the protection coefficient and the domestic terms of trade index.

2.1 Nominal protection coefficient

The degree of protection is usually measured by the 'nominal protection coefficient '(NPC) which is the ratio of domestic prices to international prices. When NPC=1, there is no subsidy for the commodity under review; a NPC>1, indicates a subsidy because farmers would have received lower prices in case of international trade of the commodity, and alternatively a NPC<1 means an implicit tax since farmers could have gained higher prices if their crops were traded internationally. Thus the use of NPC's makes sense in a situation where the commodity is traded in international markets (exports or imports).

However, this ratio represents a rather simple measurement of taxation or protection of the agricultural sector since only prices of output are taken into account. Another, more accurate measurement is the 'effective protection coefficient' (EPC), which also includes taxes or subsidies on the inputs used in the production of commodities (3). But often the value of used inputs in relation to output value is very small (as is the case in Kenya), resulting in insignificant differences between NPC's and EPC's. Therefore, in practice, NPC's are calculated as an estimate of taxation /protection of agricultural produce.

Thus: $NPC = \dfrac{P_i^d}{P_i^i}$, where

NPC = nominal protection coefficient of commodity i,

P_i^d = domestic price of commodity i (at border),

P_i^i = international price of commodity i.

For the numerator, the producer price is usually taken. The argument is that differences between producer prices and domestic border prices are unlikely to be large. However, in Kenya processing costs, transport, handling and marketing margins constitute a substantial part of the border equivalent price. Schluter (1984) calculated that in the case of maize 35% of the domestic price f.o.b. Mombasa is taken up by transport and handling costs from farm to port. This point is also mentioned by Sharpley (1980) and linked to price-setting problems:

> "Because of unusually steep railway and port charges in Kenya, there is often a wide gap between the higher import parity price relevant for commodities in which Kenya is nearly self-sufficient, and the lower export parity price more relevant for an exportable surplus. In this way, a parity pricing policy offers considerable flexibility when setting producer prices, for Kenyan prices have to be severely distorted to be outside the wide range between import and export parity prices. However, even if producer prices are within this wide range, substantial financial losses or export subsidies still may be incurred if the country suddenly moves from a position of self-sufficiency to one of exportable surplus". (p. 15).

In Kenya's case, therefore, instead of the producer price at the farm gate, it would be more correct to use the border equivalent price as domestic price in the ratio. Furthermore, since the Kenyan shilling is overvalued vis-à-vis foreign currencies, a shadow (or real) exchange rate should, strictly speaking, be introduced in the calculations to make comparisons more meaningful. A third problem in calculating the NPC for a commodity, is the importance of freight costs (to Mombasa) in the parity price, and the question whether to use freight costs from U.S.A. suppliers or alternatively from EEC markets or some other place (e.g. Gulf ports). Evidently, these statistical choices, which have to be made when calculating NPC's, can influence the value of the ratio. In practice, therefore, NPC's can vary, depending on the calculation method employed.

The number of studies on the extent of protection or taxation in Kenyan agriculture is very limited. Sharpley's study (1980) however, provides some very useful information on trends in domestic and world parity prices for a number of commodities in the 1972 - 78 period. NPC's calculations in the following tables are derived from these data.

Table 1. Comparison of domestic and world border prices for Maize, 1972/78. (Ksh, per ton)

	1972	1973	1974	1975	1976	1977	1978
Domestic border price (fob Mombasa)	576	609	812	1,036	1,359	1,462	1,525
World border price (U.S. no. 2 Yellow cif Mombasa)	529	883	1,143	1,147	1,080	898	895
NPC for maize	1.09	0.69	0.71	0.90	1.26	1.63	1.70

Table 2. Comparison of domestic and world border prices for Wheat, 1972/78 (Ksh, per ton)

	1972	1973	1974	1975	1976	1977	1978
Domestic border price (fob Mombasa)	712	779	1,062	1,336	1,537	1,665	1,788
World border price (U.S. No. 2 hard Red Winter Wheat, cif M)	631	1,165	1,500	1,411	1,275	977	1,125
NPC for wheat	1.13	0.67	0.71	0.95	1.20	1.70	1.59

Table 3. Comparison of domestic and world border prices for Rice, 1972/78 (Ksh, per ton)

	1972	1973	1974	1975	1976	1977	1978
Domestic border price (basmati fob Mombasa)	1,980	2,460	3,558	3,486	4,566	4,613	4,637
World border price (Thai 5% brokens cif Mombasa)	1,178	2,567	4,021	3,110	2,194	2,273	2,827
NPC for rice	1.68	0.96	0.88	1.12	2.08	2.03	1.64

Table 4. Comparison of domestic and world border prices for Sugar, 1972/78 (Ksh, per ton)

	1972	1973	1974	1975	1976	1977	1978
Domestic border price (KNTC, white sugar fob Mombasa)	1,344	1,344	1,470	2,160	2,630	3,168	3,180
World border price (ISA raw sugar, cif Caribbean ports)	1,153	1,477	4,703	3,731	2,123	1,429	1,273
NPC for sugar	1.16	0.92	0.31	0.58	1.24	2.22	2.50

Source: tables 1-4 Sharpley; 1980.

From these data it is apparent that for maize, wheat, rice and sugar, domestic prices were lagging behind (sometimes rapid) increases in world price levels until 1975. After 1975, however, declining world prices were not reflected in (lower) domestic price levels, and thus resulted in (heavy) protection of domestic maize, wheat, rice and sugar producers.

For maize it was possible to up-date the NPC calculations covering the period 1979-1983 (see Table 5)

Table 5. Comparison of domestic and world border prices for Maize, 1979-1983 (Ksh/per ton)

	1979	1980	1981	1982	1983
Domestic border price (fob, Mombassa)	1,312	1,565	1,741	2,095	2,470
World border price (U.S. No. 2 Yellow cif, Mobassa)	1,241	1,306	1,683	1,671	2,103
NPC for maize	1.06	1.20	1.03	1.25	1.17

Source: Calculated from Olsen; 1984, table 14.

The conclusion is that in recent years, the degree of protection of maize farmers has diminished. Domestic prices were brought more in line with international parity prices.

2.2. Domestic terms of trade

This is the relation of producer prices to prices of agricultural inputs and consumer goods, mostly bought from the urban/industrial sector (or imported). The ratio measures the trend in real purchasing power of farmers vis-à-vis the rest of the economy (barter terms of trade). The evolution of the 'barter terms of trade' is considered a fairly accurate

measure of the relative position of farmers and is therefore used in Kenya's official statistics.

Table 6 shows gross producer prices for the major agricultural commodities in the 1979-1983 period. The indices of producer price trends computed from this table, are presented in table 6.

Table 6. Gross producer prices for major agricultural commodities, 1979-83 (Ksh, per 100 kg)

	1979	1980	1981	1982	1983
Coffee	2,815	2,634	2,258	2,780	3,488
Tea	1,357	1,591	1,774	1,941	2,184
Sisal	361	414	412	503	625
Sugar cane (per ton)	133	133	145	170	227
Pyrethrum (per kg extract equivalent)	1,006	1,200	1,150	1,150	1,150
Seed cotton	328	331	341	352	369
Maize	77	95	100	107	162
Wheat	144	164	167	188	222
Rice paddy	151	151	150	150	178
Beef (3rd grade)	689	795	960	1,100	1,176
Bacon pigs	778	859	975	1,373	2,109
Milk (per 100 litre)	132	146	186	215	240

Source: GOK, 1984.

Table 7. Indices of gross producer prices for major agricultural commodities 1979-1983; (1979 = base year)

	1979	1980	1981	1982	1983
Coffee	100	93.5	80.2	98.7	123.9
Tea	100	117.2	130.7	143.0	160.9
Sisal	100	114.7	114.1	139.3	173.1
Sugar cane	100	100	109.0	127.8	170.7
Pyrethrum	100	119.3	114.3	114.3	114.3
Seed cotton	100	100.9	104.0	107.3	112.5
Maize	100	123.4	129.9	139.0	210.4
Wheat	100	113.9	115.9	130.5	154.2
Rice paddy	100	100	99.3	99.3	117.9
Beef 3rd grade	100	115.4	139.3	159.7	170.7
Bacon pigs	100	110.4	125.3	176.5	271.0
Milk	100	110.6	140.9	162.9	181.8

Source: table 6.

In analysing table 7, a distinction should be made between export crop price movements and domestic (food) crop price increases. The former are not subject to government pricing policy since prices are determined by world market conditions. Domestic crop price movements are a reflection of Kenyan pricing policy and do not feature unfavorably in the 1979-83 period. Producer price increases for maize, wheat, beef, sugar, bacon, pigs and milk were, in some cases, substantial.

This conclusion is confirmed by the trend movement of the general index of agricultural prices received in table 8, which was calculated by the Central Bureau of Statistics.

However, the other determinant of agriculture's term of trade, i.e. 'indices of prices paid by farmers', shows still higher price increases. This adversely influences the purchasing power of the agricultural sector. The trend in the terms of trade continues to be detrimental to agriculture (with the exception of a slight improvement in 1983).

Table 8. Terms of trade indices for agriculture, 1979-1983
(1976 = base year)

	1979	1980	1981	1982	1983
Prices received					
Total crops	116.4	122.3	129.7	138.0	152.7
Domestic	115.9	130.7	141.3	147.8	159.3
Export	116.8	117.4	112.3	134.6	158.1
Livestock and products	135.6	140.6	151.2	166.7	178.6
GENERAL INDEX OF AGRI-CULTURAL PRICES	123.1	133.1	145.8	159.5	183.4
Prices paid					
Purchased inputs	124.5	137.9	153.3	182.1	192.6
Index of purchased consumer goods - rural areas	130.1	146.1	169.9	205.5	234.4
INDICES OF PRICES PAID	128.7	144.1	165.8	199.7	224.0
AGRICULTURAL SECTOR TERMS OF TRADE	95.6	92.4	87.9	80.0	81.9

Source: GOK, 1984: 113.

The major cause for the worsening position of farmers is to be found in the rapidly rising index for purchased consumer goods and, to a lesser extent, in the index for purchased agricultural inputs (see table 7). Apparently, it is not pricing policies with regard to agriculture as such, that should be blamed for deteriorated terms of trade, but rather the policy of heavy industrial protection, allowing prices of domestically produced consumer goods to rise substantially above levels of their (otherwise) imported equivalents. Hopcraft (1979) concluded that 'virtually everything the farmer buys that is locally manufactured, involves a large transfer element, taxing the mass of farmers and subsidising a few protected manufacturers' (see Ruigu, 1982, p. 97).

The tendency for the terms of trade to turn against agriculture is a constraint to the government's objective of raising incentives and incomes in the rural areas, and the seriousness of the matter is well recognized in Kenya's official documents and in various research papers. Agriculture cannot be expected to fulfil its difficult task of providing food (and export crops) for a fast growing population while it persistently loses the economic strength to do so.

3. AGRICULTURAL PRODUCTION AND (RELATIVE) PRICES

3.1. The importance of prices

When discussing pricing policy, one should keep in mind that prices are only one (though an important) factor affecting production levels. They interact with a range of other variables which farmers take into account in their production decisions. These include: input availability, the operation of the marketing system, land and labour constraints, applied technology, credit, extension services, storage facilities, timely payment for deliveries and ecological and climatical conditions. Thus, correct price incentives are a necessary, but not a sufficient condition for attaining an output mix (food versus export crops) in accordance with national objectives.

Nevertheless, experience in Kenya indicates that farmers do use (relative) prices in their production decisions and that they respond quickly to changes in prices by adjusting their land use so as to employ land and labour in a more profitable way (Mwangi; 1981).

Two examples are often mentioned to illustrate this reaction: in Nyanza and Western Provinces, higher prices of sugar relative to maize in 1979 caused a shift to sugar production and secondly, higher prices of maize and milk in 1976/77 could be associated with decreased pyrethrum production levels.

Recent research on export crops of nine African countries, including Kenya, indicates that "there is considerable evidence for positive aggregate supply responses of export crops to changes in aggregate real producer prices" ..... and " estimates show that the relative price is an important determinant of overall agricultural output, particularly for Ghana and Kenya" (Bond; 1983, p. 722).

For policy purposes, knowledge about the degree of responsiveness is crucial. This is usually measured by the price elasticity of supply coefficient which expresses the percentage change in production associated with a percentage change in the price level. Price elasticities of supply are a resultant of two different types of elasticities: a) acreage and b)

yield elasticity coefficients. This is because farmers respond to price changes in different ways. They may react by altering the acreage planted or alternatively apply an improved technology (seeds/fertilizer) on the same amount of land, thereby increasing yields per hectare. In practice, output growth is caused by a combination of these two types of responses.

To gain more insight into the role of prices in explaining production volumes, a crop by crop discussion would be the most appropriate approach. Since producer price policy in Kenya, is mainly concerned with food crops, the remainder of this section will focus on two major foodstuffs in Kenya: maize and wheat. These crops account for as much as 85% of total cereal production in the country and are of central importance in pricing policy discussions.

3.2. Maize: production and pricing

This crop is Kenya's staple food and is produced on large-scale farms as well as by the vast majority of smallholders. Production levels varied between 1.1 million and 2.1 million tons in the 1970-1980 period (5).
Rainfall is an important determinant of fluctuations in yearly output levels. Of total production, the small farmers' share is estimated at 70% and large farmers contribute around 30% in an average year.

However, the share of large farms in total marketed output is much higher, in comparison with smallholders; 75% and 25% respectively. Sales to the maize marketing board (NCPB) cover about 25% of total production. Of total NCPB purchases, large farms provide by far the larger part. These maize purchases by NCPB showed great fluctuations in the 1971-1981 period, varying between 205,000 and almost 700,000 tons (table 9).

Table 9   Marketed Maize (NCPB purchases); 1970-1983, '000 tons.

Year	Purchases	Year	Purchases
1970/71	240.1	1977/78	249.2
1971/72	379.0	1978/79	234.0
1972/73	457.4	1979/80	205.0
1973/74	335.4	1980/81	392.0
1974/75	450.8	1981/82	696.0
1975/76	555.7	1982/83	630.0
1976/77	535.0		.

Source: GOK, Statistical Abstracts and Economic Surveys.

Available studies on maize supply elasticities reveal positive coefficients. A comprehensive study by E.C.A. (1983) provides a detailed analysis of farmers' response to price changes, applying different respons models for maize, wheat and rice.

In the case of maize, results indicate that in the past farmers have been responsive to producer prices with a price elasticity of supply of 0.4153 for the period 1969-1981 (E.C.A.; 1983, p. 24). Other available estimates of the supply responsiveness to changed maize producer prices are listed in table 10.

Table 10. Price elasticities of supply for maize in Kenya.

Reference	Year/Period	Elasticity coefficient
1. FAO/UNDP (1978)	1977	0.814 (smallholders)
2. Maitha (1974)	1954-1969	0.951 (large farms)
3. McLoughlin (1977)	1960-1974	0.22 (large farms)
4. Lutz/Scandizzo(1980)	n.s.	0.33/0.66 (n.s.)
5. Ministry of Agric.(n.s.)	n.s.	0.7 (n.s.)
6. Koester	n.s.	0.8 (n.s.)
7. E.C.A. (1983)	1969-1981	0.415 (n.s.)

n.s.: not specified

sources: 1 up to 5 are taken from World Bank 1982; table III - 12; p. 37.
        6 is noted in Ruigu (1982)

Table 10 shows that the degree of responsiveness established in different studies varies considerably. This is firstly attributable to different assumptions underlying the different response models used in the calculation of coefficients. The variations are furthermore the result of the fact that the studies cover different types of farmers (large farms and smallholders), different time periods as well as different regions of the country.

Large farmers are believed to be more responsive compared to smallholders because the share of the former in marketed production is far greater, despite the fact that smallholders produce the bulk of maize in the country. Large farmers are more fully incorporated into the official marketing channels. For them the official producer price set by the government is meaningful, because they deliver directly to NCPB depots (or buying centres since 1980) receiving the gazetted price.

In contrast, the majority of small farmers either deliver to NCPB appointed agents, in which case they receive the official price minus transport costs and agent's commission or, more often, they sell on the parallel (unofficial) market where prices may follow market conditions (and thus fluctuate) and have little relationship with the governments' fixed price. As a result, smallholders' responsiveness to official price changes may be less pronounced in comparison with large scale farmers.

It is therefore necessary to distinguish between different types of farmers in supply elasticity calculations and also to pay attention to the different marketing characteristics farmers face when selling their maize. These factors may have greater implications for price responsiveness than the official producer price as such.

This is confirmed in a study by Hesselmark, et al (1976) who found that, in the surplus areas of western Kenya (6), marketed output of small farmers was more associated with the price of inputs and with rainfall than with the official producer price level (in the 1965-1974 period).

Obviously, the role of official prices in explaining marketed volumes becomes greater as more smallholder maize farmers are drawn into the

official marketing (NCPB) system. But in a situation where, as in Kenya, a substantial part of marketed maize (estimated at about 50%) is traded in parallel markets, the official set price has limited meaning and is therefore a less 'powerful' policy instrument in governments' attempts to influence marketed output.

An important factor in production decisions of maize farmers is the relation of producer price and input prices to those of competing crops, wheat in particular. In the Rift Valley, for example, maize and wheat are produced under similar agricultural conditions and show production results (in term of net benefit per hectare) which are relatively close to each other. Data from the Ministry of Agriculture's 'Yields, Costs and Prices Review', GOK (1981b), indicate that in the case of large scale maize and wheat farming in the Rift Valley Province, production costs per hectare are high and relatively of the same magnitude. As a consequence small changes in relative input and output price levels are likely to influence production of one crop at the expense of the other (World Bank, 1982, p. 42). It follows that pricing policy should carefully take into consideration inter-relationships of input prices for both crops, when setting the producer price level for these crops.

Apart from pricing factors, experience in Kenya has proved that also non-price factors can seriously affect the marketed maize output.

In 1976, there was a bumper harvest for maize and the government purchased over 530,000 tons (see table 9) which, however, was far beyond the domestic need of the country. A few million bags should have been exported, but for some reason excess maize was stored in the depots. In 1977, with full storehouses, the government diminished maize purchases and farmers had to sell in the unofficial market. However, private traders were unable to buy all surplus crop due to the lack of storage facilities. Farmers' response was a reduced acreage under maize in 1978. In that year the government decided to export excess maize and by the end of the year withdrew the GMR (Guaranteed Minimum Return) credit scheme (7) and in addition lowered the official producer price for the next season. The combination of these measures resulted in a sharp decline in

NCPB purchases during the 1977-1980 time period (see table 9) and the occurence of a serious food crisis by 1980.

The foregoing demonstrates that (unfortunate) policy decisions, beyond the realm of pricing policy as such (the withdrawal of the credit system and not timely exporting excess maize) can 'overrule' the role of the producer price as a determinant of marketed output levels.

It may be concluded that non-price factors, along with prices, should be given proper attention when analyzing the determinants of maize marketed output. Overemphasis of the influence of the price factor and neglecting the marketing and institutional 'environment' could easily lead to faulty policy recommendations.

One final aspect of maize pricing policy should not remained unnoticed. The policy of seasonally and geographically uniform producer prices has been widely criticised as posing a disincentive for food production. Many observers of Kenya's maize sector developments (including international donor agencies like FAO and the World Bank) have advocated the gradual abandoning of this fixed pricing system, to replace it with a system of support and ceiling price levels with the NCPB only intervening in the maize market when producer prices rise above import parity price levels or fall below export parity prices. The argument for such a reformed pricing system is that a gradual handing over of maize marketing and distribution to private traders would better serve the goal of balancing food supply and demand patterns in the country and, in addition, would eliminate the fast accumulating deficits of NCPB operations in recent years. Such a new pricing system would also imply the lifting of the current strict maize movement regulations between districts and provinces.

The implications of these suggested reforms were discussed in an 'interministerial working group on maize market policy'. Major recommendations of this group include the division of NCPB into a Reserve and Stabilisation Departement and a Commercial Department. The former department would be given full autonomy in determining the timing and the levels of

maize imports and exports and would be responsible for efficiently managing a national maize reserve of 4 million bags in order to maintain reasonably stable price levels and adequate food supplies. This department would essentially fulfill the role of 'buyer and seller of last resort' within the (flexible) band of ceiling and support prices. The Commercial Department is to trade at official prices and cover its running costs through a sufficiently large margin between producer and consumer prices. This department would act as a 'commercial agency' and compete with private traders.

Up till now, the details about how the maize marketing system will be reorganised have not yet been settled. But it is clear that reforms along suggested lines will have far reaching implications for governments' extent of intervention in the food sector.

3.2. Wheat: production and prices

Wheat is a crop typically grown on large-scale farms. It was originally introduced by the European settlers in the Highlands of the Rift Valley. Up to now wheat production in Kenya is still very much geographically concentrated: 85% of the national wheat acreage is located in two Rift Valley districts, Uasin Gishu and Nakuru. In terms of national cereal production, wheat comes after maize, contributing about 9% of the total in 1980. Wheat is primarily consumed in the urban areas by the higher and middle income groups.

Marketing and distribution are relatively well organised as a result of long experience and a strong political influence of wheat farmers since colonial times. Practically all wheat produced is marketed through official channels and the NCPB is increasingly involved in wheat marketing activities.

Production of wheat in the 1970-1980 decade reached an average of 165,000 tons. However, in the second half of the 1970s, there was a tendency toward declining acreage under wheat cultivation. Producer prices for wheat remained relatively unchanged during the long period

between 1961 and 1973, varying between 46 and 51 Ksh per 90kg bag. Thereafter prices rapidly increased, in 1981 reaching three times the level of 1972 (see table 11).

Table 11. Wheat producer prices 1961-1982 (Ksh/90 kg bag) .

Year	Producer price	Year	Producer price
1961	47	1972	46
1962	47	1973	51
1963	48	1974	72
1964	47	1975	94
1965	47	1976	108
1966	49	1977	120
1967	50	1978	120
1968	50	1979	120
1969	49	1980	135
1970	40	1981	150
1971	46	1982	160

Source: GOK, Statistical Abstracts.

There is sufficient evidence that wheat farmers respond to producer price changes. Maitha's (1974) findings indicate that wheat farmers adjust their wheat acreage as producer prices change. Elasticity coefficients were 0.31 for the short run and 0.65 for the long run in the 1950- 1969 period.

Even more important was the finding that the ratio between the maize and wheat price was a strong determinant of the total acreage under cultivation with these respective crops, and that the degree of substitution was high (see par. 3.2). The 1983 ECA study also revealed a high acreage response to price changes for wheat with an elasticity coefficient of 0.7875 for the 1965-1980 period. Output elasticity was somewhat lower (0.4242) for the same period.

Wheat demand in the country exceeds domestic supply. In recent years imports of wheat continued to rise, reaching levels of half the amount of national production. Stimulating factors behind the growing demand for

wheat are urban population growth as well as the low prices for bread and wheat flower set by the government. In view of the fact that producer prices since 1976 increased substantially, it must be concluded that wheat consumers have been subsidised in recent years. Given the growing gap between wheat production and the national requirements, pressure is often put on the government to promote further production. However, in view of the high degree of possible substitution between maize and wheat, a producer price policy in favour of wheat cultivation could in turn adversely influence maize production which would run counter to the food needs of the great majority of the Kenyan population.

CONCLUSIONS

This paper discusses various aspects of agricultural pricing in Kenya. Section 1 addresses the institutional framework of agricultural pricing and the criteria used in price setting procedures. Price intervention by Kenya's government primarily covers the producer and consumer prices of a range of crops and products, particularly in the food commodity sector. Domestic prices of export crops follow international market prices without significant governmental intervention. Producer prices are set by the Ministry of Agriculture, while consumer prices are fixed by the Ministry of Finance. This easily leads to lack of inter-ministerial integration regarding the two different pricing policies and asks for better future coordination. As to the criteria used in the determination of producer price levels, the government increasingly takes international parity prices as guidelines. In an open economy such as the Kenyan, this policy indeed appears recommendable and serves the aim of efficiently allocating national resources, although on the other hand it leaves little scope for other policy considerations beyond the efficiency principle, such as the need of self-sufficiency in national food production. Section 2 discusses the extent to which the agricultural sector is taxed, or alternatively protected, as a result of these pricing policies. Sharpley's confrontation of domestic border prices with international market prices showed that particularly after 1975, domestic border prices for maize, wheat, rice and sugar did not reflect the lower trend in international prices for these commodities. Consequently, the degree of protection of producers of these products increased in the second half of the 1970s.

The 'terms of trade index', in recent years, reveals that the purchasing power of farmers' incomes vis-à-vis the rest of the economy has developed unfavourably. The major cause for the deteriorating terms of trade for agriculture, i.e. the (relative) position of farmers, lies in the rapidly rising prices for consumer goods and, to a lesser extent in price rises of agricultural inputs. It is therefore recommendable to carefully analyse the reasons behind future price increases of consumer goods and agricultural inputs, in order to prevent further worsening of the terms of trade for the agricultural sector.

Section 3 focuses on the importance of prices with regard to maize and wheat production and the marketed output of these crops. There is substantial evidence that producers of both maize and wheat respond positively to increases of producer prices. Available studies show positive (though varying) values of price elasticities of supply in both cases. However, since a large part of smallholder marketed maize does not enter official marketing channels, the responsiveness of these farmers to official producer price changes is less pronounced than that of large farmers, who account for the major part of official NCPB purchases.

It is further noted that the ratio of output and input prices is an important determinant of total acreage under cultivation with these two crops. Small changes in this ratio may lead to a significant shift in production of one crop to the other. It follows that pricing policy decisions should carefully consider the relative output-input price structure, when setting the level of producer prices for both crops.

Finally, it was noted that non-price factors such as maize export volume decisions, inefficiencies in the marketing system or problems with credit arrangements, can easily undercut the role of producer prices as a determinant of marketed output. Proper emphasis should therefore be placed on these important marketing and institutional aspects.

NOTES

1. Since it is evident that pricing policies and marketing systems are closely interrelated, certain pricing aspects are also discussed in most marketing studies.

2. A recent study in this area of research is the 'Grain marketing study' Booker, (1983) initiated under the World Bank's 'second structural adjustment loan' to Kenya. See for a short review of past marketing studies: Ruigu (1982).

3. Theoretical aspects of these ratios are discussed in: Scandizzo and Bruce (1980). See also: Schluter, 1984, p. 17 ff.

4. To the author's knowledge these are: Schluter (1984); E.C.A. (1983), which draws heavily on MacLoughlin (1977); Sharpley (1980) and a forthcoming study by the World Bank as announced in Scandizzo/Bruce, op.cit. (1980), p. ii.

5. However, data on maize production show wide discrepancies among various statistical sources, including the Ministry of Agriculture, CBS, FAO, NCPB and the World Bank.

6. 65% of total smallholder maize production and 90% of large-scale production originates from Western and Rift Valley Provinces.

7. The Guaranteed Minimum Return credit scheme provided crop insurance and seasonal credit up to a maximum of Ksh 1,250 per hectare to maize or wheat producers with a minimum of 15 acres under either crop.

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