

**USES OF MICRO-LEVEL DATA AND ANALYSIS
IN SUPPORT OF FOOD MARKET REFORM:**

THE CASE OF MAIZE IN ZIMBABWE

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Food market reform has been a major component of the Structural Adjustment Programs recently implemented throughout Africa. Major goals of these reforms have been to raise agricultural output and reduce budget deficits associated with agricultural marketing parastatals.

Throughout the reform processes, concerns have arisen regarding the social costs of grain market reform, particularly the impact on low-income consumers. In many African countries, food market reforms have come in response to the need to raise staple food prices to restore production incentives. At the same time, budget pressures have resulted in the elimination of subsidies and controls on consumer food prices. Thus a critical question facing African governments is how to keep food prices at tolerable levels for poor consumers at a time when production incentives must be increased and subsidies must be eliminated.

The objectives of this paper are to document (a) how perceptions of farmer and consumer behavior have influenced the structure of food marketing systems and consumption patterns; (b) how subsequent shifts in consumption patterns have narrowed policy makers' views of feasible food market reform options; (c) how collaborative research involving Government, local analysts and donors have exposed misperceptions about consumer and farmer behavior, thereby expanding the feasible range of reform options open to policy makers; and (d) how food market reform since 1991 has affected the performance of the food market, in particular access to food by vulnerable groups.

We highlight five conclusions with broader implications for policy in Eastern and Southern Africa:

1. Consumer preferences can be largely policy-driven. In Zimbabwe, historical maize meal consumption patterns were construed to reflect rigid preferences, when in actuality they were a manifestation of policies that suppressed consumers' access to less expensive, more nutritious and often preferred products. Better knowledge of how consumer choices respond to availability of a broader range of products, and how market reform might affect product availability and price, may raise policy makers' receptiveness to food market reform.
2. Consumer subsidies do not necessarily promote food security if the subsidies entrench a relatively high-cost marketing channel and prevent lower-cost alternative channels from developing.

3. Selected food market reforms in Zimbabwe have made staple food more accessible and affordable to low-income consumers while simultaneously promoting production incentives. These reforms have reduced the need for untargeted consumer food subsidies and government relief programs.
4. The removal of policy barriers that constrain options available to consumers may reduce some of the instability problems that motivated the need for controlled marketing systems in the first place.
5. The process of designing research may be as important in influencing policy change as the findings themselves. The demand for, and credibility of, research results is enhanced by a collaborative process in which government and local analysts from the outset help shape the policy options and evaluative criteria under consideration. Frequent interaction on preliminary findings guides subsequent follow-up analyses in an iterative fashion and generates local "ownership" of the research findings and their policy implications. This process of generating local ownership of research findings helps to create a common empirical foundation for donor/host country dialogue and achieve lasting benefits from policy reform.

RATIONALE FOR CONTROLLED MARKETING SYSTEMS

Controlled marketing of staple food products throughout Southern Africa was established to address real economic, political and social needs (Takavarasha). These needs must be adequately appreciated if food market reforms are to have lasting benefits in the region. First, the staple crop in the region, white maize, is thinly traded on world markets. Second, most of the population of Eastern and Southern Africa lives in landlocked cities and remote rural areas facing high transport costs to coastal ports. Third, maize production in the various countries of Southern Africa is positively correlated (Koester). Reliance on regional trade is limited, *inter alia*, because shortfalls in one country tend to coincide with shortfalls in neighboring countries. Fourth, the region is prone to frequent drought. Cereal yields are among the most unstable in the world.¹ These structural features indicate that reliance on private trade alone to offset production fluctuations would involve large price fluctuations between export and import parity levels in the absence of substantial inter-annual stockholding.² The social and economic disruptions caused by instability in staple food

¹Botswana, Swaziland, Lesotho and Zimbabwe have the highest cereal yield variability in Africa over the period 1970-92 (Goldman and Block 1992). Cereal yield variability was defined as the standard deviation of residuals of logged cereal yield from trend. Cereal yield variability of these countries was more than double that of four Asian countries for which data was presented.

²Similar problems in landlocked areas of West Africa have been discussed by Delgado (1992). Factors impeding private sector inter-annual grain arbitrage in low-income countries are discussed in Sahn and Delgado (1989).

prices had given rise to the region's historical commitment to food price stabilization and associated market regulation.

The effective control of politically-determined prices required suppression of uncontrolled private trading that would interfere with the workings of the official marketing system. As in Kenya, Malawi, Zambia and South Africa, some of the practices used in Zimbabwe to preserve the dominance of the official marketing system and impede private trade have included: (1) prohibiting private maize movement across district or zonal boundaries, including into urban areas; (2) preferentially supplying the marketing board's grain to a select group of "vertically-integrated" industrial processing firms; (3) setting a narrow margin between the producer and selling price of the marketing board, such that private trading is rendered unprofitable in many areas and the marketing board/urban processors become the sole maize buyer/seller by default; and (4) mandating a state monopoly on cross-border trade. While such policies have imposed heavy costs on their grain sectors (Child, Muir and Blackie; Jayne and Chisvo; Chisvo et al; Masters and Nuppenau), textbook free market prescriptions had been ignored in Zimbabwe and elsewhere in the region because they normally failed to satisfy policy makers' concern with the instability issue.

A second reason for the development of a controlled maize marketing system was the former colonial government's aim to protect the interests of European farmers at the expense of African smallholders. Before 1900, African farmers accounted for the majority of the food produced and marketed to urban centers and mines. However, as the number of Europeans engaged in farming rose over time, African farmers were increasingly perceived as a threat.

A variety of colonial regulations were subsequently passed that raised the profitability of maize production for European farmers at the expense of Africans. These included: (1) continuing the forced removal of Africans from the majority of the country's high-potential farming land and confining them to less-productive "reserves" (later known as "communal areas") with poor infrastructure and market access; (2) imposing a variety of taxes on African households to increase their incentives to move off their farms and work as wage laborers (mostly after 1900); (3) establishing state crop buying stations European farming areas (commencing in 1934) without parallel investments in African farming areas; (4) offering Europeans a higher price than crops delivered to the marketing board by Africans; and (5) establishing restrictions on grain movement across the boundaries of reserves to towns, mines and other demand centers where African production could otherwise compete against European-produced goods (1934 up to 1993).³ These policies eroded Africans'

³Occasionally, when exogenous shocks constricted food supplies relative to national requirements, the state temporarily took steps to stimulate African food production (such as the Master Farm Program) but this program was periodically discontinued when food supply gluts reduced farm prices, and colonial officials had to "declare publicly that they never intended to 'teach the natives to grow maize in competition with European producers'" (Phimister, p.235, quoted in Binswanger and Deininger, p. 5).

dominance over food marketing in the country and simultaneously contributed to the growth of European agriculture during 1920-75.

We argue below that the controlled market structure that evolved from policies adopted by the Government of Southern Rhodesia to stabilize food prices and protect European farmers (the major features of which were largely continued by the Government of Zimbabwe) have profoundly altered consumption habits and perceived preferences for what has become the staple food throughout Southern Africa: maize meal. We further argue that, while successfully stabilizing maize meal prices to some extent, the controlled market environment had inflated food costs and adversely affected both urban and rural food insecurity in other important respects.

THE "APPROPRIATENESS" OF CONTROLLED MARKETING SYSTEMS RESTS ON PERCEPTIONS OF HOW FARMERS AND CONSUMERS BEHAVE

This section examines how the perceived appropriateness of a particular food marketing system depends largely on the prevailing views of how farmers, consumers and private traders behave. We illustrate this point by identifying three former commonly-held perceptions of farmer and consumer behavior in Zimbabwe, and how subsequent micro-level research had modified these perceptions and, in two of the three cases, led to government support for food market reform. These three examples are (1) perceptions of rural grain self-sufficiency; (2) perceptions of consumer preferences for refined maize meal relative to whole maize meal; and (3) consumer preferences for white maize relative to yellow maize.

Rural grain self-sufficiency

Prior to 1991, Zimbabwe's grain marketing system, like many in East and Southern Africa, featured a predominantly one-way flow of grain from rural to urban areas. Once grain was sold by farmers to the Grain Marketing Board (GMB), informal restrictions barred resale to rural households or informal traders (Jayne and Chisvo). Instead, the grain was forwarded to large-scale industrial millers, stockfeeders and brewers in urban areas.⁴ Furthermore, the state substantially increased the number of grain buying depots in rural areas during the 1980s and offered prices normally above export parity, in an effort to promote smallholder income growth from grain sales.

This system was based on the implicit assumption that most smallholder areas in Zimbabwe were grain self-sufficient. On the surface, this assumption seemed plausible because grain sales rose rapidly in most smallholder areas where the GMB buying stations were

⁴Between 1980 and 1990, less than 2% of the Grain Marketing Board's total maize intake was resold to traders or consumers in rural areas (Jayne and Chisvo).

constructed, and smallholders became the major supplier of maize to the nation by 1985. Furthermore, Zimbabwe had been a consistent exporter of maize throughout the 1970 and 1980s.

However, household-level survey results in the 1980s revealed a pattern of skewed productive resources and grain production within the smallholder areas (Rohrbach, Hedden-Dunkhorst; Jayne and Chisvo; Sunga et al; Stack and Chopak). The data highlighted four key findings:

- (a) most farm households living in the drier regions of the country -- about 60% of the total -- sell little or no grain during a normal year;
- (b) between 40% and 100% of these households are net buyers of grain; most of these households purchase from three to six months' worth of household grain requirements;⁵
- (c) even during normal rainfall years, many smallholder areas net grain deficit in the aggregate; and
- (d) policy barriers had restricted informal grain movement from surplus to deficit areas. Instead, after local supplies were depleted, household grain purchases were predominantly in the form of refined maize meal manufactured and delivered by four large-scale urban milling firms. Ironically, this refined meal was less nutritious, generally less preferred, and 10%-80% more costly than the limited quantities of maize obtained and milled through local private channels (Jayne and Chisvo).

Therefore, the state's one-way marketing system, while providing an assured market outlet for surplus grain producers, effectively siphoned grain supplies out of rural areas. Controls on grain movement restricted consumers in these areas from acquiring maize through private trading channels, creating localized shortages later in the season. These controls provided the industrial urban millers with a *de facto* monopoly on maize distribution into grain-deficit areas. Household-level data revealed that industrial-milled meal is less preferred, less nutritious and considerably more expensive than maize procured and milled through private channels. The absence of viable intra-rural marketing channels -- an result of policy controls to assure the dominance of the controlled marketing system -- was shown to inflate consumer grain prices and reduce cash incomes among poor rural consumers by as much as 30% (Jayne and Chisvo).

This information on farm household behavior in Zimbabwe heightened decision makers' awareness of food insecurity problems in the semi-arid areas, and how existing marketing

⁵Most of these households are grain purchasers not because they are devoting substantial resources to other crops, but because of binding resource constraints: limited land, draft animals and non-farm income to finance investments in technology, poor soil and low rainfall (Govere 1993).

controls were exacerbating these problems. In 1991, the GOZ partially relaxed these controls on maize movement and resale, and by 1993 had eliminated almost all controls on private grain movement.

Distributional effects of Maize Self-Sufficiency

These research findings had additional implications regarding the historical pursuit of maize self-sufficiency. Self-sufficiency in white maize has normally been an explicit policy goal throughout Eastern and Southern Africa, on the grounds that the world market for white maize is thin, and that the producer price needed for self-sufficiency can normally be achieved at price levels below import parity. Moreover, a pricing policy geared toward maize self-sufficiency has been widely perceived to promote broad-based rural income growth and food security, because the vast majority of rural smallholders throughout the region devote more land to maize production than any other crop.

However, the aforementioned findings have begun to call into question the link between food price incentives and broad-based rural income growth (Blackie; Jayne and Rukuni). Because of the extremely skewed distribution of land and assets in Zimbabwe, price incentives in pursuit of maize self-sufficiency have produced very concentrated benefits and equity effects (Table 1). Within the smallholder sector, one percent of the farms (located mainly in the Mashonaland maize belt provinces) have accounted for 44% of the income from GMB maize purchases over the 1986/87-1991/92 marketing years. The top 10% of farms have accounted for 92% of the income from GMB maize purchases. Nationally, one percent of all farms in Zimbabwe (*i.e.*, 1,600 large-scale commercial farmers plus about 9,000 smallholder farmers) have accounted for 70% of the GMB's outlay on maize purchases over the 1986/87 - 1991/92 period.⁶

Two major conclusions may be drawn from these findings. First, GMB maize pricing policy has extremely concentrated benefits on the supply side. Most rural smallholders appear to derive little or no direct benefit from higher maize prices.⁷ Second, many farm households are directly hurt by higher maize prices because a substantial portion of their cash income is used to purchase maize (Hedden-Dunkhorst, Stack and Chopak, Jayne and Chisvo). Given the skewed concentration of assets among the rural sector, it is questionable whether the governments' objective of promoting broad based rural income growth is compatible with a high-priced maize policy.

⁶For similar findings in Malawi, Zambia, Tanzania and South Africa, see Kandoole and Msukwa 1992; Malambo 1988; Amani and Maro 1991; and Van Zyl and Coetzee 1990.

⁷Higher maize prices could, other things equal, contribute to the demand for agricultural wage labor on large-scale commercial farms. This could induce labor migration out of land-constrained smallholder areas where the supply response potential is constrained. Survey evidence indicates that wage labor income *within* smallholder areas is very limited (Stack and Chopak 1990).

Table 1. Concentration of Income from Maize Sales to GMB (1985/86 to 1991/92 marketing year).

category	total number (approx.)	number of farmers that sell maize to GMB	GMB maize purchases		% of total GMB expenditures on maize purchases accruing to			
			(A)	(B)		(C)	(D)	(E)
			tonnes	(annual average)	tonnes per family that sells maize	tonnes per all families within category		
Commercial farms	4,000	1,652*	490,902	297.2	122.7			46
Smallholder households								
top 1% of maize sellers	9,000	9,000	254,182	28.2	28.2			24
top 2%-10% maize sellers	81,000	81,000	275,556	3.4	3.4			26
remaining households	810,000	24,000	47,948	2.0	0.06			4
all smallholders	900,000	114,000	577,686	5.1	0.6			54
All farms	904,000	115,652	1,068,588	9.3	1.18			100

Sources: estimates of commercial and smallholder farm households in Row A are from CSO (1990); Rows B and C are from the GMB (various years). Row D = C/B; Row E = C/A; Row F = C/total GMB maize purchases

* based on 1985/86 to 1990/91 marketing year

This point should not be construed as an argument for altering the rural-urban terms of trade. To the contrary, results elsewhere indicate that in countries characterized by a large gap between import and export parity, there may be a close link between the prices of "wage good" staple foods and the production costs of industrial exportables, through the labor market (Delgado 1992). Because of important backward and forward linkages, the price of maize undoubtedly influences the general level of prices in the economy (Blackie). Therefore, efforts to reduce the cost of procuring national food requirements could help increase disposable income in urban and grain-deficit rural areas and also promote competitiveness in other sectors of the economy (Delgado 1992).

Policy efforts to pass lower maize procurement costs along to farmers in grain-deficit areas may also induce dynamic changes in cropping patterns consistent with regional comparative advantage. Several farm-level analyses have concluded that cotton, groundnut and sunflower normally provide higher financial returns than grain crops in the semi-arid smallholder areas (MLARR 1990; World Bank 1991), yet these calculations are made on the basis of producer prices. For food-deficit smallholders, however, the opportunity cost of cash crop production is not the net returns to growing and selling food grains, but rather the cost of acquiring the grain foregone by cultivating cash crops, which is related to the acquisition price of maize rather than the producer price. Recent research results indicate that for grain-deficit farmers, the incentives to devote resources to cash crop production is negatively related to the consumer price of maize meal (Jayne, 1994). Policy efforts to promote broad based rural income growth through crop diversification appear to be linked to efforts to reduce the cost of food in grain-deficit rural areas.

Consumer food subsidies do not necessarily constitute a cheap food policy

As described above, the controlled food marketing system in Zimbabwe was designed to ensure a consistent flow of maize meal to urban consumers at prices which are capable of being controlled and subsidized by government. Analysts have typically contended that Zimbabwe has pursued a "cheap food policy", indicated by the heavy direct and indirect subsidies put on industrial maize meal.⁸

Large subsidies on consumer food prices, however, do not necessarily mean that prices are lower than they would be in a restructured competitive market. Regulations at certain stages of the system may impose additional marketing costs that overwhelm the effect of direct government subsidies. This section examines how the policy tools chosen to stabilize maize prices have had the unintended consequence of shifting consumer demand toward refined, more expensive and less nutritious maize meals and creating an environment in

⁸ Indirect subsidies include GMB operating deficits, financed by the treasury. GMB's actual operating costs normally exceed the margin between the controlled producer and selling price by 30% to 50% (see Jiriyengwa 1991).

which subsequent market reform efforts would be more politically difficult and risky.

Are Consumer Preferences Exogenous? Throughout Eastern and Southern Africa, adherence to a controlled marketing system has typically resulted in centralization and concentration of distribution activities. This has not only given rise to parastatal marketing boards, but also large-scale, concentrated grain milling industries. State maize procurement and milling are either vertically integrated in a single agency, or the state marketing board serves as a de facto procurement agent for several private large-scale milling firms.⁹

Major investments in urban industrial maize milling began in 1956, as Zimbabwe's urban African population rose dramatically with industrialization. The Grain Marketing Board's practice of pan-territorial pricing and restrictions on private grain movement gave milling firms' incentives to invest in high-throughput roller mill technology exclusively in urban areas. The rise of a concentrated and centralized maize milling industry also suited the GMB and the Government because it reduced the transactions costs of selling the grain and simplified the process of implementing, monitoring and enforcing price controls on maize meal. This created a convenient and easily-managed system of supplying the urban population with staple food at prices easily controlled by the state.

The politically-determined GMB trading margin and milling margins were often insufficient to cover stated costs, requiring compensation from the Treasury.¹⁰ This practice of selectively subsidizing the vertically-integrated GMB/industrial milling system narrowed the margin within which non-registered (i.e., small-scale, non-European) traders and millers could operate, effectively suppressing their development.

The subsidization of refined roller-milled meal, restrictions on private maize movement, and the GMB's de facto vertical integration with industrial buyers had two important results: First, it restricted access to grain by urban consumers for hammer milling, and relatedly, it made refined roller-milled meal considerably more convenient, accessible and less expensive than the formerly widespread practice of obtaining maize from relatives in rural areas and milling it by hammer mill technology. Within a span of three decades, urban consumption of maize meal consumption had switched almost entirely from whole meal to refined roller-milled meal. This shift entrenched policy makers' perceptions of the superiority of refined meal, and the legitimacy and appropriateness of the official marketing system that guaranteed its availability.

As demand patterns evolved with the evolution of policy that favored the development of

⁹Current or recent examples of the former may be found in Tanzania and Malawi; examples of the latter, in Zimbabwe, Zambia, Kenya and South Africa.

¹⁰Before 1993, the Government set milling margins based on information provided by the Commercial Millers Association, the official representative of the four large-scale roller milling firms.

roller mill technology, and suppressed existing decentralized system of informal grain movement and hammer milling, the general public began to view consumer preferences for refined white maize meal as a phenomenon of urbanization, civilization, and technological progress, rather than a response to policy.¹¹ The evidence is compelling that the particular policy responses taken to deal with the objective of food price stability had altered consumer demand patterns and then entrenched the widespread perceptions of strong urban preferences for refined maize meal (Figure 1).

This system was not viewed as a major problem, however, because of the conventional wisdom, built up by decades of advertising by commercial milling firms, that urban consumers strongly prefer (and should prefer) the refined maize meals produced by industrial roller mills, and are not responsive to price differences between various types of maize meal.¹²

According to this view, studies in Eastern and Southern African demonstrating the relative inefficiency of roller mill technology compared with small-scale hammer mills were largely irrelevant because of the perception that urban consumers would not accept hammer-milled whole meal.¹³ This perception had narrowed policy makers' view of the feasible set of food market reform options, especially those involving removal of subsidies on industrially-produced maize meal and efforts to develop competitive small-scale maize trading and milling networks in urban areas.

However, research in 1991 involving collaboration between the Ministry of Lands, Agriculture and Rural Resettlement, University of Zimbabwe and donors began to call into question the validity of these perceptions. Several surveys of urban and rural households indicated that about 40% and 46% of urban households would choose to purchase whole meal produced by hammer mills at a 12% and 18% price discount relative to the more refined roller meal -- if it were available (Jayne et al, 1991; Jayne and Chisvo 1992; Jayne and Rubey 1993). The surveys also indicated that whole meal had inferior good attributes (i.e., it would be purchased in greater quantities by low-income consumers, if available).

¹¹Moreover, milling firms have spent considerable sums on advertising to promote the idea that consumption of refined maize meal is a sign of sophistication, status and technological advancement (Robinson). While advertising data in Zimbabwe is unavailable, data from Kenya indicates that marketing costs accounted for one-third of production costs for the large roller millers (Stewart).

¹²For example, the Commercial Millers' Association in 1992 issued a statement in a local newspaper that "straight-run meal is an unsophisticated, unrefined product which normally sells at a price lower than that for roller meal ... as this product has never been popular its demise is no great loss..." (advertisement in Harare Herald, February 11, 1994).

¹³See, for example, Bagachwa and Stewart. Maize milling margins among the large-scale roller mills in Zimbabwe have tended to be three to four times greater than those of small-scale hammer mills (Jayne et al).

Based also on a government study (MLAWD 1993) indicating greater receptiveness to hammer-milled meal in urban areas than previously perceived, the GOZ eliminated the subsidy on commercial roller meal in June 1993 and eliminated most of the controls on private maize movement in the country. The policy reforms allowed maize to be privately moved into urban areas to be milled by hammer mills. After June 1993, hammer-milled meal cost 60% to 70% the price of industrial roller meal -- about the same price as roller meal before its subsidization was eliminated.

The initial effects have been dramatic. While the price of roller meal rose by 52% after June 1993, the effect on consumers was buffered by private movement of maize into urban areas, which has allowed households to avoid paying the trading margin of the GMB as well as the full cost of the milling margins of the large-scale industrial roller mills. Household survey analyses undertaken since the reforms have documented a large increase in urban consumption of hammer-milled meal, especially among low income groups (Rubey; Chisvo). Table 1 indicates that immediately after the reforms, 32% of households in the lowest income quintile in the three largest urban areas of Zimbabwe were consuming hammer-milled meal, compared with 18% among the highest income quintile (Rubey). These micro-level results are corroborated by national-level GMB data, indicating that the monthly GMB maize sales to the large-scale millers had fallen to 30% of their normal level, confirming a sizable shift in maize throughput from the large roller milling firms to the small-scale hammer mills.

Table 2: Maize meal consumption by type and by income quintile

Income Quintile	Type of maize meal consumed (percentage of households)			
	Super-refined	Mudzvurwa	Roller meal	Straight-run
Quintile 1 (bottom 20%)	0	0	68	32
Quintile 2	1	0	66	33
Quintile 3	7	*	69	25
Quintile 4	6	*	73	21
Quintile 5 (top 20%)	13	0	70	18
All consumers	5	1	67	27

* less than one-half of one percent

Source: Rubey 1993

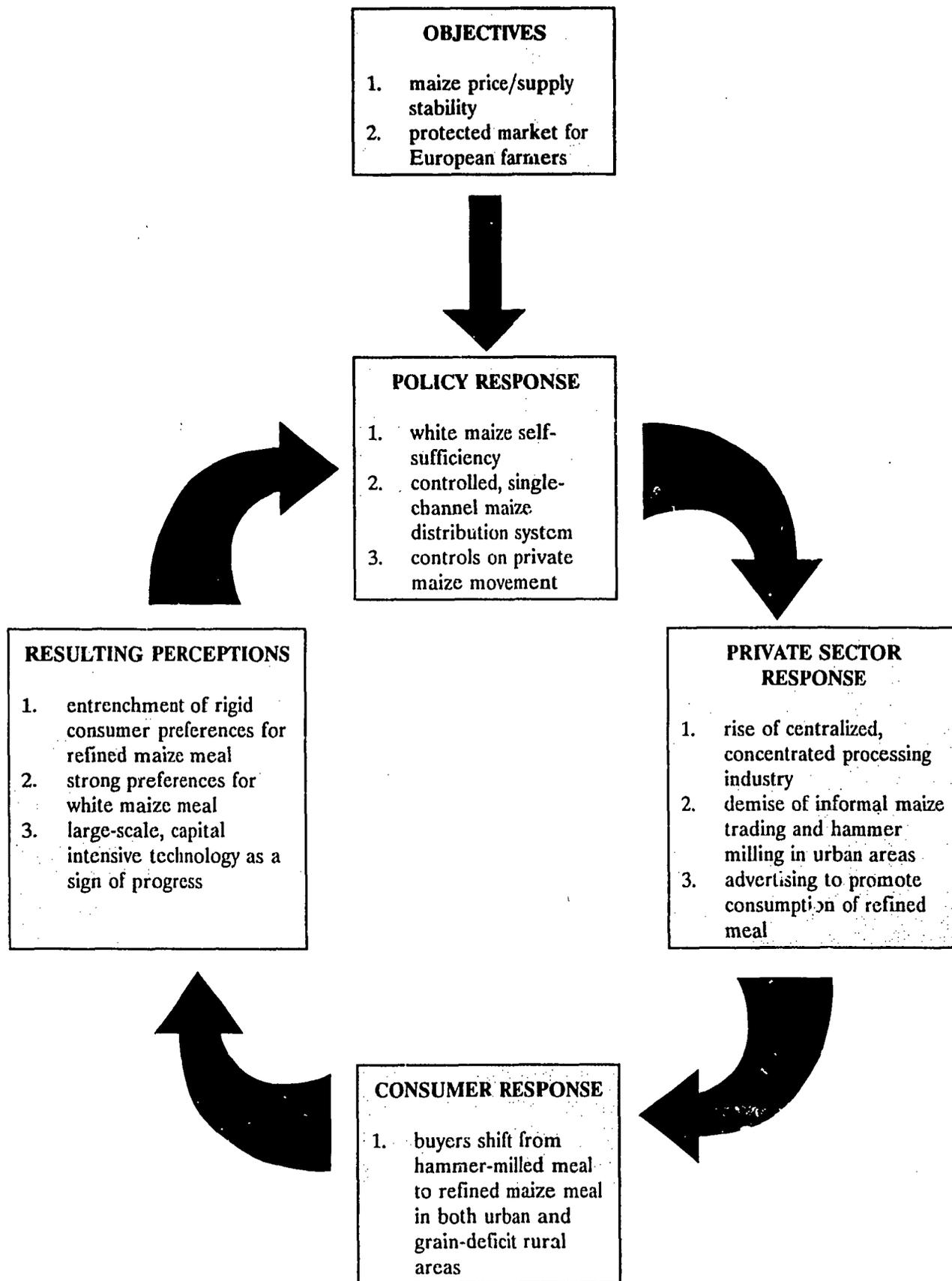


Figure 1. Interactions between Maize Sectoral Policies and Evolution of Maize Meal Consumption Patterns in Urban Zimbabwe, 1955-1980.

It is important to note that the rapid shift from roller meal to hammer milled meal has most likely been accentuated by a decline in real incomes of urban consumers since 1991 (The Economist). This is suggested by the survey findings in Zimbabwe and elsewhere that consumption of straight-run hammer milled maize meal tends to increase as incomes decline (Rubey; Sithole et al.; Mukumbu and Jayne).

The 1993 Zimbabwean experience with market reform indicates that subsidies are not always required to ensure that low-income consumers have access to an inexpensive supply of staple food. Market reform can lead to the expansion of lower cost marketing channels and permit urban households to procure household food requirements at lower cost than in a subsidized official system.

The role of yellow maize

Since its introduction to Eastern and Southern Africa by the Portuguese, maize for human consumption has traditionally been of white varieties. Yellow maize is hardly grown by smallholders in the region. In Zimbabwe, smallholder production of yellow maize is restricted by law.¹⁴ Yellow maize is grown by commercial farmers, but it is almost exclusively destined for livestock feed. Because Eastern and Southern Africans have historically consumed yellow maize only as imports during poor harvests, yellow maize has become indicative of a national policy failure. In Zimbabwe, government officials and industrial millers have discouraged the availability of yellow maize and maize meal for people to buy during normal years, contending that consumers would strongly resist eating meals from yellow maize. If the conventional wisdom is to be believed, efforts to increase the availability of yellow maize meal on the market are pointless since there will be virtually no demand.

However, Zimbabwe's experience with yellow maize imports in 1992 has called into question this view. As is the case in neighboring Mozambique, yellow maize was received with a surprising degree of consumer acceptance in Zimbabwe. Furthermore, consumer surveys conducted by Rubey (1993) indicated that about 10% of urban consumers actually prefer the taste of yellow maize meal, and would buy it if available at the same price as white maize meal.¹⁵

¹⁴This is because of fears that white and yellow maize grown in close proximity in smallholder areas might cross-pollenate and taint the GMB's maize intake.

¹⁵Interestingly, 63% of these respondents stated that they would not have wanted yellow maize a year earlier. "The drought-induced or 'forced' consumption of yellow maize during the 1992/93 resulted in a change in preferences for a small proportion of the population" (Rubey 1993, p.23).

Table 3: Percent of consumers stating that they would switch from white roller meal to yellow roller meal at a specified price, by income quintile, in a "dual-option simulation."

Income Quintile	Percentage of households that would switch to yellow roller meal given	
	\$11.10 (13% discount)	\$12.82 (26% discount)
Quintile 1 (bottom 20%)	32 percent	62 percent
Quintile 2	19 percent	44 percent
Quintile 3	25 percent	58 percent
Quintile 4	20 percent	46 percent
Quintile 5 (top 20%)	20 percent	39 percent
All consumers	23 percent	50 percent

Source: Rubey 1993.

Local yellow maize varieties typically have 15-20% higher yields than existing white maize varieties in Zimbabwe, and virtually identical input costs per hectare (CSO 1989, CFU 1993). This production cost advantage, in conjunction with the general preference for white maize meal, implies that yellow maize would be priced below white maize in a competitive market situation. A UNICEF-funded study by Chisvo (1993) found that 22.5% of urban consumers currently buying and milling white maize would switch to yellow maize sold at a 15% price discount. Rubey found that at a 26% price discount, 62% of urban households in the lowest-income quintile stated that they would switch to yellow maize, compared with 39% in the highest income quintile.

If consumer demand for yellow maize is indeed greater than the conventional wisdom suggests, then it becomes appropriate to ask whether the barriers inhibiting consumers' access to yellow maize are preventing potential gains in food security and productivity. For example,

1. The yield advantage of yellow maize means that greater output of yellow maize relative to white would allow the country to generate a higher level of aggregate maize production for a given bundle of inputs. This would exert downward pressure on maize prices, to the benefit of national and household food security, without jeopardizing production incentives. The appropriate ratio of yellow/white production could be determined in the market by consumer preferences and production costs.

2. Yellow maize is widely traded on world markets, benefits from a well-functioning commodity exchange, and typically costs 15% to 30% less than the limited international supplies of white maize. This provides Zimbabwe with a wider range of buying and risk-management options to procure needed supplies in the event of domestic production shortfalls. The hitherto perceived preference for white maize has served to mold government policy in favor of white maize self-sufficiency, since the world market for white maize is very thin. A white maize self-sufficiency orientation has put upward pressure on maize producer prices and higher marketing costs associated with white maize stockpiling. Rather than relying on a white maize self-sufficiency policy at any cost, the GOZ could reduce the cost of food available to consumers, reduce marketing costs, and improve productivity by allowing yellow maize production, imports, consumption and price levels to be determined by supply and demand conditions.
3. If Government feels that maize meal must be offered to poor consumers at a price below the unsubsidized price of yellow maize meal, then a selective subsidy on yellow maize (or yellow meal) would be less costly than untargeted subsidies on white roller meal. Given the limitations of administratively targeted schemes, "self-targeting" mechanisms are particularly attractive. A "self-targeted" subsidy is a subsidy on a food that is primarily consumed by the poor. As incomes rise, consumers voluntarily choose to consume less of these foods. Self-targeted subsidies have the potential to reach the food insecure with minimal leakage and without complicated administrative requirements.

However, a latent demand for yellow maize would not necessarily be felt upstream by millers, traders and farmers because of information barriers caused by historical policies against yellow maize consumption. Millers and traders perceive little demand for yellow maize meal because little is being consumed. But little yellow maize meal is produced because millers and traders perceive little consumer demand for it. If information barriers do exist, state action may be required to redress this aspect of market failure.

It is important to note that the purpose of this section is not to advocate the use of yellow maize as an end in itself, but rather to identify strategies to (a) capture the benefits of yellow maize's higher productivity relative to existing white maize varieties; (b) reduce the needed size of domestic maize stockpiles, thus reducing state marketing costs; (c) promote a self-sustaining targeting policy to protect vulnerable groups from the effects of sharply increased maize meal prices; and (d) increase Zimbabwe's options for using the world market, including mechanisms to reduce the cost of imported maize, since yellow maize is normally less expensive and more readily available than white maize.

POLICY LESSONS FOR EASTERN AND SOUTHERN AFRICA

Much of the literature on grain pricing and marketing policy has stressed the trade-offs between producer incentives, consumer prices for staple foods, and government budget costs (Timmer; Pinckney; Buccola and Sukume). While such trade-offs are inevitable, this analysis suggests that selected market reforms may reduce the severity of the trade-offs, even in the short run. In the case of Zimbabwe, elimination of restrictions on private grain movement in 1993 had immediately increased the availability of less expensive and more nutritious maize meal to urban consumers through the small-scale milling sector, simultaneously reducing the need for huge budget outlays on high-cost industrial roller meal and expanding market opportunities for maize producers.

These potential gains have been neglected in other countries in the region because of widespread perceptions that food consumption behavior is largely exogenous and unresponsive to changes in relative prices or a widened range of choices. Consumer surveys in Zimbabwe call into question the validity of these perceptions, especially in an environment where real urban wages have declined and food prices have risen dramatically. Easing the trade-offs between affordable consumer prices, producer incentives, and treasury costs often requires some form of food market liberalization that expands consumers' choices and captures potential gains from self-targeting. This contrasts markedly with the historical approach in East and Southern Africa of heavily subsidizing the more refined food products and blocking consumers' access to potentially lower-cost options.

The broader lessons from the experience of Zimbabwe are that:

1. While the commitment to food price stabilization and associated controls on food marketing systems have been an understandable outgrowth of the unique conditions of Eastern and Southern Africa, these policies have imposed heavy costs on producers, consumers and/or the treasury. The development of decentralized maize marketing networks in Zimbabwe, facilitated by the policy reforms of 1993, has already measurably reduced food marketing margins and consumer prices and has stimulated private sector investment (Sithole et al. 1993).
2. Food consumption behavior can be largely policy-driven. As shown by the case of Zimbabwe, consumer behavior was much more flexible and responsive to policy change than conventionally perceived. Better articulation of consumer preferences through the food system may facilitate (a) relatively costless improvements in access to food and the nutritional content of food consumed; (b) productivity gains in the agricultural system through shifts in crop mix and processing techniques; and (c) growth in employment and income distribution from shifts in the importance of alternative marketing channels and associated technologies utilized by these alternative channels.

3. Consumer subsidies do not necessarily promote food security if the subsidies entrench a relatively high-cost marketing channel and prevent lower-cost alternative channels from developing.
4. Improved knowledge of consumer behavior may raise government receptivity to food market reform. Governments are naturally averse to implementing reforms that would put food security at risk for a significant portion of the population. Therefore, local receptivity to food market reform depends on knowledge of how consumer behavior is likely to respond to changes in relative prices and access to a wider range of products.
5. The process of undertaking research may be as important as the research findings themselves. There will always be entrenched interests in maintaining status quo policies. These groups will typically attempt to mobilize support against policy reform. Donor pressure, while often useful and effective, can also be branded as interference and be used to direct public opinion against socially useful reform. However, strong local analytical units often have greater local acceptance, and can serve to make the effects of policy reform more credible and transparent to policy makers and the public at large. Therefore, the research process may have a greater impact when driven by locally-based analysis and dissemination of findings.

Accurate data on farmer, consumer and trader behavior can help identify strategies to reduce the trade-offs between food affordability, farm production incentives, and government transfers. This can provide an empirical foundation to guide food market reforms. The case of Zimbabwe demonstrates that selected food market reforms can promote food access and affordability by making the market work better for consumers and farmers, in addition to their more negatively-perceived role of eliminating food subsidies and reducing marketing board deficits.

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