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THE IMPACT OF ZAMBIA'S ECONOMIC POLICY REFORM PROGRAM IN THE AGRICULTURAL SECTOR

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Reform Program in the
Agricultural Sector**

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This paper evaluates the effectiveness of the Zambia government's economic liberalization program in the agricultural sector between 1982 and 1987. The study emphasizes the impact of the program on production, marketing, transport, processing, and consumption of maize. Other issues such as the impact on production of other crops, input usage, import substitution, and export promotion policies are discussed.

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Abstract

The Impact of Zambia's Economic Policy Reform Program in the Agricultural Sector

Between 1982 and 1987, the Government of Zambia (GRZ) began an economic liberalization program which was widely acclaimed as a model for other African countries to follow. On May 1, 1987, the GRZ withdrew from the program and reversed a number of the reforms which had been underway. This paper addresses the question: was the Zambian economic reform program accomplishing its purpose in the agricultural sector? One section of the paper examines the impacts that the program was having on Zambian maize production just prior to its termination in the spring of 1987. Subsequent sections deal with maize consumption, marketing, transport and processing, the impacts of the reform program on production of other crops, and input usage, import substitution and export promotion in the agricultural sector. The paper's conclusions draw lessons and implications from the Zambian experience.

THE IMPACT OF ZAMBIA'S ECONOMIC POLICY REFORM PROGRAM IN THE AGRICULTURAL SECTOR

Summary

Between 1982 and 1987, the Government of Zambia (GRZ) began an economic liberalization program. The program was widely acclaimed as a model for other African countries to follow. On May 1, 1987, the GRZ withdrew from the program and reversed a number of the reforms which had been underway. In January of 1987, AID/Washington sponsored a team to visit Zambia to assess the impacts of recent policy changes on the agricultural sector. The report that was filed was basically very optimistic concerning Zambia's progress and the outlook for agriculture.

The Zambian economy was changing from a very interventionist and controlled system to a more liberal, mixed, and decentralized one. The policy changes were beginning to show positive results in terms of increases in hectareage under cultivation, rises in amounts of maize marketed, crop diversification, reduced capital- and import-intensiveness, rising agricultural exports, and a reversal of the long-standing decline of rural, relative to urban, incomes. This turnaround in Zambian agriculture suggests that it was the policy environment, and not the physical environment, which had hitherto been the primary constraint on agricultural production.

The policy changes that affected farmers the most were decontrol of retail prices, liberalization of agricultural marketing, increases in producer prices for crops, decrease in the fertilizer subsidy, and the introduction of a foreign exchange auction and the concomitant devaluation.

Throughout this entire period, the incomes of Zambians continued to erode; however, because of increases in prices for agricultural commodities, farmers improved their economic standing relative to other groups in the economy. It should be noted that increases in the cost of living exceeded the nominal income gains for most farmers.

Farmers increased plantings of major crops at an average rate of 10 percent per year between 1982 and 1986, and the evidence points to the conclusion that this increase was due partly to price incentives. Evidence was found that exports were expanding because of the increasing incentive due to devaluation. Import substitution in the form of increasing reliance on oxen and fewer imports of tractors and other foreign-origin inputs was found.

Consumers have long been accustomed to subsidies on basic consumer essentials, the most important of which is maize meal. Part of the reform process was to reduce the subsidy and deregulate prices on breakfast meal, the preferred form of maize meal. In December of 1986, the effort to eliminate the subsidy on breakfast meal was abandoned because of riots in the Copperbelt. This incident is but one example of the problems encountered in management and implementation of the reform process which eventually led to the abandonment of most elements of the reform program.

This paper addresses the question: was the Zambian economic reform program accomplishing its purpose in the agricultural sector? One section of the paper examines the impacts that the program was having on Zambian maize production just prior to its termination in the spring of 1987. Subsequent sections deal with maize consumption, marketing, transport and processing, the impacts of the reform program on production of other crops, and input usage, import substitution and export promotion in the agricultural sector. The paper's conclusions draw lessons and implications from the Zambian experience.

Background

High copper prices in the late 1960s and early 1970s had allowed the Zambian government to establish a complex set of state-run enterprises

accompanied by subsidies and administered pricing for the nominal benefit of consumers, farmers, and other important groups. Increasing restrictions were placed on the private sector, and in many cases private sector participation was explicitly prohibited. The GRZ purchased majority ownership in industry, transportation, and utilities concerns. Government monopsony control was maintained in agricultural marketing.

Copper prices declined severely in the mid-1970s, causing the country's balance of trade to deteriorate. To adjust to what was perceived as a temporary slump, additional restrictions were placed on imports, foreign exchange, and credit. Subsequent declines in copper prices and revenues began to reveal the inappropriateness of a rigid and administered economic structure. By 1982, real GNP per capita was 20 percent lower than in 1974. Fiscal deficits averaged 18 percent of GDP by 1980-82. Heavy external borrowing because of diminishing foreign exchange earnings led to large external debt accumulation and then to arrears. Because of the inability to remain up to date on foreign debt obligations, by January 1983 the GRZ had concluded that foreign exchange requirements could not continue to be met by further borrowing.

The country's untenable financial position led President Kenneth Kaunda to launch a major economic restructuring program in the early 1980s. The main thrust was to decontrol and liberalize the economy from the degree of state participation and regulation that had existed since Independence in 1964, in order to diversify its structure away from an undue dependence on copper. The objective was revitalization of the economic structure in order to provide the conditions necessary for sustainable growth. The principal components of the program were deregulation of market structures, freeing-up of prices (including the price of foreign exchange), greater market access extended to the private sector, and streamlining of public sector activities and interventions. A commitment was made to provide incentives for agricultural production and emphasize development led by the agricultural sector. Zambians appeared to have concluded that market signals and incentives play an important role in the success of any economic development strategy.

In pursuit of these goals the Zambian government began to increase producer prices for maize while attempting to reduce costly consumer subsidies. The monopsony power of the maize marketing parastatal was reduced first by allowing farm cooperatives to purchase maize in certain areas, then by allowing any entity to purchase maize. The enforcement of a single purchasing price for maize across all regions was relaxed. Farmers were allowed to bargain for better prices. Producer prices for most other crops were deregulated completely. Fertilizer subsidies were reduced. Interest rates were decontrolled and the exchange rate allowed to float under a foreign exchange "auction" system supported by donors. The government committed itself to monetary and fiscal policies designed to rein inflation and governmental "crowding out" of investors.

Maize Production

Maize is by far the most important crop in Zambia. In nutritional terms it is the staple of the Zambian diet. In terms of value of crops marketed through official channels, it accounts for over 70 percent of marketed value of agricultural commodities. The policy changes that have affected maize markets most directly are the increases in official producer prices, the reduction of the subsidy on maize consumption, the rising fertilizer prices because of decreases in the level of subsidy, and the partial deregulation of the marketing system. The policy of the GRZ is to focus adaptive research on smallholder crops. Maize is considered a smallholder crop and recent research results have featured releases of nine improved seed varieties.

Improved price incentives are believed to have stimulated increased maize production in recent years, particularly among small farmers, who now account for 60 percent of marketed production. Between the 1981-82 and the 1985-86 marketing seasons, the official producer price of maize increased from K[16] to K[55] per 90-kg bag. This was an increase of 20 percent adjusted for inflation of low-income consumer prices. The major portion of the increase in nominal producer prices came in the final three years of this period, when the amount of maize marketed increased from 6.3 million bags to 10.5 million bags -- a 65 percent increase. All indications point to the

responsiveness of farmers to price incentives. Preliminary survey figures from Eastern Province indicate that, since 1981, small-farm households have greatly expanded hectareage under maize cultivation in response to the new price incentives (see Table 1). The surveys show that only 23 percent of small and traditional households in 1981 tilled more than three hectares; by 1986, the figure had risen to 53 percent.

Table 1. Small and Traditional Farmers: Distribution of Maize Production by Household in Chipata District, Eastern Province

Crop area (hectares)	1981 (percent)		1986 (percent)	
	Production (N=139)	Households (N=139)	Production (N=310)	Households (N=310)
<1	15	40	1	10
1-2	17	26	3	21
2-3	11	11	6	15
>3	57	23	89	53

Source: Based on surveys by the International Food Policy Research Institute; 1986 figures preliminary.

Price responsiveness has been masked to some degree by other factors that have dominated production or marketing figures in some years. The most obvious of these is rainfall. Both the 1981-82 and the 1983-84 growing seasons were poor for growing maize (Table 2). The 1984-85 season had good rains and marketed output rose by 11 percent, despite a fall in the real purchasing power that farmers derived from selling a bag of maize. Weather conditions were also good in the 1985-86 season; but in that year a 34 percent increase in the real producer price of maize contributed to a rise in marketed output of 48 percent. The problem is to distinguish between the effects of weather conditions and price incentives.

Other indicators that are not dominated by weather also tend to show that Zambian farmers responded to more favorable prices. A farm-level survey by the USAID Zambia Agricultural Research and Extension (ZAMARE) Project

in the Central District, conducted prior to the 1986-87 planting season, showed planting intentions for maize up by 30 percent over the previous year. This would be expected because of the more favorable price structure. The production manager of Zambia Seed Company stated that the company had run out of seed in January 1987 for that growing year and that sales had run about 20 percent higher than expected. The increases in seed sales were

Table 2. Factors Affecting Marketing Maize

Crop year (Sept.-Aug.)	Average rainfall ^a (mm)	Maize marketed in 90-kg bags (thousands)	Real price ^b (1975=100)
1980-81	767	7,734	5.84
1981-82	494	5,705	6.15
1982-83	853	5,902	5.88
1983-84	702	6,347	6.56
1984-85	1,023	7,069	5.52
1985-86	821 ^c	10,500	7.41

a. Based on average of rainfall data collected monthly at five reporting stations.

b. In kwacha, deflated by low-income CPI (Source: Central Statistical Office).

c. Data available only from three reporting stations.

primarily to small farmers, as commercial farmers did not increase purchases appreciably. About 60 percent of the small farmers paid cash for the seed, which shows that availability of credit was not a major factor in the seed purchase decision, since farmers who received credit for seed purchases used a voucher.

Several cooperative members and officials interviewed indicated that planting intentions were up because of the profitable maize prices. Even though maize production was likely to fall in the 1987 harvest season, because of late arrival of fertilizer and an extended drought in the southern areas of the country, farmers were responding to the favorable pricing environment and attempting to grow more maize, soybeans, sunflower, wheat, and other crops.

Maize Consumption

Urban consumers have been hit hardest by increases in maize prices. This impact has been softened, however, by consumption subsidies. Comparison of the pattern of price increases on breakfast meal (the preferred staple) with increases in the price index for goods purchased by low-income consumers confirms that consumption subsidies have cushioned the impact of price changes. Over the past 10 years, prices of breakfast meal have risen only two-thirds as quickly as the general price level. Thus it is not surprising that the attempt to decontrol breakfast meal prices late in 1986, leading to price increases of 120 percent, met with resistance. The price increases and mistakes in implementation led to riots in which at least 15 people were killed.

When the price deregulation was attempted, the government kept prices of roller meal (the less-preferred staple) at their previous (low) levels, engendering immediate shortages, as price-sensitive consumers switched to the purchase of the now much less expensive type of meal. Contributing significantly to the problem was lack of confidence on the part of the millers that they would receive timely compensation from the government for continuing to produce roller meal and selling it at the low price. Reports indicated that many millers -- including some that were governmental parastatals -- simply halted their production of roller meal.

Estimates indicate that breakfast meal accounts for 40 percent of total maize meal consumption, although some Zambians believe that the proportion is much higher. If these estimates are correct, they represent quite a marked shift away from roller meal, which in a 1974-75 FAO study was estimated to constitute over 85 percent of total maize consumption. This may be related to the fact that government-set margins gave better returns to breakfast meal, causing millers to produce more breakfast meal.

Roller meal is reported to be a less desirable food; breakfast meal is consumed mainly by higher income householders. The breakdown, in fact, is not so simple. Informal interviews with Zambian housewives indicated that

although it is not as nutritious, breakfast meal is preferred because it is easier to cook, and there is less wastage in its preparation, which means the cost differential per plateful is not as distinct as might be expected from the difference in the price of the meal itself. This suggests that there is a large degree of substitutability between the two types of meal. Indeed, the shift from breakfast to roller meal when the price of the former doubled was actually anticipated, although planning for its consequences was woefully inadequate.

The problem that Zambia faces now is that the government, having eased the burden of subsidizing urban consumption from the shoulders of the country's farmers, currently finds itself saddled with these subsidies. With producer prices up and maize meal consumption prices being held down, the subsidies have widened. In 1986, K[334] million was budgeted for agricultural subsidies; actual subsidies exceeded K500 million, according to the Finance Ministry. (The amount budgeted in 1987 for agricultural subsidies was K[677] million as of January 1987; informed observers were predicting that actual subsidy levels would be nearly twice as high.) Little progress has been made in discussions regarding developing a program to target food or income assistance to those urban dwellers most vulnerable to the impacts of removing food subsidies.

Maize Marketing and Transport Efficiency

Since 1981, the government has tried numerous measures to improve the efficiency of maize marketing. Provincial cooperatives were given increasing responsibility for rural fertilizer procurement and for intra-provincial maize trade, while trade between provinces remained under the control of NAMBoard, the national agricultural marketing parastatal. Roles were changed in 1985, with responsibility for all maize marketing reverting to NAMBoard and cooperatives acting as marketing agents. Under a 1986 liberalization scheme anyone was allowed to buy maize, but NAMBoard was designated buyer of last resort. Subsidy payments were made through NAMBoard to the cooperatives. Plans were also drawn up to channel subsidies through the millers. In 1987, NAMBoard was subsumed under the Ministry of Cooperatives.

One result of these changes has often been a lot of confusion. Interviews with small farmers, commercial farmers, cooperative officials, NAMBoard officials, truckers, millers, technical experts, and government officials all tended to confirm that problems had arisen in the management and implementation of the reforms. The problem areas mentioned centered on agricultural credit, distribution of fertilizer, purchase of maize, evacuation of the crop from rural areas, and storage.

NAMBoard and the cooperatives are required to operate under prices fixed by government fiat, which are often insufficient to cover costs; thus, subsidy payments are required. These payments are frequently delayed. The cooperatives resort to borrowing while waiting for their subsidy payments and although the government as a matter of policy may guarantee these loans, interest payments represent additional costs. As government funds become more constrained, the length of the delays tends to increase. In 1986, some K[333] million was allocated for subsidy payments. Estimated claims, however, ran to over K[500] million. Thus a system of short-term credit has been created to cover delays in subsidization, a system which soaks up a good deal of the scarce liquidity of financial markets.

Frequent changes in responsibilities have generated difficulties. The following dilemma, discovered in the course of numerous interviews in Southern Province, is illustrative of the types of problems encountered. At harvest time the cooperatives borrowed from commercial banks to finance maize purchases from farmers. (These loans ultimately were guaranteed by the Finance Ministry.) NAMBoard, required to purchase excess maize purchases from the co-ops for transport to other provinces, ran out of funds to reimburse them for maize purchases and subsidy payments. The loans were costing the co-ops 30-35 percent in annualized interest charges.

A second dilemma centers on seasonal credit extended by the co-ops to small farmers. Securing credit to small farmers is difficult because typically they hold no formal title to their lands. Reserves and Trust Lands are generally allocated by tradition, although an increasing number of "emergent" and commercial farmers have obtained leaseholds in these areas. Initially,

leaseholds may only be granted for 14 years, however, thus discouraging long-term investment. Land tenure is more secure along the line-of-rail, where it is allocated mostly by leaseholds which extend to a maximum of 99 years. But the transfer of leaseholds is a cumbersome process, reducing the land's value as collateral. Although fixed land improvements may be used as collateral, their value is also reduced by the difficulty in transferring leaseholds.

Farmers, particularly small farmers, receive credit from the cooperatives in the form of seed, maize bags, and fertilizer. Since land is not readily usable as collateral, the co-ops have developed a system of securing production loans to small farmers against their future crop marketing. With "liberalization" of the market in 1986, however, NAMBoard, as well as other co-ops and traders, was allowed to buy from the small farmers directly. Some farmers saw an opportunity to default on their loans from the local co-op, bypassing the market stop order by selling to NAMBoard, and did so.

Retention of some other policies continues to create distortions. Small farmers are still encouraged to market maize which they would otherwise retain for their own consumption. In 1986, for example, whereas maize production was estimated to have risen by 12 percent, the amount of maize marketed rose by 31 percent. Since storage capacity year to year on small farms is thought to be rudimentary, some of the increase could be due to small farmers attempting to capture the consumption subsidy by selling raw maize and repurchasing it as subsidized meal.

If so, the result is an unnecessary burden on storage and transportation facilities. Demand for transportation services is also high because of pan-territorial pricing, which encourages production in remote districts. This promotes long-range hauling. Thus, according to NAMBoard estimates, transport alone accounts for 53 percent of maize marketing costs and 36 percent of fertilizer marketing costs nationwide. The Southern Province Cooperative Marketing Union estimates that transportation and interest charges make up 85 percent of the cost of marketing maize.

Roads have not been maintained properly, largely because of a long period of foreign exchange rationing. The same is true of the trucking fleet, rolling stock, and railbeds. Devaluations have pushed costs of imported vehicles out of the reach of most Zambians for the time being. Imports of spare parts are thriving, however, as is demand for mechanics, according to a Ford dealership. The average age of the trucking fleet is now thought to be 10 years.

The trucking industry operates under a fixed-rate schedule negotiated with the government. Rates are differentiated by distance and road conditions in rural areas, with the government picking up the tab through the subsidy payments. The differentials are typically not sufficient to encourage the truckers to venture deep into the rural areas, however. Significant delays are experienced in gaining access to transport in the farther reaches of the country. Indeed, one trucker commented that wet weather might multiply by seven the number of days necessary for transport and handling in remote areas, and it just was not worthwhile at fixed rates. A number of small farmers indicated they would prefer to receive a smaller immediate cash payment than to wait several months for the full payment at the official price or for transport from remote areas. They might be induced to pay at least part of the transportation and handling costs themselves in order to avoid payment delays.

In 1986, a liberalization plan was introduced, which was to change the point of subsidization from NAMBoard to the millers after transportation and handling had already been paid. In essence this would have changed the pan-territorial pricing structure to one based on differential transportation costs. The farmer would have had the option to pay more in order to get his maize to the millers in a more timely fashion or to wait for NAMBoard, which would have sold his maize to the millers at a cost-recovery price. This system was not implemented, however, partly because there was no planning of how and when subsidies would be advanced to the millers.

There tended to be general agreement among farmers, cooperative representatives, NAMBoard and government officials, and technical advisers alike about the need for more storage facilities, particularly in the more

remote rural areas plagued by delays in both fertilizer and maize transport. The crunch on centrally located storage facilities was amply demonstrated at several points along the line-of-rail in Southern Province. In January 1987, NAMBoard was still holding grain on out-of-door slabs, covered by tarpaulins, which should have been shipped to more permanent sites in (October or November of 1986. NAMBoard officials said that shipment of a large part of the country's maize surplus to the urban centers would be delayed indefinitely because storage there was already full.

Thus, although covered national storage capacity, estimated at 7.6 million 90-kg grain bags (460,000 metric tons), was just sufficient to cover national demand, it was wholly insufficient to cover 10.5 million bags, the amount of maize marketed in 1986. The danger was that a good portion of the surplus would be lost to rain and pests.

Maize Processing

There is little doubt that the riots in the Copperbelt following an attempt to deregulate the price of breakfast meal were incited partly by the importance of maize meal in the budget of the poor urban dweller. Apparently, the government's intention was to target food subsidies to the poorest in the urban areas by holding prices on the less expensive grade of meal, roller meal, at previously subsidized levels.

The move failed, however, and had to be rescinded partly for reasons other than the price increase. The increase was announced in the planting season, when few alternative foods are on the market. Moreover, the government had announced that the point of subsidization would be moved from marketing parastatals and cooperatives directly to the mills, some of which were privately owned and run. It was not made clear how subsidies on roller meal would be distributed to the millers, nor was there any advance announcement of an implementation date, which would have allowed millers to build up extra stocks of roller meal. A rush on demand virtually depleted all roller meal stocks when the price increases on breakfast meal were announced. The millers had little incentive to produce more roller meal,

because they were unsure of how or when they would be receiving subsidy payments to cover their losses in selling it. Shortages of roller meal apparently contributed to triggering the riots.

The policy of subsidizing the millers directly and streamlining transportation and handling inefficiencies was well conceived, but the implications of that policy were not adequately addressed in terms of what steps would be needed in order to carry it out and who would be responsible. The millers were given assurances of subsidy payments, but the industry is much more decentralized than NAMBoard or the provincial cooperatives, and the mechanics of how and when subsidies were to be paid were left unclear.

Advance notification of the move would have allowed stocks to adjust in anticipation of the shift. Gradual, pre-announced changes in the prices would have dampened short-term consumer hoarding. Instead, roller meal stocks were depleted almost immediately. Thirteen of the larger private mills were nationalized after the riots, and their owners' bank accounts frozen. Notably, 69 percent of processing prior to the nationalization was being done by parastatals, and so they too shared responsibility for the shortages. The price increases, as well as the plan to change the point of subsidization to the millers, were shelved. What started as a laudable effort ended up as a gross miscalculation because of insufficient planning and inadequate implementation.

A final point is worth noting concerning the distortions created by the consumption subsidy. The subsidy on maize creates an incentive to export processed maize to neighboring countries -- notably Zaire. It is extremely difficult for Zairian farmers and millers in the nearby Shaba region to compete with imports that are heavily subsidized by the Zambian government. The maize trade is considered to be smuggling. The Zambian government attempts to thwart maize smuggling partly by allocating maize to millers on the basis of the regional population; however, this means that some more efficient millers are prevented from operating anywhere near capacity because of inadequate allocation of raw materials based on population in the Province. One manager of a parastatal mill in Southern Province pointed out that since his region is a net exporter of maize, its population by definition is small

relative to production. Thus, although his plant was quite modern, his maize allocation allows him to operate at only 49 percent of capacity.

Other Crops

In December 1982, the retail prices of major items, apart from candles, maize, and wheat, were decontrolled. In 1984, wheat prices were deregulated. The system of official producer prices remained in effect, however. As long as official buying and selling prices were in force, there was no incentive for private businessmen to engage in trade because of the unprofitable margins. With free market pricing at the retail level, however, the possibility was opened up that the margin between free market retail prices and official producer prices would be large enough to induce private businessmen to purchase directly from farmers, bypassing the official channels. There is strong evidence that this is just what happened and that for deregulated crops the official buying price became a support price rather than an administered price. If free market prices were above the official buying price, the farmers sold to private businessmen. If official prices were above free market prices, they sold through official channels.

A second result of retail price deregulation was that retail products flowed into the rural areas, since transportation costs could be covered in the retail price. This created a need on the part of farmers for cash to purchase the newly available goods. The result has been greater incentive for small farmers to sell their output for cash. In effect, retail price deregulation encouraged more subsistence farmers to become "emergent" commercial farmers.

The first growing season to reflect the deregulated pricing structure was the 1983-84 season. Table 3 shows amounts marketed of various crops. There was an indication of diversification of cropping patterns into crops that are subject to free market pricing, since the percentage increases in deregulated crops exceed the rate of change in regulated crops.

Frequent mention was made in our interviews of increased plantings of sunflower and soybeans. Soybeans are more commonly grown by commercial

farmers and sunflowers by smallholders. In line with the government policy of focusing agricultural research and extension efforts on smallholder crops, six new varieties of soybeans have been released in recent years, two of which are self-inoculating and therefore can be planted by small farmers from their own seed. Research is underway into management practices in soybeans that will make the crop more practical for small farmers to raise in order to supply a growing domestic animal feed industry. Two new varieties of sunflower have also been released in the last few years. The practical result of the government's agricultural research policy is that new cropping possibilities have been opened up for small farmers.

One apparent reason for the recent popularity of these two crops is that the fertilizer requirements are not as high as those for maize. Farmers perceive that their returns are competitive with maize because of the increase in the cost of fertilizer. Although it may not be strictly true that sunflower requires a lower level of purchased inputs, the grading system for sunflower up to September 1986 was not adequate to allow price differentials to be paid for seed with higher oil content. Thus there was no penalty under the grading system for producing sunflower with a lower oil content, and therefore little incentive to adopt new varieties with a higher oil yield. Farmers perceived that reasonable profitability could be attained with minimal usage of expensive fertilizer. The situation changed somewhat in September 1986 when a price differential between traditional and newer varieties of sunflower was announced.

Production, Imports, and Use of Fertilizer

Fertilizer prices are controlled by the government and in the past have been heavily subsidized. The primary objective of maintaining a subsidy on the price of fertilizer was to increase its use and thereby to encourage crop production. Calculations of the level of subsidy involved are very difficult because there is not a free market in fertilizer with which prices can be compared. It is therefore difficult to distinguish whether a payment is a subsidy on the delivered price of fertilizer or whether it is simply a subsidy to

an inefficient delivery system. Even though the kwacha price of fertilizer increased significantly in the year ending in January 1987, the devaluation of the kwacha was even steeper, and thus the dollar-denominated price to the farmer was actually lower.

Interviews indicated that there has been less wasteful use of fertilizer because of the higher cost. In the past, Zambia has had one of the highest rates of fertilizer disappearance per hectare in East Africa. This may have been as a result of wasteful use and smuggling into neighboring countries, both of which are exacerbated by a highly subsidized price. The GRZ was making progress in its effort to eliminate the subsidy, but the precipitous devaluation of the kwacha conceals the progress made in establishing import parity pricing on fertilizer.

An approximate price parity has been maintained between the price of a bag of fertilizer and a bag of maize in recent years, with the exception of a brief period in 1985-86. It is not clear whether this has been by design or chance. Farmers are quick to recognize the input/output price relationship between fertilizer and maize and are able to make rational economic choices as a result. Since the prices of a bag of fertilizer and of a bag of maize are about the same, small farmers recognize the profitability of using fertilizer, as one bag of fertilizer will yield three to four additional bags of maize. In 1985 the increase in the price of fertilizer lagged behind the increase in the price of maize by several months. For a period the input/output price ratio fell and therefore more fertilizer could be purchased with a bag of maize. Fertilizer purchases increased by 50 percent over the previous season even though no significant new sources of credit were available. From this example it is readily apparent that farmers are aware of, and responsive to, input/output price relationships.

Table 3. Marketed Output of Selected Agricultural Commodities

	Maize (90-kg)	Sun- flower (90-kg)	Soy- beans (90-kg)	Ground- Rice nuts (80-kg)(80-kg)		Wheat (90-kg)	Cotton	Sorghum (90-kg)	Tobacco	Millet (90-kg)
	Thousands						Tons	Thousands	Tons	Thousands
1978-79	5,192	238	14	23	34	73	1,490	1.7	4,600	0.0
1979-80	5,446	345	39	28	25	106	2,290	1.0	4,100	2.6
1980-81	7,734	385	41	33	16	128	1,680	1.4	2,400	2.4
1981-82	5,705	426	57	30	9	143	1,280	1.7	1,900	n/a
1982-83	5,902	609	77	63	13	113	2,070	1.1	2,300	1.1
1983-84	6,347	808	106	68	14	49	4,390	3.2	2,500	0.2
1984-85	7,069	510	178	79	30	n/a	3,030	12.4	2,200	0.5
1985-86	10,500	475	130	101	50	n/a	3,230	20.0	3,400	1.0

Note: n/a means not available.

Sources: 1978-81: *Final Crop Forecasts*, various issues, Ministry of Agricultural and Water Development (MAWD); 1982-85: *Agricultural Statistics Bulletin*, October-December 1985, MAWD; 1985-86: *Final Crop Forecast*, Central Statistical Office (CSO).

Data on farmer consumption of fertilizer are not available, so deliveries by NAMBoard are used as a proxy. This does not allow for any on-farm carryover from one season to the next that may be caused by late delivery, drought conditions, or storage in anticipation of price increases. Table 4 shows deliveries from the 1980-81 season to 1986-87. The input/output price relationship of fertilizer/maize remains roughly at parity, indicating that the profitability of using fertilizer remains about the same. The team heard from cooperative union officials, however, that small farmers were cutting back on the rate of application per hectare because the out-of-pocket costs for fertilizer were higher.

Zambia has one fertilizer producer, Nitrogen Chemicals of Zambia (NCZ). From 1980-81 to 1984-85, NCZ supplied approximately 20 percent of the fertilizer consumed in the country. The balance came from imports. Almost all imported fertilizer originates in South Africa. In recent years, domestic production has been hindered by foreign-exchange availability shortages which have resulted in maintenance problems and non-availability of fuel and raw materials. The Japanese, the Germans, and the World Bank have undertaken a program to support the rehabilitation of NCZ. Until 1986, USAID financed the supply of imported raw materials for this purpose. These donor programs, along with the recent freedom to price compound fertilizers roughly at import parity and the dramatic devaluation of the kwacha, have combined to result in much larger local fertilizer production. Current levels of production are between 60,000 and 90,000 metric tons, while demand is estimated at 160,000 metric tons. Thus, local production is now estimated to fill between 37 percent and 56 percent of local demand, a dramatic example of successful import substitution.

Import Substitution and Export Promotion

The foreign-exchange auction system begun in the autumn of 1985 effectively replaced Zambia's system of fixed exchange rates, under which the kwacha had become overvalued, with a floating rate. This was determined weekly in foreign-exchange auctions, at which virtually any Zambian could bid for foreign exchange. In real trade-weighted terms, by January 1987 the

Table 4. Fertilizer and Maize Prices and Fertilizer Deliveries

Cropping year	Fertilizer price (K/bag maize mixture)	Fertilizer deliveries (1,000 MT)	Maize price (K/90-kg bag)	Price ratio (maize/fertilizer)
1980-81	9.60	196	13.50	1.41
1981-82	11.75	212	16.00	1.36
1982-83	14.95	211	18.30	1.22
1983-84	24.10	166	24.50	1.02
1984-85	26.75	141	28.50	1.06
1985-86	48.00	211	55.00	1.15
1986-87	80.00	n/a	78.00	0.98

Note: n/a means not available.

Source: Ministry of Agriculture and Water Development, Agricultural Statistics.

kwacha had fallen in value against the dollar by 80 percent since the beginning of the auction. The devaluation caused a rapid increase in the kwacha prices of imports and vastly increased the kwacha value of exports. The result was a shift in expenditures in favor of domestically produced goods, and in production in favor of exportables. Agriculture in particular benefited from this shift.

The Zambian Export Growers' Association estimated in 1986 that the volume of non-traditional, horticultural exports had more than doubled since the auction was initiated. Moreover, it projected that such exports would more than double again in 1987. This growth came from both large- and small-scale farmers. ZAMHORT, a parastatal active in the fruit and vegetable trade, saw the volume of its exports grow from 16.1 metric tons in 1984-85 to an estimated 438.3 metric tons for the 1985-86 season. It is noteworthy that these exports came from increases in production by smaller, commercially oriented farms without the capital necessary to engage directly in export to markets in the industrialized countries.

Exports to neighboring countries, such as Zaire, Tanzania, Malawi, and Zimbabwe, also began to become lucrative. In 1986, the Commercial Farmers

Bureau reported significant increases in volumes of small livestock, fruit, vegetables, and other foodstuffs exported to neighboring countries. Interviews at a sugar company revealed that sugar export markets were being developed in Zaire, Tanzania, Rwanda, and Burundi. Rules in place since 1984 allowing retention of 50 percent of foreign exchange earnings on exports were making possible payments on its foreign debts and rehabilitation of its industrial plant. During the long hiatus in foreign exchange availability, when the kwacha was overvalued, the plant had deteriorated because of lack of access to imports for maintenance and new investment.

Calculations by USAID Mission economists concerning maize, wheat, and rice prices indicated in each case that Zambian producers had become very competitive in export markets since the devaluations starting in late 1985. In the latter part of 1986, it became more cost-effective for Zambians to produce and consume their own maize than to import from neighboring Malawi, one of the region's lowest-cost producers. Yet Zambia has not begun exporting its maize surplus in any significant amounts.

Considerable import substitution was also taking place in the agriculture sector, according to those farmers, cooperative representatives, and technical experts interviewed. Ministry of Agriculture and Water Development estimates show that ox-plow production in maize results in costs 22 percent lower than those faced by tractor users. USAID agricultural extension agents (on the ZAMARE team) reported that "oxenization" is rising in rural areas because of lower costs compared to import-intensive, tractor-driven agricultural production.

Some of the "emergent" small farmers closer to the line-of-rail were reportedly substituting walking tractors for full-sized tractors in order to hold down import costs. This was another example of how labor-intensive production was beginning to substitute for capital-intensiveness following the devaluation of the kwacha. In general, labor was described as the constraining factor for most small farmers, especially those with increased agricultural production. Other interviewees reported on crop diversification into soybeans and sunflower. This was permitting substitution of domestically

grown protein concentrates in livestock feed and reductions in fish meal imports.

These leading indicators of growing import substitution and rising exports in the agricultural sector were quite encouraging. Nevertheless, optimism as to Zambia's overall trade balance had to be tempered by realistic assessment of the contribution that non-traditional exports could make to the country's total exports. The base from which agricultural exports were growing was small. Hence, substantial growth in this sector could not contribute much to helping the balance of payments in absolute terms.

In the final analysis, success in the agricultural sector still depends to a large degree on the ability of the country to earn foreign exchange. The prospects in this regard look grim in the short term. Zambia's exports continue to be dominated by copper and cobalt, whose combined export values still accounted for 86 percent of total exports in 1986, according to figures available from both the Bank of Zambia and the Central Statistical Office.

Thus, in early 1987, Zambia's ability to service external obligations was expected to be severely constrained for the foreseeable future. The current account deteriorated significantly from 1983 to 1986, because of a 28 percent fall in exports, a 37 percent increase in interest payments, and a 25 percent increase in debt amortization. The overall balance-of-payments deficits had been financed for the previous three years principally through debt rescheduling and the accumulation of external debt payment arrears. With arrears reductions in 1987, the debt-service ratio would have risen to 121 percent in the absence of further debt rescheduling. Significant financing gaps were expected for the remainder of the decade.

It was in this bleak context that President Kaunda decided to abandon Zambia's economic stabilization program. Indeed, considering the country's extreme export-dependence on copper, its position on external creditworthiness looks grim. The external debt overhang represents a tremendous burden that Zambians are finding impossible to sustain. It is important to recognize, however, that the debt burden is the accumulated result of inappropriate past

policies and governmental interventions in the marketplace. Abandonment of its external obligations will impoverish Zambia now and for the foreseeable future. It is also true that unless the economic policy reforms are sustained, future generations of Zambians will labor under even more unfavorable constraints.

Conclusions

It can be concluded that the long-standing decline in the rural areas' share of national income, because of policies that effectively taxed farmers and subsidized town-dwellers, was reversed by the economic policy reforms, which greatly improved the equity of the economic system. Rural areas represent some 53 percent of population and employment in Zambia, and 80 percent of the population in the rural areas can be classified as poor or very poor. Thus the government's policy changes were largely benefiting the poorer sectors of Zambian society.

Reduced regulation and quite competitive exchange rates provided tremendous encouragement to exports. IMF figures suggest that exports other than copper and cobalt increased in 1986 by 11 percent. The rise was led by agriculture, especially specialty crops. It is noteworthy that these export increases came from both small and commercial farmers. Exports of fruit, livestock, vegetables, and sugar to neighboring countries, such as Zaire, Tanzania, Malawi, and Zimbabwe, also became lucrative.

Nevertheless there were significant, and in some cases tragic, problems associated with the process of reform. Effective planning and implementation of the reforms were major stumbling blocks. Overlap of the responsibilities of NAMBoard (the national agricultural marketing parastatal) and farmers' cooperative unions (also largely regulated and/or subsidized by the government) generated tremendous confusion, leading to costly delays. An attempt to change the point of maize subsidization from NAMBoard and the cooperatives to the millers, while reducing the maize meal consumption subsidy, turned into a disaster. Planning and implementation difficulties in that instance were primary factors leading to maize meal shortages and riots.

Prior to the announcement of policy changes, careful analysis needs to be undertaken to identify potential bottlenecks and unintended effects and the means of circumventing them. Clear lines of institutional responsibility must be defined in order to avoid serious miscalculations and to ensure effective implementation of reforms. In the case of the maize meal riots, it was never made clear to the millers how or when they would be reimbursed for selling their produce at a severe loss. As a result many stopped producing the cheaper grade of meal altogether.

Retention of the consumption subsidies has also had deleterious impacts on the marketing, transport and storage system. Small farmers, for example, were encouraged by a combination of producer prices, which did not reflect transportation and storage costs, and subsidized consumer prices, to market maize that they otherwise would have retained for their own consumption. This led to an unnecessary and rising burden on storage and transportation facilities.

Although the government's decision to continue maize consumption subsidies deferred some of the cost to the urban areas of the restructuring program, maize subsidies alone accounted for fully 16 percent of the government's budget deficit in 1986. Both rural and urban consumers share the burden of accelerating inflation, driven by price deregulation, rapidly increasing import prices and an expanding money supply to finance the budget deficit. Of these sources, however, the monetary growth is primarily responsible for increases in the underlying rate of inflation.

The problem is that providing a general subsidy to urban dwellers, rich and poor alike, is no longer feasible for Zambia. The alternative would be to target food or income assistance to those poorer urban dwellers most vulnerable to rising food prices, while narrowing the overall consumption subsidies. If planned and implemented effectively, such a policy could provide an orderly means of adjusting Zambia's fiscal policies with respect to food subsidies. As the country's financial difficulties become increasingly acute, the real choice is not likely to be whether to adjust, but whether the

adjustment will occur in an orderly or a disorderly fashion. The attempt to retain subsidies on only one kind of maize meal -- and the riots that followed -- are an example of what can happen when adjustment occurs in a disorderly way.

It is to be hoped that many of the reforms that led to the turn-around in Zambian agricultural production will be retained by the government, and reports indicate this is President Kaunda's intention. Presumably this would entail continuing to provide adequate price incentives to farmers and continuing to liberalize marketing, transport and processing. But if the exchange rate is to be heavily and increasingly overvalued, as appears likely at present, pricing agricultural production at border parity levels will inevitably lead to reduced incentives for farmers to grow food. Foreign exchange will again have to be rationed, and if the past is any guide agriculture will be last in the queue for needed imports. Agricultural exports will of necessity suffer; and the country's dependence on copper exports and South African imports will worsen.