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DECONTROLLING THE MAIZE MARKETING  
SYSTEM IN KENYA

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This paper continues a discussion initiated by O. Hesselmark and G. Lorenzl in an article, "Structure and Problems of the Maize Marketing System in Kenya", in Zeitschrift fuer Auslandsische Landwirtschaft, 15 (2) 1976, pp. 161-179. It will appear as an article in the same journal in 1977. Hans Gsaenger is a Lecturer with the Department of Agricultural Economics of the University of Nairobi, and Guenter Schmidt is a Visiting Research Fellow with the Institute for Development Studies.

Views expressed in this paper are those of the authors. They should not be interpreted as reflecting the views of the Institute for Development Studies or of the University of Nairobi.

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ABSTRACT

In this paper the authors assess the major deficiencies of the present maize marketing system in Kenya, discuss the implications of a completely decontrolled maize market, analyse the effects of different types of stabilisation schemes, and review the Indian and Pakistani experience with private performance and various types of government intervention in food grain marketing systems. An alternative scheme for regulating the Kenyan maize market is suggested and proposals are made for the implementation of such a scheme.

The most appropriate form of control of the maize marketing system in Kenya would seem to be a price stabilisation scheme with bufferstock operations to be carried out by the Maize and Produce Board. The Board would act as a buyer and seller of maize to keep price fluctuations within certain limits, and in addition keep a strategic reserve in case of drought. The implementation of this system requires a network of rural collection centres and Maize and Produce Board stores, located in these centres as well as in strategic markets in deficit areas. A market information system has to be established and movement restrictions lifted, and the price structure and rules for the Board's operations have to be clearly defined.

## INTRODUCTION

In Kenya there are three channels through which a producer can market his maize: a) the parastatal Maize and Produce Board (MPB), b) directly to consumers or c) through market traders. The first two channels are legal, the third is allowed by law if no inter-district trade is involved. For other transactions the sale is only lawful if a movement permit is granted by the MPB prior to shipment. The MPB controlled channel is usually referred to as the "formal marketing" system, while the other two are considered "informal". Relatively little is known about the informal system and its marketing problems (5), but it is estimated that about half of the maize sold in Kenya moves through the informal system by local (and illicit) inter-district trade.

This paper attempts to assess the major deficiencies of the present maize marketing system and to propose an alternative approach for regulating the Kenyan maize markets.

The major hypotheses are:-

- that the present "control" system is an impediment to an optimal allocation of resources, thus causing welfare losses,
- that the system of fixed prices for all levels of the marketing chain causes distortions in the marketing system leading to welfare losses to producers and consumers,
- that a bufferstock scheme would be more appropriate for regulating the maize market than the present system of control,
- that any form of government intervention in the pricing and marketing of maize is likely to fail as long as the rural assembly function is only partly developed.

## MAJOR DEFICIENCIES OF THE PRESENT SYSTEM

The control exercised through the MPB is aimed at regulating production and external and internal marketing of maize while maintaining a strategic reserve and guaranteeing satisfactory prices to consumers and producers.<sup>1</sup> (18, p. 4.) While there is evidence that the MPB is providing fairly reliable outlets for maize in surplus areas, it is apparently failing to stabilise prices for consumers both in surplus and deficit areas. In addition, it is questionable whether small-scale producers in surplus areas are always able to actually receive the guaranteed farm-gate prices because of limited buying capacities of the MPB shortly after harvest. The volume

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1. How these controls are implemented is described extensively in Hesselmark and Lorenzl. (5)

of illicit trade indicates that the present regional price differentiation is not in line with actual prices established by supply and demand prevailing in rural deficit areas and with transfer costs (also including risk premiums for illicit trade) incurred for shipping maize from surplus to deficit areas.

The dualistic features of the formal and informal system suggest that the present control system needs to be revised. The national Development Plan 1970-74 already pointed out that:-

With a view to improving efficiency, the policies and structures of the agricultural marketing system will be subjected to more thorough appraisal and changes made where appropriate.... For instance, it is expected that some measure of decontrol will be introduced into maize marketing in order to reduce the share of final price being absorbed by the marketing system. (8, p. 198)

However, since 1969 no major alteration of the maize marketing policy has been implemented. Stating this, the 1974-78 Plan outlines that changes:-

will be introduced early in the new Plan period. Under the proposed marketing system maize millers will be free to purchase their requirements direct from farmers without going through the Maize and Produce Board. The Board will purchase any maize offered to it at a guaranteed floor price and will sell maize to anyone requiring it at a fixed price. It will also be responsible for maintaining strategic reserve and for all imports and exports. (9, p. 234)

Although the latest Plan indicates the direction of change envisaged it is not at all explicit about the regulatory function of the MFB. It appears that the MFB will act as a competitive buyer and seller and will be able to perform its price stabilising functions by virtue of a large market share.

In assessing the present system of intervention in the pricing and marketing of maize, the nature of supply and demand fluctuations and thus price fluctuations has to be studied. For any price policy, it is important to know whether the major source of instability is price or yield fluctuations. In Kenya, Hesselmark showed that total maize output depends far more on rainfall than on producer prices. (2) Especially for the small-scale farming sector which contributes about 47 per cent of the total marketed output, prices of inputs and rainfall availability determine total output of maize more than prices paid to producers.<sup>2</sup>

For the large-scale farming sector Maitha (17) has shown that price supply response with respect to maize acreage is quite high. (Kenya short-run

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2. A study under way will provide more precise information: L.M. Awiti, An Empirical Study on Farm Factors Determining the Marketed Surplus of Maize in Kenya, M. Sc. thesis, Department of Agricultural Economics, University of Nairobi, in preparation.

elasticity 0.95, India-Pakistan 0.23, according to Krishna, 13). He concludes that the high price elasticity, partly explainable by the absence of "shifter variables"<sup>3</sup> during the period under study, would justify a relaxation of the price fixing policy and the introduction of a "floor and ceiling" price system.

Empirical evidence now available strongly indicates that the nature of the instabilities observed in the maize output of Kenya is attributable to a large extent to yield fluctuations, especially in the small-farm sector. A pricing policy which is set to provide incentives for increased production calls under these circumstances for a support price system that ensures:-

- a shift in technologies to increase and stabilise yields, and
- a spatial distribution of production that encourages production in areas with comparatively low unit costs.

The present pricing policy, by fixing prices at inappropriate levels and providing inadequate regional differentiation, encourages production in marginal areas, thus leading to welfare losses for both farmers and consumers.

In the following section we examine alternative solutions for the problems of the Kenyan maize marketing system and discuss the welfare implications for consumers and producers.

#### IS COMPLETE DECONTROL DESIRABLE?

A free market system for maize in Kenya, i.e. the absence of any control or pricing policy, might lead to drastic fluctuations in terms of output, and in the prices received by the farmers and paid by the consumers. In order to judge the magnitude of the fluctuations which could be expected it is necessary to shed some light on the dichotomous character of the maize production system, characterised by completely commercialised large farms and subsistence oriented small farms. Out of the total maize crop of 2.1 million metric tons (1975/1976), approximately 760,000 metric tons entered the marketing systems. The formal system (MFB) received about 493,000 metric tons or 64 per cent of the total marketed crop. The large-scale farming sector contributed about 256,000 metric tons or 53 per cent, while the small-farm sector provided the remaining 237,000 metric tons or 47 per cent. (All figures are estimates, calculated on the basis of available information in the 1975 Statistical Abstract, 10, the 1976 Economic Survey, 11, and Hesselmark, 3.)

Econometric studies have shown high responsiveness of the large commercial farms to price changes, so that any drastic reduction of the producer prices for maize would lead to a production shift from maize to either barley or wheat. This in turn would, ceteris paribus, lead to a sharp

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3. For India-Pakistan, Krishna (13) shows the relatively important role shifter variables such as rainfall, irrigated land, etc. play.

increase in consumer prices. The income elasticity of demand for maize in Nairobi in 1972 was 0.030, so the price elasticity of demand for maize will be somewhat in the same range since cross-elasticities are also rather low. With a demand elasticity close to zero, increasing consumer prices will have a negative effect on household incomes and will especially affect the position of low-income households.

The small farmer's decision on what acreage to plant in maize is to a lesser extent dependent on producer prices than on home consumption needs. Up to 60 to 70 per cent of the maize crop is for home consumption, and only the surplus beyond the farm household's needs enters the marketing system. Although a recent survey has shown that on a national level about 50 per cent of the farmer's food is purchased, the usual practice is to retain the amount of maize necessary for the household's needs.<sup>4</sup> Consequently, even if a free market system were introduced output fluctuations in the smallholder sector would probably not increase significantly since the maize price is only of minor importance in determining small-farm incomes. At the same time, it can be concluded that a policy of fixing producer prices is only partly effective in stabilising the income of subsistence oriented small-scale maize producers.

A second element to be considered when discussing a free market system for maize is the structure of rural markets and the prevailing physical infrastructure. Rural collection centres, transport facilities, the transport system and degree of competition are all important elements influencing the flow of goods and the per unit costs of moving them to the final consumers. Case studies show that the small-farm sector faces high transport costs because of relatively low volumes, the underdeveloped network of rural collection centres, the lack of rural feeder roads, the lack of competition among traders and truckers and in some regions the large distances to MFB depots which adjoin the railways that were mainly built to serve the former "scheduled areas" of the white settlers, now comprising the large-farm sector. These structural deficiencies are unlikely to be solved by any interventionist legislation, but at least the present control system helps to protect the farmers to some extent from paying the marketing bill. On the other hand the fixing of trading, transport and milling margins leads to serious distortions already described in many studies. (5, 6, 7) One is tempted to conclude that a

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4. Kenya, Central Bureau of Statistics, Integrated Rural Survey I and II, 1976, unpublished. These findings do imply that farmers buy maize at certain stages of the year. Although this is true for a certain segment of the small-scale producers, the figure shown does just simply average the highly skewed distribution of food purchases.

completely free market system is likely to:-

- contribute to more drastic supply fluctuations because of the responsiveness of the commercial farming sector, consequently leading to sharp fluctuations in consumer prices due to inelastic demand,
- incur higher marketing costs because of poor market infrastructure and the low level of competition in rural markets, possibly lowering producer prices and increasing consumer prices at the same time.

Consequently, a free market system for maize might have negative welfare implications.

In addition, the sensitivity of maize output to climatic factors causes unpredictable fluctuations that might endanger national food security. Although Kenya is considered self-sufficient in maize "even under adverse conditions" (12, p. 25) a national food reserve has to be kept. The private sector will be neither able nor willing to perform such a function effectively. It is more likely that severe deficit situations will be abused by the private traders and millers for obtaining windfall gains. While a free market system is principally viable under supply conditions that are stabilised on a level that meets aggregate domestic demand,<sup>5</sup> some control has to be imposed to avoid welfare losses for the lower income brackets which comprise the majority of the population.

Before entering a discussion of the most appropriate form of control for the Kenya maize market, some theoretical considerations will be outlined with regard to the welfare implications of different stabilisation schemes. This will help to delineate some criteria for a control system which could be viable within the Kenyan context. A general criterion for evaluating specific market control systems is the net welfare gains to be expected:-

net welfare gains = additional consumer welfare + additional producer welfare - costs of running the scheme.

The net effects of a stabilisation scheme<sup>6</sup> depend on:-

5. This is not a condition sine qua non since local deficits can be offset by imports, but as long as average production costs in Kenya are lower than import prices it would be uneconomic to rely on the world market. ✓ Since Kenya is more or less on the brink of becoming a net exporter of maize, the more relevant problem is the appropriate use of surpluses exceeding local demand. It can be argued that either diversification of production or the use of surplus maize for improving meat quality is more beneficial to the national economy than exporting maize at a loss, as has happened over the last ten years. (26, p. 181)

6. The following discussion is based on a comparative static economic analysis. Although it might be argued that such an analysis does not really help to fully understand the highly complex mechanisms of supply response, it is believed that in the absence of empirically tested supply functions for the small-farm sector this type of analysis will at least help to show the major pros and cons of various stabilisation schemes.



- a. The source of random price fluctuations. If the fluctuation is due to random shifts in supply, then price stabilisation is beneficial to the producers. Consumers may lose from price stabilisation, but the net effects are positive. This holds true regardless of whether supply is based on actual prices (perfect information) or on expected prices. If fluctuations are due to shifts in demand, then producers will lose from price stabilisation and consumers will gain from it. (19, 27)
- b. The type of stabilisation scheme. Traditional price stabilisation schemes and supply and demand stabilisation schemes are likely to produce different welfare results. It can be shown that in the case of price elasticity of demand greater than price elasticity of supply, the welfare effects of supply stabilisation are greater than the welfare effects of price or demand stabilisation. Where price elasticity of supply is greater than price elasticity of demand, price stabilisation produces a higher welfare gain than supply or demand stabilisation.

In both cases, demand stabilisation has the least significant welfare effects. (25)

- c. The budgetary implications of the stabilisation scheme. The financial burden incurred by the government is mainly a function of the size of stocks which are kept. This again is determined by the type of stabilisation scheme carried out and the way the intervention prices are set. In the case of a price stabilisation scheme, the costs involved are strongly influenced by the setting of selling and purchasing prices in line with the long-term equilibrium price. The smaller the margin between the selling and purchasing price, the greater the number and magnitude of transactions and thus the number of changes in the stocks. If the prices are not set in line with the long-term trends the stocks either reach unacceptable levels causing tremendous financial burdens, or the stocks are exhausted quickly at the expense of the scheme's effectiveness in stabilising prices. Assuming the same size of stocks for different stabilisation schemes, the relative costs involved are determined by the degree of variation in government stocks. It can be assumed that demand stabilisation involves lower relative costs than price and supply stabilisation. The relative cost of price and supply stabilisation schemes, i.e. the variance in the stocks, depends on the relationship between the elasticities of supply and demand. If the price elasticity of demand is greater than the price elasticity of supply, then the variation of stocks for supply stabilisation is greater than that for price stabilisation, or vice versa. (28)
- d. The managerial ability of the government agency responsible for implementing the stabilisation scheme. The managerial capacity of the agency may

be a limiting factor for operating stabilisation schemes of various kinds. Given a low level of managerial capacity open market interventions, involving direct competition with the private sector, may be rather difficult to perform effectively. This competition is necessary in a demand stabilisation scheme because such a scheme involves selling directly to consumers. Also in supply stabilisation, if the market infrastructure is unfavourable effective operations necessitate intake of the commodity in the rural surplus areas and a rather dense network of intake stations has to be operated in direct competition with private traders, who might be able to render additional services to the farmers which the agency cannot easily provide. Price stabilisation schemes which allow a relatively wide margin of floor and ceiling prices are easier to manage than the other two types.

In the light of these considerations two stabilisation schemes should be considered to replace the present rigid control system:-

- a. Price Stabilisation by defining "basepoints" of intervention in the maize market. Since the operating costs of the stabilisation scheme should be minimised in order to maximise the net welfare gains, the margin between the selling and purchasing price should be sufficiently wide. Since Kenya is on the brink of becoming a permanent exporter of maize, the lower limit (floor price) should not exceed the export parity price. The upper limit should be fixed at a level where the expected discounted value of the bufferstocks after a period of four to five years is the same as the starting value. (This period caters for annual fluctuations so that the annual marketed output is in line with the trends.) (28, p. 5)
- b. Supply Stabilisation by announcing support prices annually, which vary inversely with the expected output. Assuming farmers make "rational" decisions, their production decisions will be based on an expected price, implying that when the actual support price is announced the maize supply will be completely inelastic. The level of the support price should be determined by the expected equilibrium price taking into consideration the projected supply and demand. This stabilisation scheme needs sophisticated tools for estimating harvests and for projecting demand. Kenya has developed a method of forecasting maize output (3), and by means of this, it should be possible to arrive at rather reliable price estimates. The support price should not be fixed in terms of costs of production, mainly because shifts in technology are desirable to bring about a decline in per unit costs. Once the support price has been announced, the government agency buys and sells through the established trade channels.

Although price elasticity of supply is quite high in the commercial large-farm sector, the overall price elasticity of supply is rather small because of the small-farm sector, but it is still greater than the price elasticity of demand. Given this relationship, a price stabilisation scheme will be more beneficial than a supply stabilisation scheme. However, the random price fluctuations in Kenya are mainly due to shifts in supply, which means that a price stabilisation policy would result in a welfare loss for the consumers. To offset these negative effects, one might consider supplementing the price stabilisation scheme with subsidised consumption for certain vulnerable groups. This could be done either by introducing outlets which would sell subsidised maize or by issuing food vouchers which entitle certain people to buy food at subsidised prices. Since such a system is likely to be subverted by mismanagement and corruption, other devices for discriminating in favour of vulnerable groups should be thoroughly considered.

#### LESSONS TO BE LEARNED FROM INDIA AND PAKISTAN

In discussing the rigid controls of maize marketing in Kenya, it would seem worthwhile to review the respective policies of India and Pakistan.

Like Kenya, both countries have a long history of government control in pricing and marketing their major staple food crops, wheat and rice, which goes back to colonial times. With the objectives of assuring adequate food supply, keeping prices low and stable, particularly for urban consumers, and preventing alleged exploitation of farmers and consumers by "parasitic" traders, various control systems have been established, such as compulsory procurement (state monopoly schemes), voluntary procurement, zoning of surplus and deficit areas along with movement restrictions (similar to those in Kenya for maize and beans), fixing minimum and maximum prices, "fair price distribution", and so forth. But unlike the situation in Kenya, the degree of intervention has varied over time and among different regions and commodities.

After independence, India favoured free trade, but then revived controls in the late 1950s. Periods of intensive control were followed by periods of more relaxed controls, etc. In Pakistan, there has been a general policy of distributing portions of the food crop through "ration shops" at fixed prices,<sup>7</sup> but otherwise the wheat trade has been subject to relatively little direct intervention. Deliveries to the Government Procurement Centres (collection centres) which are comparable to the MFB depots have usually been on a voluntary basis. For rice, after a period of a liberal procurement policy a compulsory scheme was introduced, intended to maximise exports.

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7. The same policy is pursued in India.

To summarise, the marketing systems for the major staple foods in India and Pakistan have experienced varying degrees of government intervention. This history provides a unique opportunity to study private performance under the impact of different types of government intervention. One of the major questions is how effective has the private enterprise system been during times of relatively free trade. Often rigid controls are officially justified with the allegation that private traders are not able to perform the marketing function in a socially desirable way rather than exploiting consumers and producers. (4, p. 5) But if this does not hold true, governments could confine themselves to more indirect control measures such as have been described. These might be sufficient to correct undesirable features which may arise in a free competitive marketing system.

Provided certain preconditions are met, a free enterprise system can be fairly efficient and thus complete government control is not necessary to stabilise the market, as can be seen from the Indian and Pakistani experiences. Research on the internal food marketing systems in both countries (14, 15, 16 and others quoted in 16) indicates that:-

- the private marketing system generally cannot be labelled exploitative. On the contrary, competition between traders at all levels of the marketing channel was found to be rather intensive, giving little scope for excess profits.
- market integration is quite high, i.e. markets of various consuming and producing centres are closely related to each other. Price differences between markets are usually not greater than transfer costs.
- returns on storage, on the average, are not unreasonable. Profits in some years are balanced by losses in others.
- support price schemes through procurement operations (voluntary schemes) are usually able to stabilise producer prices.
- zoning, movement restrictions and compulsory procurement have generally destabilising rather than stabilising effects.
- price differences between markets are higher in periods of strict control than in periods of relatively free trade.

All these findings suggest that marketing systems in developing countries which rely on private traders in conjunction with a government stabilisation scheme may be able to function in a socially desirable manner. Stable producer and consumer prices can be maintained by open market interventions if adequate supply of food is assured.

The Indian and Pakistani experiences only have bearing on Kenya if the structural differences between the countries are taken into consideration. Different socio-economic systems lead to specific structural features which may not allow a direct transfer of policies which have proved successful in one country. Therefore we shall briefly describe the basic differences and similarities between India and Pakistan on the one hand and Kenya on the other with respect to the marketing systems of staple food crops.

The general level of development in terms of per capita income is rather low in all three countries, ranging from approximately US \$100 in India to about US \$130 in Kenya and Pakistan. The crucial role of the agricultural sector is expressed by its significant contribution to GNP (35 to 45 per cent) and the high proportion of the rural population depending directly or indirectly on agriculture. Only approximately 10 per cent of the Kenyan population lives in urban centres, whereas urbanisation in India (20 per cent) and Pakistan (25 per cent) is already more significant.

The basic production patterns of the major staples on the Indian subcontinent are to some extent similar to those of maize in Kenya. The staples are produced in almost every region of these countries, but there are only a few surplus regions serving the urban and rural deficit areas. Wheat in Pakistan, for example, is produced in all provinces, but only the high-potential Punjab (Indus Basin, well developed irrigation system) produces major surpluses, contributing more than 70 per cent of the total output. (22) On the other hand, Baluchistan and the North West Frontier Province in particular are semi-arid areas with almost exclusively rainfed wheat production and are far from being able to meet their own requirements. Similar situations exist in India for wheat, rice and millet. Thus, all three countries have distinct surplus and deficit areas leading to intensive interregional trade. Furthermore, dualistic agricultural production prevails in all three countries. In Pakistan for example 77 per cent of all farms are below 12.5 acres, and they account for only 32 per cent of the total farming area. (20) Consequently, the medium- and large-scale commercial farms which are quite sensitive to price changes contribute the major part of the marketed output. As the demand elasticities for staples are also rather low in India and Pakistan, the situation with respect to price fluctuations is almost the same as in Kenya.

No significant differences in the degree of commercialisation of farming can be observed. On the Indian subcontinent as well as in Kenya, about 30 to 40 per cent of staple food production is marketed. (15, p. 44; 24, pp. 63-64) However, taking the difference in size of the countries into account, the absolute amount of produce which has to be handled by the respective marketing systems is considerably higher in India and Pakistan than in Kenya. Whereas in Kenya (1975/76) the maize marketing system handled about

760,00 metric tons (3), the wheat marketing system in Pakistan had to manage about 2.8 million metric tons of domestically produced wheat (35 per cent of the estimated total production) and more than 1.0 million metric tons of imported wheat. (21, pp. 17 and 22) In India, from 1955/56 to 1964/65 between 20 and 40 million metric tons of food grains (wheat, rice, millet, maize and pulses) passed through the marketing channels each year (15, p. 44); imports of cereal at that time reached more than 10 million metric tons a year. (15, p. 227) As can be seen from the figures for India and Pakistan, despite the "Green Revolution" imports of foodgrains (wheat) still play an important role in assuring an adequate food supply for the population. By contrast, Kenya has been able to export part of its maize production.

As pointed out already, within the Kenyan maize marketing system two different subsystems can be distinguished. The marketed production entering the formal system is either sold directly to one of the 33 MFB depots (collection centres), mainly by large-scale farmers, or channelled through appointed agents, particularly by the smallholders. Rural wholesale assembly markets (primary markets) play a minor role in this system and they are poorly developed. Only a small part is bought in the rural markets by independent traders and sold to the depots. These transactions usually cause welfare losses for the farmers because the traders pay a price which is generally lower than the government fixed MFB buying price.

The structure of the Indian and Pakistani grain marketing systems is quite different from that of Kenya.<sup>8</sup> The basic pattern is as follows:<sup>9</sup> A very small amount is exchanged partly on a barter basis in village shops, but almost the whole marketed output is channelled through primary wholesale markets. These markets are permanent daily markets with a sufficient number of commission agents acting on behalf of the sellers (farmers or primary buyers). Wholesalers are either acting on their own behalf or on behalf of outside buyers (wholesalers, millers) on a commission basis. The surplus is brought to the market for the most part by the farmers themselves, or by itinerant or village traders collecting the produce in the villages, mainly from smaller

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8. The following presentation refers mainly to the more developed regions of both countries (e.g. Punjab) as these systems are the relatively most efficient ones. This provides the opportunity to pinpoint the crucial elements of efficient primary markets in a decontrolled marketing system.

9. The marketing pattern in fact is more complex and shows a great deal of regional variation. A detailed description is beyond the scope of this paper, but can be found, for example, in 15 and 24.

farmers. From the market the produce is transferred to the next stages of the marketing channel system. This may be a Government Procurement Centre, under a government monopoly scheme or under a voluntary scheme if the government fixed support price is above the market level.<sup>10</sup> In all other cases the produce is normally shipped to secondary or terminal markets or directly to the mills.<sup>11</sup>

Compared to the maize marketing system in Kenya, primary wholesale markets in India and Pakistan are essential elements of the grain marketing system. In the Punjab (Pakistan and India) each market serves an area of about 600 to 1,300 km<sup>2</sup> with approximately 150 to 250 villages within a radius of 15 to 30 km. (14, p. 31; 24, p. 240) The average daily wheat transactions range during the peak season from about 70 to 300 metric tons<sup>12</sup> depending on the region, size of markets, catchment area, etc. (15, p. 132; 24, p. 236) For comparison, one of the biggest markets in the Western Province of Kenya, Luanda market, handled not more than 17 metric tons per day in 1973/74.<sup>13</sup> (1, p. 4)

For transactions on the scale of those taking place in the Indian and Pakistani market centres, the market infrastructure and the organisation of the transactions are of great importance. A well organised Indian and Pakistani market provides a sufficiently large market yard bordered by market stalls for the commission agents and traders, with platforms in front where the inflowing produce is piled up until it is sold by auction, weighed, re-filled into bags, loaded and finally shipped. In the middle of the market there are central amenities (library, market information facilities, cafeteria, water, etc.) and space for parking animals, carts or lorries. Entrances and exits, sufficient in number and size, link the market with the road network of the country. All these markets are generally well connected with each other by roads and often in addition by railway lines and by communication facilities such as telephones.

Usually, if these markets are well organised as described, they are "regulated markets", controlled by a market committee consisting of representatives of farmers, traders and government officials.<sup>14</sup> The functions of these

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10. Generally only very big farmers bypass the wholesale market and sell directly to the Government Procurement Centre if the procurement price is higher than the market price.

11. In the case of rice, the paddy is usually milled in the primary market centres before being shipped to the procurement centres or to other markets.

12. Estimates on the basis of yearly volume of transactions, assuming that 70 per cent (15, pp. 121-123) is handled during the four busiest months.

13. Retail transactions are included in this figure.

14. The regulations for these markets are laid down in the "Agricultural Produce Markets Act" which was first decreed for the former Punjab Province by the colonial powers in 1939. After independence the Act was amended by the Pakistani and Indian Governments.

committees are, among others, to provide and improve the market infrastructure, to license market functionaries, to control and monitor weights, measures and market practices, to settle disputes and to collect market fees which are used for running the market.

Altogether, these types of markets provide the necessary infrastructural conditions for an effective and competitive marketing system. As pointed out, research on the Indian and Pakistani grain marketing systems has shown that they are relatively efficient. This can be attributed in part to the existence and functioning of an established network of central wholesale assembly and terminal markets.

Moreover, these markets play a decisive role in government efforts to stabilise prices. Since almost the whole flow of produce goes through these markets they provide a good opportunity for intervention. During times when voluntary supply schemes have been in effect, traders have been ready to sell to the nearby Procurement Centres, often within the same urban centre near the railway station, as soon as market prices drop below the government minimum or support price: in this way a further decline of prices is prevented.<sup>15</sup> Hence, because these prices are effective for farmers even if they sell in the villages, the intervention on the wholesale market level enables the government to guarantee a minimum return to the producers. The links between the markets and the Procurement Centres are quite strong since the government or the statutory marketing body involves all licensed market traders in the procurement operations. Given a voluntary procurement scheme, the traders, however, are free to sell to the private sector.

Comparing the institutional and infrastructural conditions of the Indian and Pakistani with the Kenyan food grain marketing systems, the poorly developed rural wholesale market infrastructure and the weak links between the private informal and the government controlled formal sector of the Kenyan maize marketing system become evident. In consequence, if the controls of maize marketing in Kenya are to be diminished, all efforts must be made to improve the institutional and infrastructural conditions of the rural markets and to intensify relations between the private and government marketing institutions. If this important area is neglected, government interventions in the marketing of maize cannot be effective and are likely to fail. The situation would not be much better than it has been in the past.

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15. One of the preconditions is that the Procurement Centres are prepared to take all produce supplied.



## CONCLUSIONS

The discussion so far has shown that some control of maize marketing in Kenya is desirable in order to avoid welfare losses for the producers and consumers. But it also has revealed, taking the Indian and Pakistani experience into consideration, that a less rigid control system than presently exercised in Kenya can only prove successful if the physical and institutional infrastructure creates a marketing environment which allows a competitive system to emerge, linking up the local, district and interregional trading system.

The system envisaged can best be characterised as a price stabilisation scheme with bufferstock operations run by the Maize and Produce Board, whose role has to be redefined. At present, the MFB is exerting virtually a domestic monopoly which has apparently become obsolete, given present and expected developments in the maize production-distribution system. The basic objectives of the revised control system would be, as in the past, to protect both producers and consumers and to maintain a strategic reserve in case of droughts. The role of the MFB under the new scheme would be to act as a buyer and seller of maize to keep price fluctuations within given limits.

Various steps have to be taken in order to implement such a scheme:-

1. Establishing a market information system which serves producers, traders, consumers and the MFB. Such a market information system should collect and disseminate price information, forecast regional supply and demand for estimating regional equilibrium prices, and provide information on grades and standards.
2. Lifting movement restrictions, thus allowing traders and producers to move maize freely over district and regional borders. But lifting movement restrictions without abolishing the rather restrictive way in which transport licenses are issued might lead to new frictions in the marketing system in terms of high transport costs charged by truckers who run local monopolies.
3. Establishing rural collection centres on the Indian and Pakistani model. These rural collection centres should be established in the producing areas, providing basic services for a smoother flow of goods. At the same time the centres should be linked up with the interregional transport network. Preferably such centres should be sited in places which rank third or fourth in the hierarchy of central places in the region, assuring that producers on the average will not have to move their produce more than 20 miles. In order to assure the functioning of these rural collection and trading centres, Market Committees should be organised with representatives of all interested parties to provide

information, to prevent malpractices, and to act as referees in cases of arguments about grades and measures.

4. Establishing MFB stores in areas without MFB depots. The regional distribution of MFB depots is not equitable for all areas. Therefore, in addition to the existing depots, the MFB should build up a network of stores in rural collection centres and at strategic markets in deficit areas to cater for easily accessible MFB outlets.
5. Defining the price structure and the decision rules for MFB operations. In order to achieve price stabilisation and increased allocative efficiency, the MFB depots and stores should operate as buying and selling centres for producers and traders, operating at prices appropriate for the various outlets.

As mentioned, the floor price should not exceed the export parity price. The local buying prices will be derived from it by adding the average local transport and handling costs. The local selling price would be the local buying price plus handling and storing charges, and in the case of deficit regions, also the transfer costs of maize from other regions. The ceiling price should not exceed the urban consumer price which has to be calculated by taking into consideration the weight of purchased maize in the cost of living index for low- and middle-income consumers, avoiding welfare losses for the urban consumers.

Given a well functioning market information system, such pricing formulas should not be too difficult to implement if the local depot or MFB store can operate freely and has the financial means to buy the quantities offered at the prices fixed by MFB headquarters for the specific outlet.

6. Finally the storage capacity of all MFB depots, at five million bags, can be used partly for accommodating the strategic minimum reserve of two million bags, while the remaining capacity can be used for storing other commodities handled by the MFB.

Although it seems economically feasible and advantageous to decontrol the maize marketing system in Kenya in the described way, one has to keep in mind that Kenya has not experienced any other maize marketing system yet and thus political pressure might come to bear against any major revision. In order to show the viability of the proposed scheme, one should test it in one region before implementing it on a national scale.

## SUMMARY

In this paper the authors attempt to assess the major deficiencies of the present maize marketing system, discuss the implications of a completely decontrolled maize market, analyse the effects of different types of stabilisation schemes and review the Indian and Pakistani experience with private performance and various types of government intervention in food grain marketing systems, taking their institutional and infrastructural conditions into consideration. As a result, an alternative scheme for regulating the Kenya maize market is suggested and proposals are made for the implementation of such a scheme.

In Kenya, rigid controls (price fixing, movement restrictions) are imposed on the maize marketing system which have led to various inefficiencies. Prices are fixed on inappropriate levels and the parastatal Maize and Produce Board (MPB) apparently seems to be unable to stabilise producer and consumer prices. By the establishment of movement restrictions, interregional imbalances and price differences are aggravated, leading to an extensive illegal trade which enables intermediaries to earn considerable excess profits.

A free market system for maize in Kenya is likely to contribute to drastic supply and consumer price fluctuations because of the highly responsive commercial farming sector and the inelastic nature of demand, and might endanger national food security. Thus, in order to avoid welfare losses for producers and consumers, some control has to be imposed. Taking several factors into account, a price stabilisation scheme with bufferstock operations carried out by the MPB seems to be the most appropriate form of control. The role of the MPB would be to act as a buyer and seller of maize to keep price fluctuations within certain limits, and in addition to keep a strategic reserve in case of drought.

From experience in India and Pakistan it can be learned that such a scheme, relying more on the private sector of the marketing system, may be able to protect producers and consumers, but is likely to succeed only if the physical and institutional market infrastructure is improved. The implementation of the proposed control system requires a network of rural collection centres (similar to those in India and Pakistan) and MPB stores, located in these centres as well as in strategic markets in deficit areas. Furthermore, a market information system has to be established and movement restrictions lifted. Finally, the price structure and rules for MPB operations have to be clearly defined. The floor price should not exceed the export parity price and the ceiling price should be set by taking the weight of purchased maize in the cost of living index for low- and middle-income consumers into consideration.

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