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## Is There Life after Liberalization? Transaction Costs Analysis of Maize and Cotton Marketing in Zambia and Tanzania

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# **Is There Life After Liberalization?: Transaction Costs Analysis of Maize and Cotton Marketing in Zambia and Tanzania**

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by  
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## Executive Summary

This study analyzes transactions costs in markets for maize and cotton in Zambia and Tanzania and identifies institutional impediments to reducing those transactions costs. The privatization of agricultural markets in Sub-Saharan Africa during recent years provides an excellent opportunity for learning more about how the private sector responds to the withdrawal of government from marketing operations and about how institutional arrangements can facilitate or impede the private sector response. This paper analyzes changes in transactions costs for evidence of the private sector's ability to fill the vacancy left by retreating government programs. Further, the paper assesses the institutional environment and the degree to which institutional arrangements affect transaction costs. It provides answers to the following questions: What are the structural and institutional imperfections in the marketing of the two commodities? How have these factors led to inefficient marketing? What reforms would be necessary to improve marketing efficiency?

The paper explains the importance of marketing efficiency in an era of privatization. Lowering transactions costs will encourage continued participation in formal markets by farmers in remote areas. Before privatization, these farmers were brought into the marketing system by the pan-territorial pricing system established by a state-owned marketing chain. The pricing system subsidized the market participation of farmers in remote areas, permitting their participation but at great cost to the government. In the absence of this subsidy (that is, after privatization), these remote farmers will continue to participate in formal markets only if marketing costs can be reduced.

The assessment of the maize and cotton markets in Zambia and Tanzania shows that although there has been significant success in the private sector's response to liberalization, there are still many conditions which lead to inflated transactions costs. The factors contributing to these costs are the quality of roads, availability of transport, quality of communications, and availability of credit. The study traces these contributing factors back to their roots in institutional arrangements -- inefficiency or corruption in government bureaucracy, inefficiency or corruption in courts and other legal proceedings, cultural traditions and habits, ineffective isolation of policy decisions from excessive and inappropriate interest group pressure, inappropriate legal environment. Improvement in any of these areas would decrease transaction costs.

The Zambian maize market is characterized by a wide variety of marketing arrangements. Since the break up of the government monopoly in maize marketing, there have been thousands of private sector entrants into various parts of the maize marketing chain. These entrants include multi-national companies active in the international grain trade, large-scale multi-plant milling companies, small scale individually owned hammermills, large national trucking firms, small traders with a single small truck, chains of retail stores, and small retailers buying and selling at public markets. Virtually all of the transactions in this market are "spot" or cash transactions. Maize is typically sold by the bag (mostly 90 kg bags) rather than by weight, and there is no "grading" or adjustment of price for quality, except for occasional cases where a shipment of

maize is rejected at a mill for having too high a moisture content. Especially at the farm-first buyer level, there is a lack of competition that if addressed, could reduce transactions costs. The lack of competition has a number of causes: poor roads make it costly for traders to visit farms; poor communications make it difficult for farmers to compare the price being offered by one trader to other prices; inadequate credit keeps potential traders out of the market; inadequate credit and on-farm storage capacity forces farmers to sell at harvest rather than waiting for higher prices.

Each of these causes has roots in more basic institutional arrangements. For example, if we attempt to identify the institutional causes of poor roads, we discover several answers. Some funds allocated for road construction and repair are not spent because the bureaucratic process for authorizing those expenditures is complex and cumbersome. Funds that are spent are spent ineffectively due to corruption or incompetence on the part of the funding authorities, or because political pressure causes money to be spent in lower priority areas. Alternative arrangements that one might expect -- private roads for example, or highway authorities self-financed through highway tolls -- are infeasible in the current institutional environment because of difficulties in establishing and enforcing property rights or because of the high cost of monitoring employees. In a similar fashion, we can identify fundamental institutional causes for the other apparent sources of high transactions costs.

The Tanzanian maize market has many similarities to the Zambian maize market. There is a wide variety of types and sizes of private sector firms involved in the maize trade. The government continues to own and operate maize mills, although a serious attempt is made to operate without government subsidy. As in Zambia, the Tanzanian market demonstrates a need for more competition and better communication of price information at the farm level. Within the capital city, the central role played by maize brokers (*dahlalis*) appears to be diminishing because they face increased competition from millers who seek out direct supplies of maize. Transactions are almost entirely spot (cash) transactions. Maize is sold by the kilogram, and there are no price adjustments for quality. Efficiency in maize milling has been limited by inadequate and unreliable supplies of water and electricity provided through the publicly owned and operated utilities. Although privatization has substantially reduced the government's role in maize markets, the government-run Strategic Grain Reserve continues to enforce movement restrictions on maize which discourage entry and competition in the maize markets by limiting potentially profitable trades.

Of the four markets studied here, the Zambian cotton market is the one that has seen the least adjustment in the face of privatization. The large ginneries were transferred from government to private ownership, but the basic arrangements of marketing remained the same to a considerable degree. Ginneries continue to act as monopsonists within mutually agreed to geographical areas. Ginneries continue to contract with farmers during the planting season, providing inputs on credit and extension information during the growing season, and requiring delivery of the crop to the ginnery or its agent. Increasingly, the contracting has been undertaken by smaller scale independent "outgrower managers". This, combined with the opening of a new

privately owned ginnery in the coming year promises to erode further the ability of ginneries to act as monopsonists. In the market for Zambian cotton, the high cost of extension to the ginneries and the integration of extension and credit provision to farmers with the ginning function stands out as a major problem and important target for reform. The apparent cause of the integration of farm extension, farm credit, and ginning functions is that it is difficult to identify and punish borrowers who fail to repay the lender for production credit. One promising alternative to the existing system is the use of farmer groups as the means of distributing extension information and credit. The early experiences of two USAID-funded projects illustrate some approaches to facilitating group formation for this purpose.

The Tanzanian cotton market has already seen significant entry by privately owned ginneries who compete with the cooperative ginneries. Compared to Zambia, there is less contractual tying of farmers to ginneries. In the market for Tanzanian cotton, improved management practices in the cooperative ginneries and/or replacement of out-moded ginnery equipment hold out the promise of reduced transactions costs. In addition (not unlike in the Tanzanian maize market), the government plays a substantial regulatory role through processes that require (for example) government approval on location of new ginneries or difficult-to-obtain licenses for export of cotton lint. As in Zambia, costly farm credit and extension contribute to high transactions costs in the cotton market in Tanzania.

Sustainable reform would require changes in the institutional framework. Suggestions offered in this paper target three areas. One area is improved governance, for instance, punishing administrative corruption, rewarding administrative competence, and isolating policy decisions from excessive and inappropriate interest group pressure. Another area is legal reform, that is, reduction of transaction costs through better enforcement of anti-trust and anti-monopoly laws. Finally, the paper identifies the need for the development of a social framework conducive to new forms of economic organization.

The ability of Zambian and Tanzanian maize and cotton markets to reach their potential is contingent upon a reduction in the inflated transaction costs. The evidence in this paper suggests that successful implementation of these reforms would contribute to well-functioning, efficient markets.

## Acknowledgments

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## **Introduction**

Throughout Eastern and Southern Africa, the 1990's have seen radical changes in agricultural marketing policies leading to a reduced role for government and an increased role for the private sector. Zambia and Tanzania are among the countries that have liberalized their agricultural sectors. State-led and controlled marketing of crops in these countries have lately given way to the private sector participation.

This study examines the experiences in the marketing of maize and cotton in Zambia and Tanzania. The report addresses the degree to which the private sector has been successful in filling the vacancy left by retreating government programs, and identifies some of the institutional impediments that continue to limit the efficiency of private sector marketing arrangements by raising transaction costs. An attempt is made to organize, in a systematic way, institutional imperfections that may lead to inefficient marketing.

This paper is organized as follows. The section following this introduction defines the terms--transaction costs, marketing margins, marketing efficiency, and institutions--used in the paper. A brief conceptual model in Section 3 illustrates the importance of reduced transaction costs (or improved marketing efficiency) in achieving widespread market participation. The model shows that policies aimed at removing institutional impediments to further reductions in these costs can be seen as a potentially more cost effective way of achieving some of the same objectives that were being pursued by the previously existing government marketing schemes. The rest of the paper analyzes the impact of liberalization of maize and cotton marketing in Zambia and Tanzania and assesses the efficiency of prevailing marketing arrangements. Section 4 briefly describes the data that was used in this exercise. Sections 5 and 6 describe the evolution of and major characteristics of the marketing chains for maize and cotton, respectively, in Zambia. These sections also analyze the efficiency of the marketing structure, describe some of the most important of the existing marketing inefficiencies in each of the markets, and trace each inefficiency back to its fundamental institutional cause. Sections 7 and 8 assess in turn the marketing of maize and cotton in Tanzania. Finally, a few concluding remarks are made in Section 9.

## **2. Definition of Terms**

Before proceeding, it will be useful to understand the way in which certain terms will be used in this paper. This section provides definitions and explanations of the terms "transactions costs" and "institutional impediments."

### **2.1 Transactions Costs, Marketing Margins, and Marketing Efficiency**

#### **2.1.1 Transactions Costs**

The term "transactions costs" seems to mean different things to different people. Our task here is to define the term in such a way that we are dealing with a concept that gives practical insights into the operation of maize and cotton markets in Sub-Saharan Africa. Not every definition accomplishes this. For example, the MIT dictionary of economics defines transactions costs as "costs other than the price which are incurred in trading goods and services." But what is the practical use of a definition that includes transportation costs if paid by the buyer (and therefore such costs are not included in the price) but not if paid by the seller (so they are included in the price)? or of a definition that includes costs of activities done by the buyer, but not of those same activities if the buyer hires an outside firm (in which case they are included in the price of services)?

Much of the literature about transactions costs and "transactions cost economics" is theoretical, rather than empirical. In addition, the applications of the theory are frequently for financial instruments, contracts, and other items of exchange that require no physical handling, storage, or transport. In particular, the recent theoretical literature has focussed on costs associated with imperfect information. This literature creates preconceptions about how the term "transactions costs" should be defined in an applied setting. But the question remains: can we draw useful conclusions about real world situations by defining transactions costs in a narrow way, as a category distinct from other marketing costs?

As a starting point for our discussion, consider the description of transactions by Milgrom and Roberts:

*The total costs of an economic activity can be expressed as the sum of production costs and transaction costs where the former depend only on the technology and the inputs used and the latter depend only on the way transactions are organized.*

If we look at the first half of this definition, transactions costs would appear to include all marketing costs. Applying the definition to maize markets, we could split the total costs of delivering maize to the consumer as the sum of the costs of producing the maize on the farm and the all costs associated with delivering the maize to the consumer.

However the second half of the Milgrom and Roberts definition clearly implies that transactions costs are associated with uncertainty or imperfect information. In many instances, the imperfect information exists because a good is produced by one firm and transacted -- sold to a second -- rather than being produced and consumed by the same firm. In this sense, the transaction and the costs associated with the transaction are influenced by the organization of the economic activity -- the fact that the production and consumption are done by separate economic units. Since Coase explored "The Nature of the Firm" in 1937, economists have been coming to grips with the relationship between the need to process information and the organization of production. And indeed, the tying of "transactions costs" to "organization" sets up the fundamental hypothesis that an optimal institutional framework will be that which minimizes transactions costs.

To pursue this notion that "transactions costs are the costs of dealing with imperfect information," we next consider a prototypical example of transactions costs that arise in the optimal contracts literature. Suppose a lender lends money to a farmer to finance a crop, and the farmer promises to repay the loan (if he is able) at harvest time. The lender knows everything about the borrower, except the lender cannot observe whether the farmer's crop is a good crop (in which case she can fully repay the loan), or a bad crop (in which case she is unable to repay in full). The problem to be overcome is how to get the farmer to honestly report to the lender whether she has a good crop or a bad crop. One organizational response to this information imperfection is a collateral provision: if the farmer reports a poor crop, the farmer must give up collateral to the lender. The costs associated with the collateral provision are an example of a "pure" transaction cost: the cost arises from the lending transaction alone, they are affected by the organization of economic activity (if the lender and borrower merged into a single firm, the imperfect information would disappear).

Every economist would agree that the collateral costs in this example are "transactions costs." But the issue of costs related to information is more complex than this. In the real world there are substantial costs associated with the physical collection and analysis of information, thus the extent of informational imperfection is not a given exogenous state, but is the endogenous result of economic decisions. To illustrate this, we can revisit the above lending problem. As an alternative to collateral, the lender could undertake the costly monitoring of the farmer's crop, for example by hiring a person to visit the farm and report on the crop's progress. We can call this activity an "information service."

If someone outside the lending firm undertakes to provide this service, there will be a new transaction, between the "information services" firm and the lender. The economic activity culminating in that transaction will also require "production costs" -- the costs of collecting the information -- and "transactions costs" -- the costs associated with the contracting between the lender and provider of information services. Obviously, the "production costs" are incurred whether the information services are provided by the lender itself or by some outside firm. The

production costs of the information service are clearly affected by technology -- for example, the ability to monitor by satellite might reduce the costs of collecting information

Now consider the alternative ways and the total costs (production costs plus transactions costs) of learning about the state of the farmer's crops. If we were to define "transactions costs" as *excluding* the physical costs of producing the information service, we might well conclude that "transactions costs are minimized" by the physical collection of information (sending an inspector to monitor the farmer's crop) -- since that method substitutes technology-based information for organization-based information. If we define transactions costs to include all costs associated with the imperfect information, we might well conclude that "transactions costs are minimized" by the use of collateral.

As this example makes clear, in the real world there is potential for substitution between costs of creating better information and costs associated with transacting in the face of imperfect information. One cannot learn anything about the relative efficiency of a transaction by looking at only one element of the costs. As a practical matter, we should be concerned with total costs, to define transactions costs in a limited way (excluding physical costs) is to invite misleading conclusions about which response to imperfect information is the best response.

Milgrom and Roberts recognize the difficulties of making a distinction between production costs and transaction costs in practice:

*"[P]roduction and transactions costs generally depend both on the organization and on the technology, which makes the conceptual separation between production and transaction costs troublesome."*

But perhaps it is possible to define transactions costs as the total costs associated with information.<sup>1</sup> For example, see Jurg Niehans' definition, "In one way or another transaction costs are incurred in an effort to reduce uncertainty", or George Stigler's transactions costs are "the costs of transportation from ignorance to omniscience". Defining "transactions costs" like this would allow us to include both the hiring of a crop inspector and the costs associated with collateral in our definition of transactions costs, but to exclude items such as transport, storage, and handling of the commodity. Clearly, this focus on costs associated with information is justifiable when we are discussing a transaction such as a loan transaction, in which there is no physical commodity to be handled. In fact, the emphasis of the theoretical literature on this type of transaction may explain why many people might be tempted to define transactions as including only information related costs. For the purposes of this paper, where we are concerned with

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<sup>1</sup> For example, see Jurg Niehans' definition: "In one way or another transaction costs are incurred in an effort to reduce uncertainty" or George Stigler's transactions costs are "the costs of transportation from ignorance to omniscience". George Stigler (1967) "Imperfections in the Capital Market," *Journal of Political Economy* (75)3: 287-92. Jurg Niehans, "Transactions Costs," in *The New Palgrave Dictionary of Economics*, edited by John Eatwell, Murray Milgate and Peter Newman. Macmillan Press Limited, London, pp. 676-679.

markets for maize and cotton, the question remains. Can we draw practical conclusions about the efficiency of marketing arrangements by looking at transactions costs defined in this way (to include only those costs associated with information, and to ignore costs of physical handling of the commodity)?

Here too, the difficulty with a limited definition is that there is potential for substitution between costs associated with information and costs associated with physical handling of the commodity. For example, a firm might undertake extensive search costs in order to discover a buyer who is nearby; this would reduce transport costs. If we told the manager of a firm, "You will be compensated based on the extent to which you minimize 'transactions costs'," and then went on to define transactions costs as only those costs associated with information, the manager would avoid search costs, even if that meant shipping to a far away customer and incurring high transportation costs.

To make this same point with a different example, consider two firms who both want to have a given quantity of maize available to them six months in the future. The first firm guarantees the availability of maize by storage. The second firm guarantees the availability of maize by forward contracting (signing a contract that commits a seller to supply a fixed quantity of maize at a fixed price six months in the future). If we define transactions costs as those associated with information, the costs associated with contracting by the second firm would be transactions costs, while the storage costs incurred by the first firm would not be transactions costs. Can we say that the decisions of the first firm are "superior" because transactions costs (defined in this way) are lower? Of course not. To draw any reasonable conclusion about which firm is more efficient, we need to compare the total costs of the two firms.

The difficulty of learning anything useful about the efficiency of transactions in real world markets from an investigation of information costs only is recognized by Jaffee. In a paper showing how the transactions cost concept can be applied to agriculture, he lists the following categories:

**Search costs** are the costs associated with identifying and contacting potential buyers and sellers.

**Screening costs** are the costs associated with gathering information about the reliability of a particular buyer or seller, and the quality of the goods being transacted.

**Bargaining costs** are the costs of gathering information on prices in other transactions, on factors that might influence the willingness to bargain by the other party to the transaction, on implications of contract terms, etc.

**Monitoring costs** include the costs associated with monitoring contract performance.

**Enforcement costs** are the costs incurred in insuring that contract provisions are met. They include the costs associated with default provisions in contracts.

**Transfer costs** include transport, storage, processing, retailing, and wholesaling costs. They also include the costs associated with commodity losses in storage and transport.

Jaffee's "transfer costs" category clearly includes costs of marketing services performed in physically handling the commodity: transport, storage, retailing, wholesaling. The other

categories are costs associated with various types of informational imperfections, certainly transactions such as loans that have no need for physical handling would still involve enforcement, monitoring, screening, search, and bargaining

There are many examples of substitutability between information related costs and the costs of physical handling. A buyer might increase his wholesaling costs in the form of expenditures on "market development" by sending agents into producing areas more frequently; in doing so the buyer would reduce the seller's (farmer's) costs of acquiring information on price and searching for a buyer. Or, a processor could reduce costs of enforcing a contract provision on quality of a commodity by eliminating that provision, and in its place sorting the commodity by quality at the plant.

The point here is: If we want to draw inferences about marketing efficiency, we need to consider marketing costs in their totality. In the real world, information related costs do not exist in isolation from other economic decisions. As the above examples indicate, there is a lot of potential for reducing information costs by increasing costs of physical handling, or vice versa. If we focus too narrowly on information related costs, and exclude the costs of physical handling, we could well draw erroneous conclusions about whether marketing practices are efficient.

The above discussion leads to the following conclusions:

- We cannot define transactions costs based on whether the firm incurs these costs internally, or hires a service done by another firm.
- We cannot define transactions costs based on whether the cost is influenced only by organization (as opposed to technology).
- We cannot define transactions costs based on whether the cost is incurred as a result of imperfect information.

To violate any of these strictures will lead to a definition of transactions costs that does provide any practical guidance about market efficiency. If we adopted such a limited definition, we could (potentially) say "transactions costs are lower in situation Z than in situation X," however we could not conclude that situation Z is preferable.

This leads us to define transactions costs very broadly, as "all costs associated with marketing of the commodity." "Transaction costs" will include

- (a) the direct costs of marketing activities, including costs arising from imperfect information,
- (b) economic profits earned by firms in the marketing chain, and
- (c) indirect costs incurred by a firm in the marketing chain for certain activities which are related to the firm's involvement in marketing, but which are not strictly speaking direct costs of marketing the commodity.

These latter two points require some explanation.

Economic profits occur when a firm has the ability to influence the price of a commodity (through monopoly, monopsony, or collusion) and does not face the threat of entry by other firms. We include economic profits in our measure of transactions costs because these profits influence the size of the difference between what consumers pay and what farmers receive.

The “indirect costs” are the costs that a marketing firm incurs for “non-marketing” activities which indirectly influence the firm’s marketing costs. The main examples of these indirect costs in this paper will be the costs of providing farm credit and extension by marketing firms. These activities are not, strictly speaking, marketing activities. In the United States, for example, it is very common for farm credit to be delivered by firms (such as banks or input suppliers) that are completely divorced from the commodity marketing chain. However, in both Zambia and Tanzania, marketing firms are the primary commercial suppliers of farm credit and extension services. In large part, as we shall see later in the paper, this is because marketing firms have a great advantage over other firms in credit contract monitoring and enforcement – the marketing firm can extract loan repayment from the farmer at the time the commodity is marketed. In addition, the provision of farm credit and extension can indirectly influence the marketing firm’s costs. Credit and extension make farm production more profitable, thereby increasing aggregate farm output of the commodity. An increase in quantity handled by the marketing firm results in a decrease in average costs of the firm, when the marketing technology exhibits increasing returns (as is the case for cotton ginneries and other large processors).

Transactions costs are born by a variety of individuals and groups both inside and outside the marketing chain.

**Firms and individuals in the marketing chain** bear the obvious costs of labor, capital, and other inputs used to produce services such as transportation or storage. In addition, these firms bear costs of certain contingencies that might occur – for example, the firms face a threat of loss of the commodity through fire or theft. Thirdly, in cases where sectors of the marketing chain are imperfectly competitive the costs of providing marketing services should include the economic profits earned by monopoly firms. Finally, there are circumstances in which marketing firms bears costs of producing services that are not (strictly speaking) directly associated with the marketing of the commodity. For example, cotton marketing firms may have an advantage in providing production credit to farmers because marketing firms can enforce repayment at the time when the crop is marketed. The costs associated with this provision of credit by marketing firms falls within our definition of transactions costs.

At either end of the marketing chain, **farmers and consumers** bear some of the transactions costs. These may include monetary costs, such as the cost of traveling to the market, and may also include the value of time and effort expended by the farmers and consumers in the marketing transactions.

**Government Agencies** may also bear some of the costs involved with marketing transactions. In some cases the government directly takes over some or all of the services

performed in the marketing chain. In other cases, the government is an alternative provider of these services.

Some transactions costs may be borne by **individuals external to the market transactions**. For example, if transportation or storage of the commodity creates environmental damage, this damage is a cost associated with the marketing transactions borne by the public at large.

### **2.1.2 Marketing Margins**

**Marketing margins are the difference in prices at two different points in the marketing chain.** A commonly reported marketing margin is the farm-to-retail spread, which measures the difference between the retail price and the farm level price for a commodity. **Marketing margins are a typical way of measuring marketing costs.** There are two difficulties with this measure. First, in periods when firms in the marketing chain earn negative economic profits, the marketing margin will not fully reflect actual costs. Second, marketing margins do not reflect all transactions costs. The marketing margin reflects transactions costs paid by firms in the marketing chain, but costs incurred by consumers, farmers, government agencies or those external to the marketing chain. This can create analytical difficulties, because it is possible to shift costs from one category to another. For example, if an externality becomes internalized through a tax, that cost moves from the "external cost" category (not measured by marketing margins) to "marketing cost" category (included in marketing margins). This relationship of transactions costs to marketing margins is similar to that suggested in the New Palgrave

"Transactions costs face the individual trader in two forms, namely (1) as inputs of his own resources, including time and (2) as margins between the buying and the selling price he finds for the same commodity in the market."

### **2.1.3 Marketing Efficiency**

"Market efficiency" as we will use the term here refers to the extent to which transactions costs are at the minimum, or the degree to which transactions costs can be reduced. Two additional strands of economics literature are relevant here. The "efficient markets" literature of finance defines markets as efficient when there is an absence of arbitrage opportunities – when there is no possibility of earning a profit by buying the commodity in one market and selling the commodity in a second market. In this context, market efficiency requires that private transactions costs be minimized – failure to minimize total private transactions costs would create the opportunity to make profits by a firm or collection of firms that did minimize costs. Of course, the minimization of private transactions costs does not necessarily imply that total (or social) transactions costs are minimized. The second strand of literature that is relevant is the production economics literature on efficiency. This literature explicitly recognizes the possibility that firms do not always perform at optimal levels. The concepts of this literature also apply to marketing firms including those processing firms and those providing marketing services such as storage, transportation, and information. The relevant insights from this literature are that the real

world may be characterized by the existence of persistent arbitrage opportunities (the failure to minimize private transactions costs) and that the size of these inefficiencies is related to degree and intensity of competition and experience

## **2.2 Institutional Impediments to Efficient Marketing**

Having discussed transactions costs (and their relation to marketing efficiency), we now turn to the factors that influence these costs. Those include the technology and the costs of inputs used by marketing firms, but our focus will be on the ways in which institutional arrangements influence transactions and marketing costs. The “institutions” or “institutional arrangements” of an economy are formal and informal rules that govern or influence economic decisions.

The meaning of the term is perhaps best explained by means of some examples. Laws and government policies are institutions. The organization of governance and rules governing the behavior of government officials are institutions. Religious beliefs and other social strictures are institutions. The organization of ownership and assignment of property rights are institutions.

What may not be clear at first glance is how institutions can affect transactions and marketing costs. It should be obvious that some institutions (for example, government tax policies) directly influence costs of marketing firms. But frequently, institutions affect transactions costs in more subtle ways. For example, orthodox Judaism forbids travel and commercial activity on the Sabbath. If this proscription were widely practiced, marketing firms might respond to this by building extra storage capacity for perishable commodities in order to store those commodities over the Sabbath.

Changes in institutions can have major impacts on the structure of the marketing chain, as existing marketing arrangements become supplanted by more efficient but dramatically different arrangements. For example, repeal of the Zambian law that forbade private marketing of maize has led to huge growth in the number of small scale hammermills.

As we examine the ways in which institutions and institutional changes affect marketing efficiency and transactions costs, we will follow the model illustrated in the figure below.

Again, an example helps explain these categories. Costs of transport are an element of transactions costs. To trace the institutional causes of high transport costs, we might proceed as follows. Why are transport costs high? One reason might be poor roads. This is an immediate, or “apparent” cause of the high transport costs. (Other apparent causes might be an inadequate truck fleet, poor railroads, high energy costs.) But why are roads poor? One reason might be that money allocated for road repair is wasted on roads with little traffic. This is an “underlying” cause of the high transport costs. (Other reasons might be that incompetent firms are contracted to undertake repairs or that road funds are stolen.) Why are road repair funds mis-spent? The fundamental institutional causes are the administrative rules and procedures that permit or encourage corruption or mismanagement by government employees.

It should be clear from this example that the pathways of causation can be exceedingly complicated. A single cost may have a number of apparent causes. Each apparent cause may have multiple underlying causes. Each underlying cause may have several institutional causes. Likewise, a single institution may affect many different aspects of transactions costs.

### **3. A Framework for Understanding the Importance of Marketing Efficiency: Impact of Privatization on Markets and Market Participation**

One of the biggest concerns raised by government policymakers in our interviews with them is the impact of privatization on farmers in remote areas. As the government marketing system is dismantled, it appears that farmers in remote areas have been the most severely affected. These farmers may no longer be able to find a market outlet for their crops, or the farmers may choose not to participate in markets because of the low prices in these markets. In this section, we develop a simple conceptual model that explicitly considers the extent of market participation by farmers. The model demonstrates several interesting points: first, it is possible to see, within the context of the model, why policymakers were attracted in the first place to programs that would increase the extent of market participation; second, the model demonstrates how the elimination of pricing policies would cause a contraction in market participation in the short term; third, the model demonstrates how policies directed at improving marketing efficiency can regain the lost market participants and suggests some ways in which these policies may be more cost effective than the pricing policies.

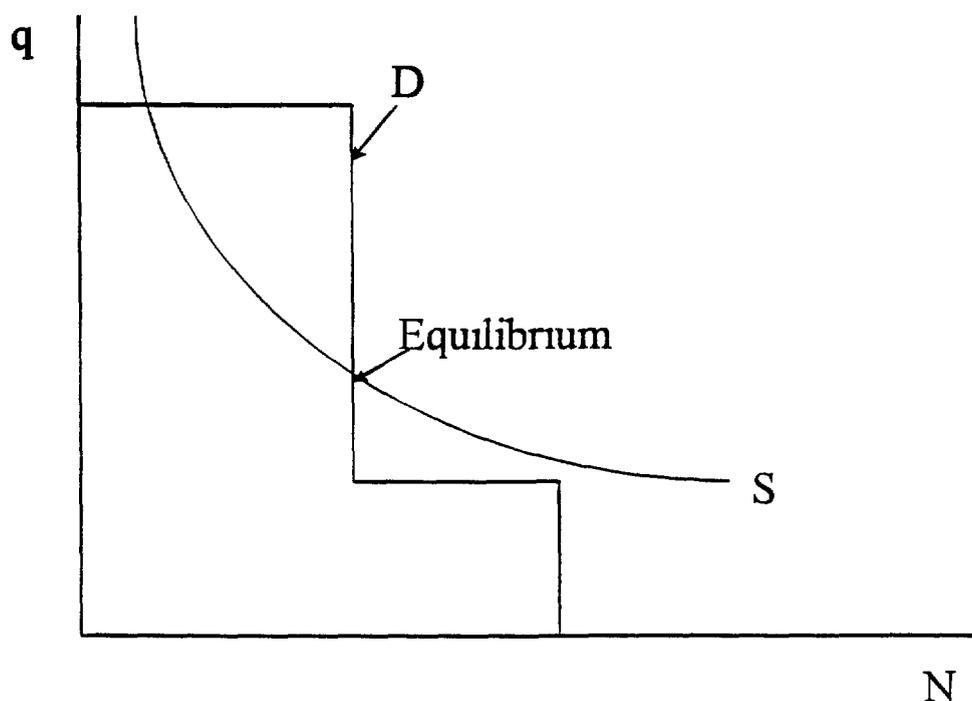
#### **3.1 Supply and Demand of Marketing Services**

In this simplified stylistic model of marketing from the farmer's perspective, we have split up transactions into two categories. The first category includes costs that are different for each farmer such as transportation costs. In the simplified model presented here, we assume that there are two groups of farmers: farmers in the periphery (far from the central market) pay high costs to get their crops to market; farmers near the center pay lower costs. The second category of costs includes the costs that must be paid by anyone who participates in the market such as the costs of searching for a buyer or the costs of grading and inspection.

It is on this second category -- the costs paid in the central market for each transaction -- that we will concentrate, by discussing the likely shapes of aggregate supply and demand curves for marketing services in the central market.

The demand curve answers the question: how much are people willing to pay in the central market to find a buyer, or to have their goods graded and inspected? One group of farmers -- those near the center -- that are willing to pay a relatively high price to find a buyer, a second group of farmers -- those in the periphery -- cannot afford to pay as much because it costs them more to transport the goods from the farm. This creates a "demand for marketing services" curve that has two steps. The width of each step in the demand curve is determined by how many farmers there are in each group.

The supply curve answers the question if there are  $N$  transactions -- if there are  $N$  farmers participating in the central market -- what will the average costs per transaction be? Here we conjecture that average costs per transaction decline as the number of transactions increases it is easier to find a buyer or the cost of grading and inspection per unit declines as the number of sellers increases (Formally, the supply curve is represented by the average cost curve rather than the usual marginal cost curve because we assume there are no barriers to entry, which implies that the natural monopolist provider of marketing services must earn zero profits )



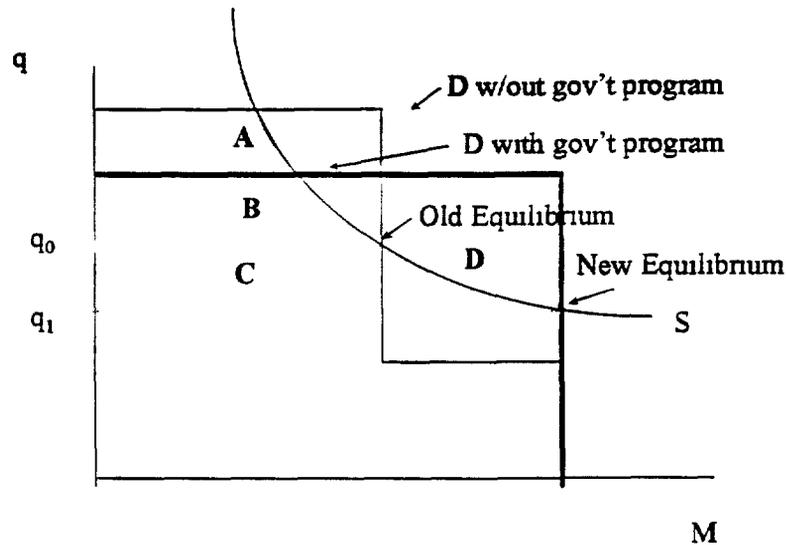
To review the supply curve is the (declining) average cost curve. The demand curve has two steps at the critical levels of  $q$  for the low transport cost and high transport cost farmers. The equilibrium point is one at which there is no lower price ( $q$ ) at which quantity demanded equals quantity supplied. The producer of marketing services, at this point, is earning zero profit and thus not attracting any entry. As the picture is drawn here, only the low transportation cost farmers participate in the market, there is a substantial group of farmers who are self-sufficient and who choose not to participate in the market.

### 3.2 Why Pan-Territorial Pricing May Appear Attractive in Theory

This conceptual model may provide some insight into the rationale for past government pricing policies. Simply described, the programs in effect for marketing of many agricultural

commodities in both Zambia and Tanzania prior to 1990 were programs of government ownership of almost all aspects of the marketing chain. As such these programs could and did establish farm level prices without regard to underlying supply and demand conditions. A common aspect of the pricing policies was to establish “pan-territorial” and “pan-seasonal” prices—a price that was the same for all areas of the country at all times during the year.

The figure below illustrates why a pan-territorial pricing scheme may have appeared like a reasonable option to policy makers. After presenting this idealized view of pan-territorial pricing, we will see some of the ways in which the real failed to live up to the ideal.



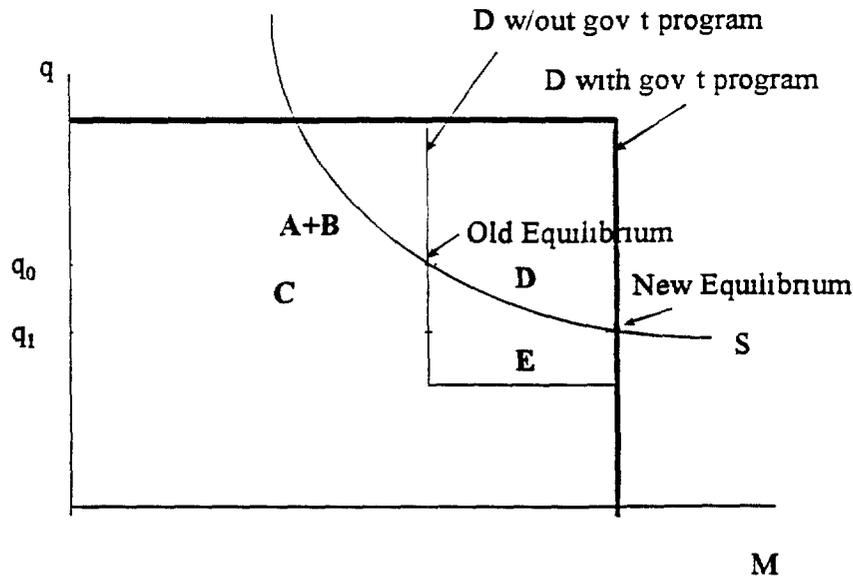
Without the government program, only farmers near the center participate in markets. But prices are such that the center farmers actually earn economic profits—they are willing to pay more (the high plateau on the old demand curve) than they are required to pay ( $q_0$ ). (Those economic profits are the sum of rectangles A plus B in the above figure.) A pan-territorial pricing program illustrated here simultaneously reduces the price received by farmers in the center (moving their willingness to pay for marketing services to a lower plateau) and increases the price received by farmers in the periphery (shifting their willingness to pay for marketing services to a higher plateau). In effect, the pricing system illustrated here subsidizes the transportation of the farmers in the periphery by taxing the farmers in the center. With that shift in the demand for marketing services curve, the equilibrium shifts to a point where all farmers participate in the market. Because there are more participants, the volume of trades increases, and the average cost and price per trade declines (because of increasing returns). In the new equilibrium, the center farmers lose rectangle A because of the lower commodity prices, but gain rectangle C because of the lower marketing costs. (As drawn, rectangles A and C are approximately the same size, to illustrate the case where farmers in the center are equally well off with or without the program.)

Farmers in the periphery have now changed from being non-participants to participants. They prefer the program (earning profits equal to rectangle **D**). In addition, since the government is in effect taxing the commodity price in the center and subsidizing it in the periphery, it is possible that the government can run this program at no net cost (or perhaps even earn a profit). The zero cost option is illustrated in the above by making the area of rectangle **A** (the size of the tax on farmers in the center) equal to the area of rectangle **D** (the size of the subsidy to farmers in the periphery).

### 3.3 Why Pan-Territorial Pricing Failed in Practice

This scenario illustrates why pan-territorial pricing programs might appear to be an attractive program. If the program could be operated as described above, it would be a program with no losers, and a program which benefits the farmers in the periphery while inducing those farmers to participate in the market. As put into practice, however, the pan-territorial pricing programs did not work like the ideal described in the above figure. There appear to be two difficulties – one political and one economic -- inherent in putting the theory into practice.

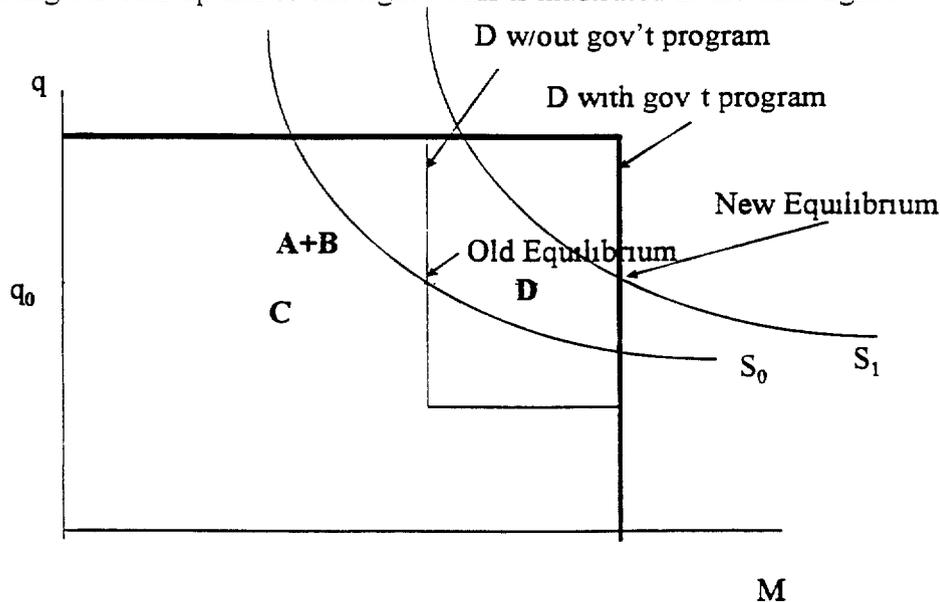
The political difficulty lies in convincing farmers in the center that they will not be significantly harmed by a pan-territorial pricing policy that reduces the price those farmers received. In order to get these farmers to support the pan-territorial pricing policy, the temptation for policy makers is to set the price level at the price received previously (before the policy). That is illustrated here.



Here the costs to the government are area  $D + E$  -- there are no offsetting revenues from

farmers in the center. This is consistent with the observed experience: programs tended to be quite costly, requiring significant government subsidies. Of course, the costs to the government are (at least partially) offset by gains to farmers. Farmers in the periphery gain area D (the difference between the farmers' willingness to pay and the price they are required to pay times the number of transactions). In addition, farmers in the center gain (area C) because of the reduced price for marketing services. If the government could recover some or all of the area C - - for example by establishing a pan-territorial price below the previously existing price level -- it could achieve the expansion of the market into the periphery at a lower net cost to the government - - perhaps (if  $C > D+E$ ) at no net cost to the government. However, in practice, for political reasons, governments have been reluctant to set pan-territorial price at lower than currently prevailing price. It is this "political difficulty" that explains in part why the pan-territorial pricing programs have been such a drain on the budget of the national government.

The economic difficulty in achieving the ideal presented earlier is that the lack of competitiveness in the marketing chain may increase marketing costs and shift the supply curve for marketing services up and to the right. This is illustrated in the next figure.



As drawn, the inefficiencies in the government provision of marketing services ( $S_1$  rather than  $S_0$ ) eliminate the potential gain from realizing greater economies of size. In this figure the average cost and price of marketing services remains the same with the program or without the program (Of course it is possible that the outward shift in the supply curve is so great that the average cost is actually greater under the government program than without.) In the picture above farmers in the center are not affected by the program: commodity prices and willingness to pay are the same with and without the program and the costs of marketing services are the same.

with and without the program. Although the program does improve the economic well-being of farmers in the periphery, the cost to the government ( $D+E$ ) exceed the gains to farmers in the periphery ( $D$ ). This illustrates how the pan-territorial pricing program as actually implemented not only may fail to achieve the ideal envisioned in the above analysis, but also may result in a program that is expensive to the government and relatively ineffective in assisting farmers.

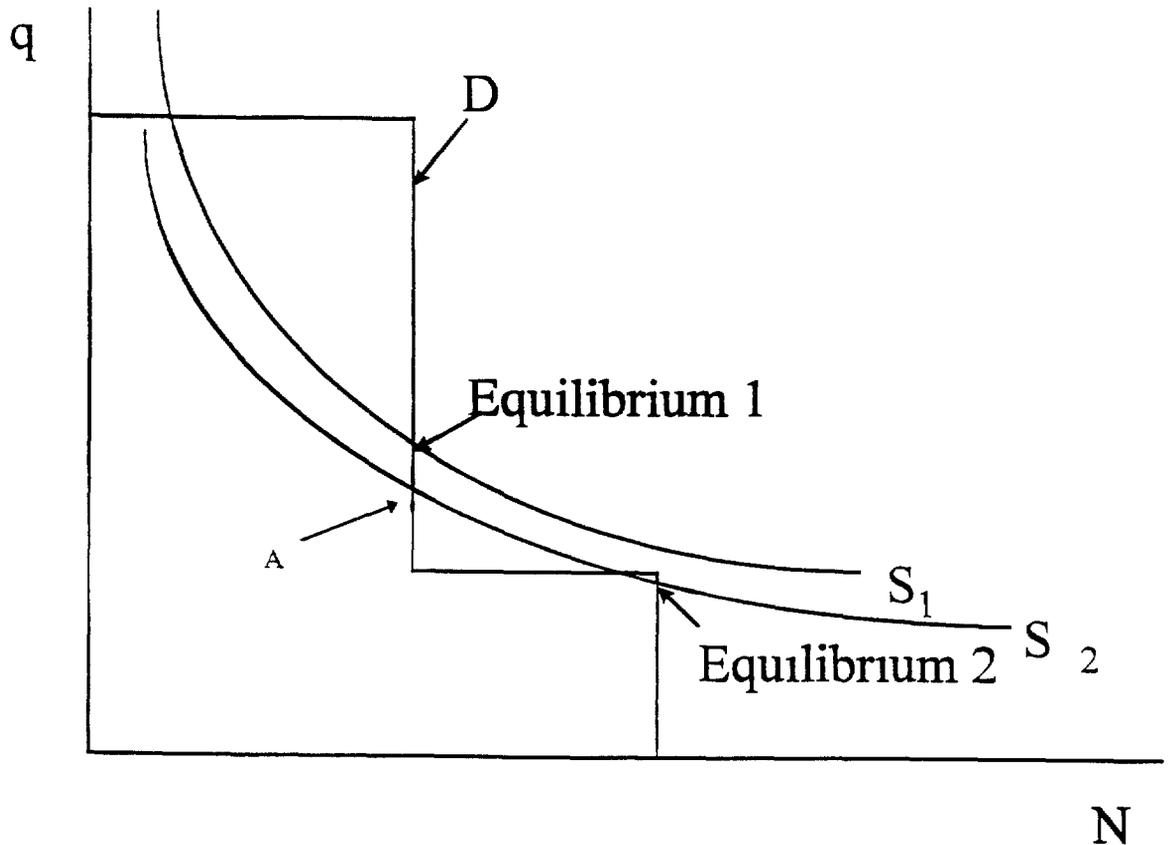
### **3.4 The Impact of Eliminating Pan-Territorial Pricing**

The above analysis also predicts the kinds of responses we might expect to elimination of the pan-territorial pricing programs. Initially, elimination will eliminate market participation by farmers in the periphery. This, in and of itself, raises marketing costs to remaining market participants, as we move up the average cost curve. Over time, private sector participation will lead to increased levels of competition that shifts the average cost curve down to its competitive minimum position. After the adjustment, the "old equilibrium" condition in the above picture will be the final resting point.

### **3.5 Marketing Efficiencies as an Alternative to Pricing Policies**

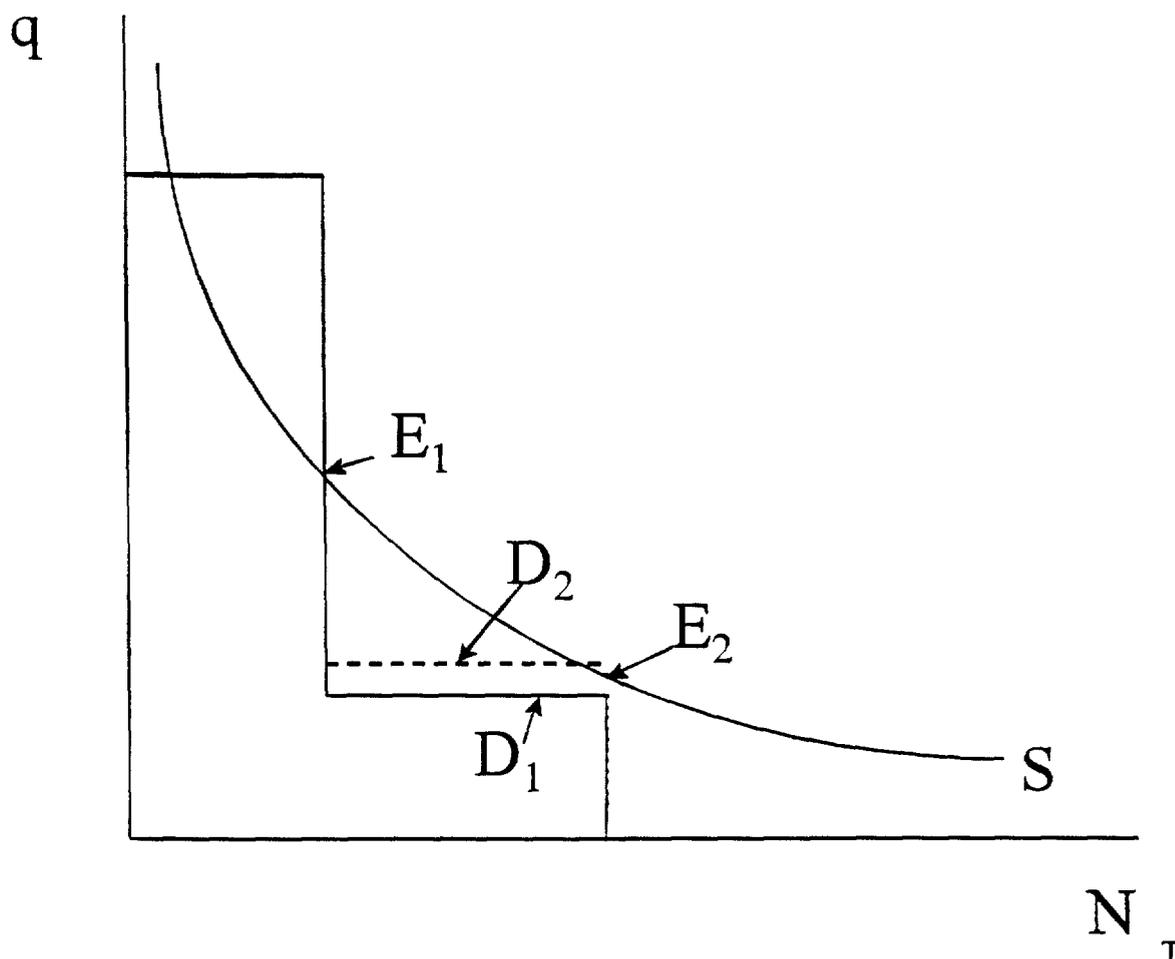
The conceptual model also illustrates why we should be concerned with market efficiency, and why programs that improve market efficiency may accomplish some of the same objectives as the previous pricing policies. An improvement in marketing efficiency is an alternative way of persuading periphery farmers to participate in the market -- with the resulting drop in average marketing costs. Improvements in marketing efficiency enter into the above model in two ways: reductions in the fixed costs of marketing, or reductions in the farmer specific marketing costs, especially for non-participating farmers.

Improvements in marketing efficiency in the central market -- for example through a more cost effective inspection and grading system, or through reductions in the processing costs -- will shift the supply of marketing services down and to the left (from  $S_1$  to  $S_2$ ) in the figure below.



In this illustration, a very small shift in the supply curve, from  $S_1$  to  $S_2$ , has a dramatic impact in market participation. The slight change causes all former non-participants to participate in the market. This brings down average costs of providing marketing services and thus provides an external benefit to the farmers who were already participating. Notice the difference between reductions in  $q$  attributable to improvements in marketing efficiency (illustrated by the small downward shift in the supply curve and the movement from equilibrium 1 to point A) and the reductions in  $q$  attributable to greater realization of economies of size in marketing (illustrated by the much larger movement along the new supply curve from point A to equilibrium 2).

Improvements in marketing efficiency that reduce the farmer specific marketing costs – for example, improvements in roads, greater competition in transportation, better telephone or radio communications – are illustrated in the figure below. This figure illustrates the case where the marketing efficiency gained reduces only the “transportation” costs born by farmers in the periphery.



his reduction in costs of transporting the product from the periphery to the market increases the amount that farmers in the periphery are willing to pay for marketing services in the center market. Here again, a small shift in willingness to pay for marketing services from  $D_1$  to  $D_2$  causes a large shift in equilibrium from  $E_1$  to  $E_2$ . The direct impact of a policy to encourage non-participants to participate is of course to increase the utility of the program recipients. But the indirect impact of reduced transactions costs for previous participants may actually dwarf the direct impact.

### 3.6 Types of Policies that Encourage Market Participation

A fundamental tenet of current thinking on appropriate government policies in developing economies is “increasing dependence on competitive markets”. In applying this tenet to agricultural households, markets, and policies, two policy lessons are commonly drawn: (i) policies should encourage participation in markets; (ii) policies should not interfere with the price setting mechanism of markets. The recent experience in agricultural commodity market liberalization in Sub-Saharan Africa might lead one to believe that these two tenets are

fundamentally at odds with each other – elimination of the government interference in the markets may frequently have the immediate impact of discouraging market participation. The model above suggests that there are policy interventions that can encourage market participation without interfering with the price setting mechanism of the market. Those policy interventions are ones that reduce marketing costs by improving the institutional framework within which marketing occurs. This illustrates why we should be concerned with marketing efficiency. Improvements in marketing efficiency may be able to accomplish some of the same things that were previously done by the pan-territorial pricing system, and accomplish them at much lower cost to the government and the society as a whole.

## **PART II**

### **Marketing of Cotton and Maize in Zambia and Tanzania**

The next chapters will analyze the impact of liberalization on maize and cotton marketing and market participation in Zambia and Tanzania. The chapters will address the questions, to what extent the private sector has filled the vacuum left by retreating government programs, and what kind of institutional impediments may constrain further participation of the private sector? Specifically, the efficiency of prevailing marketing structures will be assessed by estimating transactions costs and identifying the institutional factors behind these costs

#### **4. Data Collection**

Both primary and secondary sources of data were used to assess the marketing of cotton and maize in Zambia and Tanzania. Secondary data was obtained from government ministries, statistical records, and other reports. Primary data was collected by surveying the marketing chains for maize and cotton from the farmgate to the consumer. This data was collected in two ways: first, structured interviews were conducted in June 1997 in each country to elicit information from processors (large-scale maize mills, hammer mills, ginneries), manufacturers (textile and spinning mills), large-scale traders and brokers, and cooperatives. Second, a sample of farmers was surveyed in July 1997. The sample of farmers was constructed in each country as follows:

##### **4.1 Zambia**

In Zambia 88 maize farmers and 68 cotton farmers were surveyed in July 1997.

The survey was conducted in Mumbwa district of Central province and Petauke district of Eastern province. Both districts are major cotton and maize producers in their respective provinces. Central province is a line-of-rail province close to Copperbelt markets with fairly good transportation infrastructure. By contrast, Eastern province is remote from major markets and its transportation infrastructure is poor relative to Central province.

Villages for the sample were selected, taking into account the distance from town market and the state of road infrastructure. The villages covered in each district were as follows:

| District | Villages  |
|----------|---|
| Mumbwa   | Moono<br>Mumbwa Boma<br>Haamaundu<br>Chibila Agricultural Camp  |
| Petauke  | Chunkanda<br>Mwaulukila<br>North Nyamphande (settlement scheme)<br>Mpande<br>Petauke Boma (market place)<br>Mumbi<br>Mwaniawanthu |

## 4 2 Tanzania

In Tanzania, the clustering technique was used to arrive at the appropriate sample design. Cluster samples of a minimum of three villages were chosen from three major crop growing districts in a major crop growing area. From each cluster village an average of 15 households were interviewed. In addition, in the case of cotton, farmers and traders were interviewed at marketing centers and stations.

139 maize farmers and 23 maize traders were surveyed in Tanzania in July 1997. The survey was carried out in Iringa, one of the major maize growing areas. The maize survey covered the following districts and villages:

| District     | Villages                      |
|--------------|-------------------------------|
| Iringa Rural | Ilula<br>Tagamenda<br>Ifunda  |
| Mufindi      | Ifwagi<br>Luganga<br>Nyalolo  |
| Njombe       | Nyombo<br>Ramadhan<br>Mtwango |

Further, 120 cotton farmers and 16 cotton traders were interviewed in the Mwanza region. The cotton survey was carried out in the following districts and villages

| District            | Villages                             |
|---------------------|--------------------------------------|
| Magu                | Yitwimila<br>Masanza-One<br>Itumbili |
| Kwimba              | Kilyaboya<br>Ngudu                   |
| Misungwi            | Misasi<br>Manawa                     |
| Mwanza Municipality | Nyakato                              |
| Sengerema           | Tabaruka                             |

The purpose of these small surveys of farmers and traders was to provide only an indication of marketing arrangements and problems farmers and traders face -- specifically in the areas where they were conducted. By no means do they provide a comprehensive assessment of maize and cotton marketing in Zambia and Tanzania; the sample sizes are too small.

The results of these surveys will not be presented systematically in this report--to save the reader from the boredom. Instead, some key results will be highlighted where appropriate.

## **5. Marketing of Maize in Zambia**

This chapter analyzes the impact of liberalization on maize marketing in Zambia changes in the structure and efficiency of maize marketing and the magnitude and causes of transactions costs It will be shown that the private sector has responded vigorously to liberalization the marketing of maize is today primarily carried out by private traders in Zambia The results also indicate that the efficiency of mill-to-retailer marketing of maize--that takes place primarily within cities--has increased since liberalization However, the efficiency of farm-to-wholesaler marketing--that involves moving maize between cities--seems to have decreased Some of the main causes for this inefficiency--and high transactions costs--are found to be inadequate transportation infrastructure, inadequate access to information, weak contract enforcement, and lack of access to on-farm storage, credit, and inputs

### **5.1 Institutional Structures and Marketing Arrangements**

Maize is the staple food as well as a major cash crop in Zambia It is used as an input in the beer brewing industry and in the production of stockfeeds for poultry, beef and dairy cattle, and pigs In 1996, about 62 percent of the cultivated area in Zambia was planted in maize (Ministry of Agriculture, Food, and Fisheries 1997) This dominance of maize is to a large extent the result of previous government policies which encouraged production of maize throughout Zambia at the expense of other crops, as will be discussed below

About half of the maize produced in Zambia is grown by small-scale farmers who cultivate on average two hectares of maize each (Ministry of Agriculture Food, and Fisheries 1997) The rest is grown by large-scale farmers According to the Ministry of Agriculture, Food, and Fisheries maize accounted for about 95 percent of agricultural crop sales of small-scale farmers and 38 percent of the large-scale farmers in the 1980s

Maize is grown throughout the country, except in some exceptionally wet, dry, or infertile regions The principle maize growing areas are Central, Southern, and Eastern provinces Maize in Zambia is rainfed Fertilizers are commonly applied, in particular by large-scale maize farmers

#### **5.1.1 Background to Liberalization**

Until 1995 the marketing of maize in Zambia was controlled by the government through marketing boards Government controls on maize marketing were initiated in 1936 by the Maize Control Ordinance No 20 of 1935 (Musona 1997) This Ordinance provided the Maize Control Board with the responsibility of managing maize marketing The Maize Control Board was coordinating the maize marketing until 1957, when it was replaced by the Grain Marketing Board

This board was however, soon dissolved

In the mid 1960s the National Agricultural Marketing Board (NAMB) was established to handle agricultural marketing, including the marketing of maize. It was charged with the tasks of handling and procurement of agricultural crops, buying and selling of fruits and vegetables, buying and selling of fertilizers, seeds, pesticides, and ox-drawn implements, and managing strategic reserves of maize.

The government set the price of maize at different stages in the marketing chain. The government announced producer prices at which NAMB procured maize from farmers, and into-mill prices at which NAMB sold the procured maize to mills. These prices were pan-territorial and pan-seasonal.

These post-independence (1964) agricultural policies aimed to increase domestic maize production in order to supply the densely-populated urban mining areas with inexpensive maize meal (Howard and Mungoma 1995). Another aim was to reduce reliance on European commercial farmers settled in Zambia by increasing the participation of African farmers, as well as to improve regional equity by increasing market involvement of farmers in remote, less agriculturally advanced provinces. As it turned out, these objectives were pursued at a high cost.

In 1977, due to its heavy operating losses, NAMB was reorganized and other parastatals were formed to take care of the marketing of cotton, fruits and vegetables. The large size of NAMB had proved very difficult to manage. Also, NAMB was often unable to cover its costs with its revenues--the margin between the fixed procurement and selling price was not wide enough to cover the cost of NAMB operations. These factors led to increasing governmental subsidies. To improve the situation, the marketing of cotton, fruits, and vegetables was transferred to other parastatals.

The role of NAMB was also reduced in maize marketing. Provincial cooperative unions were formed in Luapula, Lusaka, North Western, Copperbelt, and Western provinces where no cooperatives existed, to handle the marketing of the crop and the distribution of inputs to farmers. The provincial cooperative unions took over most of the assets and liabilities of NAMB in these areas. The provincial storage centers remained however, under the control of NAMB. NAMB also continued to purchase surplus maize from the maize surplus provinces (Central, Eastern, Northern, and Southern) for sale to maize deficit areas. In addition, NAMB managed and procured maize for the National Maize Strategic Reserves and imported and exported maize when needed.

In 1989, a new National Agricultural Marketing Act was passed which dissolved NAMB and made the Zambia Cooperative Federation (ZCF) responsible for maize marketing and the maintenance of the National Maize Strategic Reserves. The Nitrogen Chemicals of Zambia was in turn charged with fertilizer production, importation, and distribution.

Cooperatives unions instead of being viewed as farmers' associations, were generally perceived to be part of the government in Zambia. Cooperatives unions were largely financed and used as instruments of government policy (Ministry of Agriculture, Food, and Fisheries 1995). Further, the management of the cooperative movement was weak. The government financed the operation of cooperatives regardless of their performance, which did not provide any incentive for the cooperative management to improve the efficiency of operations. Excess staff within cooperatives was common. The negligent administration and control led to the widespread misuse of cooperative funds and assets (Ministry of Agriculture, Food, and Fisheries 1995). As a consequence, crop and input marketing activities were highly ineffective and inefficient. As the report prepared by the Government of the Republic of Zambia et al (1994) states

*"The buying and storage system lent itself to corruption and mismanagement on a grand scale. Underweight bags were the norm in rural maize buying—with the average bag missing about 10 percent of its nominal contents. Many crop receipts were fraudulently issued. A high percentage of stored maize tended to rot (due to water ingress and lack of ventilation) or to be eaten by weevils (due to lack of fumigation in storage). The problem was not principally one of technical know-how, but of discipline and accountability."*

Under this system maize was hauled over long distances to a parastatal mill, and then the processed maize meal was hauled back once more over the same distance at the expense of the government. This system was in place until the liberalization of maize marketing in 1995.

### **5.1 2 Liberalization of Maize Marketing**

In 1995, the government passed the Food Reserves Act which removed the monopoly of maize marketing from ZCF and liberalized the maize trade. Participation in maize trading was made open, provided participants registered with the Food Security Division of the Ministry of Agriculture. This applied to foreign trade in maize as well. The controlled producer and into-mill prices were abolished and the input market was liberalized.

What was the response of the private sector to these changes? How did the marketing structure change? These questions will be answered in the next section.

### **5.1 3 Impact of Liberalization on Maize Marketing Structure**

Private sector response to the liberalization of maize marketing has been overwhelming. Marketing of maize in Zambia today is conducted primarily by private traders.

Maize farmers in Zambia can be classified into two groups: large-scale farmers and small-scale farmers. The small-scale farmers dominate the maize marketing in the country.

There are about 400-500 large-scale maize farms in Zambia (The Government of the Republic of Zambia et al 1994) These farms are either corporately or individually owned and they are located along the railway line that runs from Livingstone through Lusaka to the Copperbelt The average size of these farms is about 200 hectares and they commonly employ modern farming technologies Unlike the small-scale farmers, these farmers are financing their operations through credit from commercial banks They do not necessarily grow maize every year they switch in and out of maize depending on producer prices of maize and other crops The maize grown on these farms is either exported or sold directly to large-scale mills or to large-scale traders (which then sell it to a mill)

In addition to large-scale farmers, there are about 400,000 small-scale farmers which produce the bulk of maize in Zambia These farmers can be further classified into two categories farmers that use oxen for cultivation and farmers that use hand hoes The average farm size for cultivators that use oxen is about two hectares while for cultivators that use hand hoes it is only about 0.5 hectares Typically, all of these farmers lack access to credit

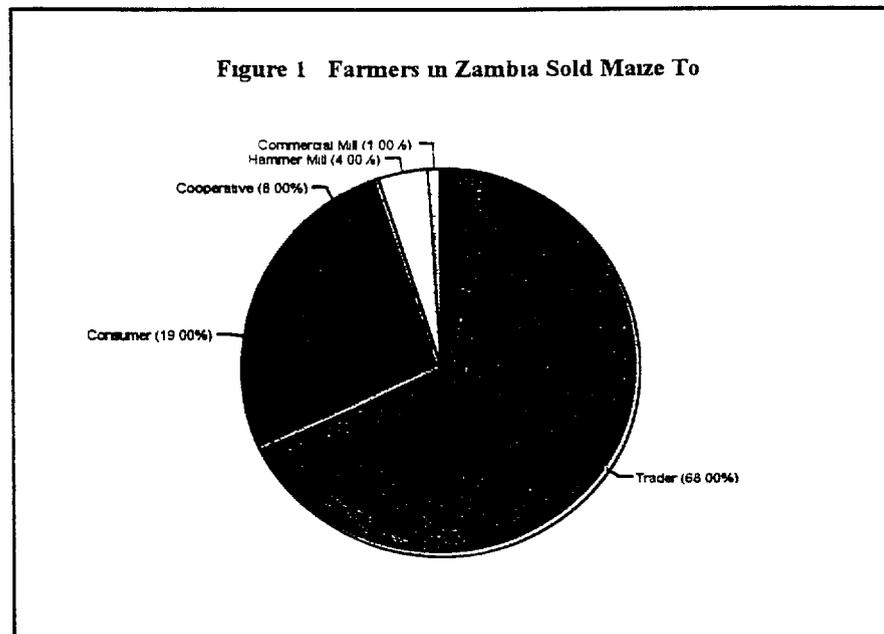
Private traders are the primary maize buyers from farmers At least three types of private traders can be identified large-scale, medium-scale, and small-scale traders

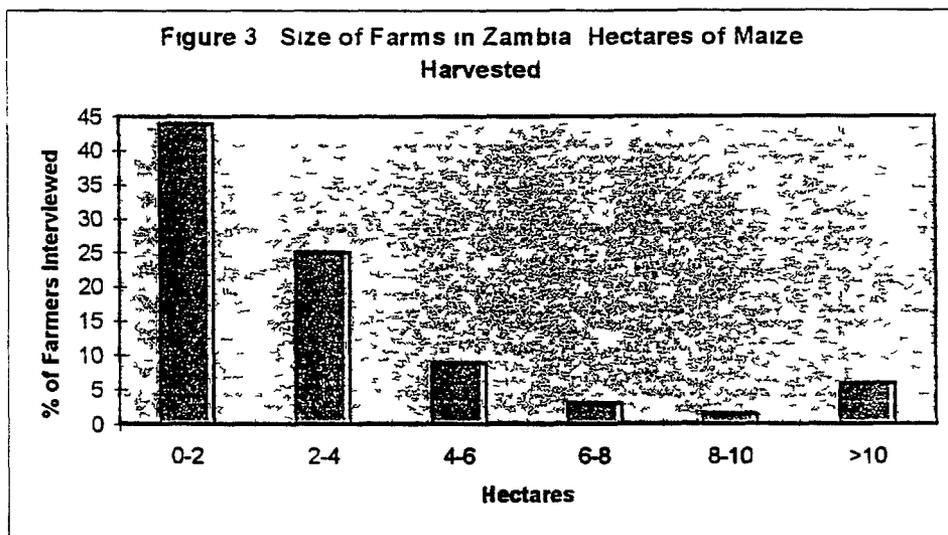
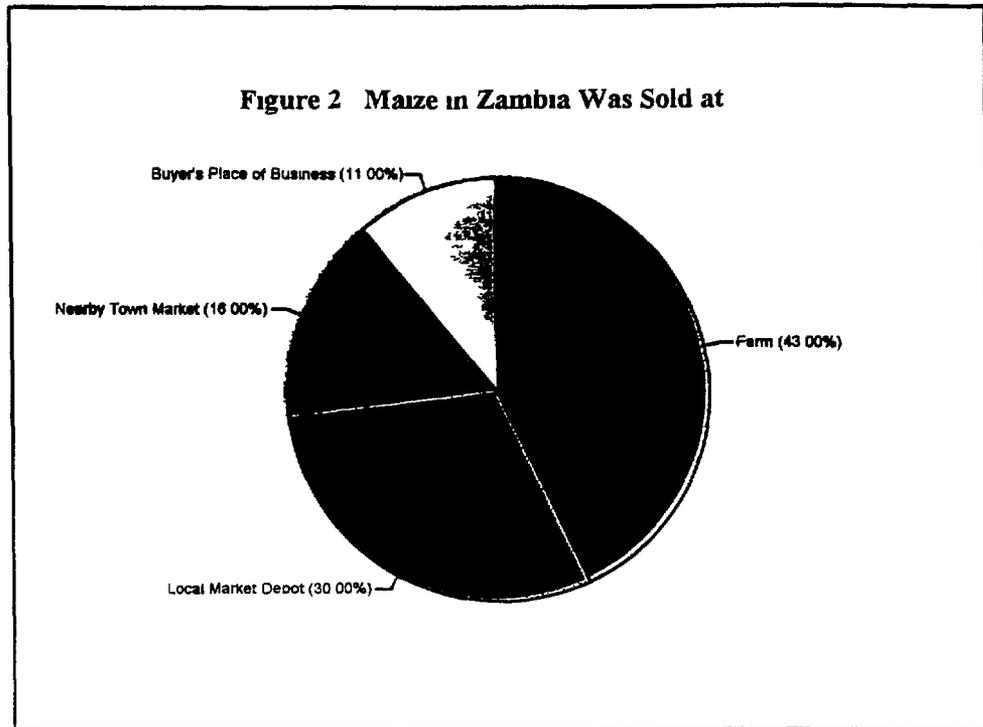
Large-scale traders are buying and handling large volumes of maize These traders are either multinational trading companies or large-scale domestic companies which own transport facilities These traders commonly collect maize directly from farmers--primarily from the large-scale ones-- but some traders have collection points in rural areas where farmers deliver their crops Payment is usually made on short-term credit basis, and some of these traders also exchange fertilizer for part or all of the maize purchased The maize collected by these traders is typically sold to large-scale mills

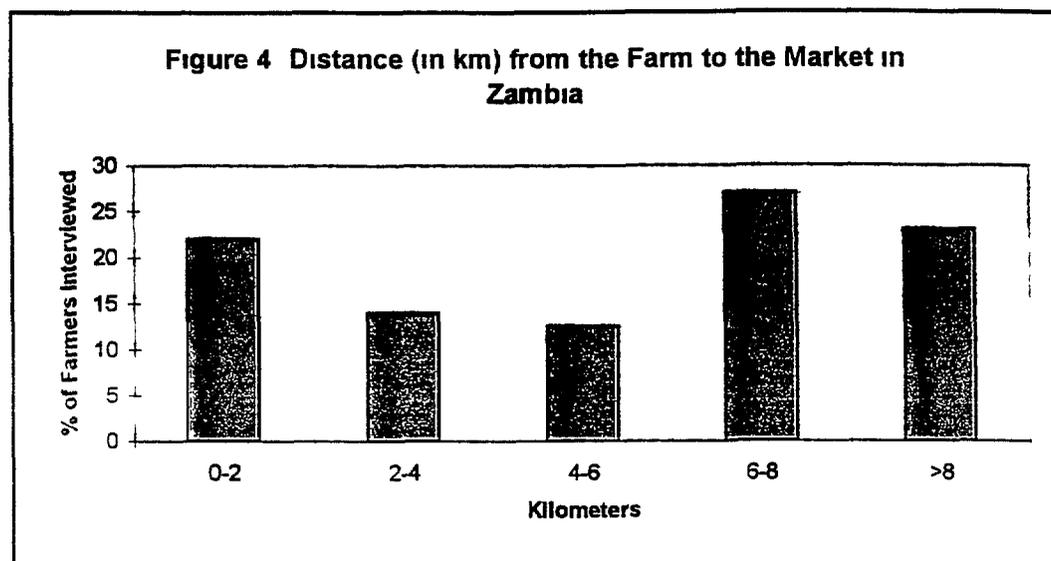
Medium-scale traders operate as middle-men with small working capital They buy small amounts of maize from several farmers--primarily small-scale farmers--assemble the purchased maize, and then transport and sell the collected maize either to hammer mills or to large-scale mills These traders typically own trucks which allow them to operate as collectors/transporters of maize

Small-scale traders buy maize in small amounts directly from small-scale farmers in rural areas and typically sell it in the local public market Most of these traders sell the maize directly to consumers, though some of them sell it to retailers or hammer mills operating in the local market These traders typically operate only within the local markets Traders either pick the maize up from the farm gate and transport it by their own or hired ox-cart or bicycle to the local market, or farmers deliver their maize to a fixed delivery point in the village Payment to a farmer is made either in cash or in kind Farmers themselves often operate as small-scale traders and sell their crop in the local market to consumers

Most of the maize farmers surveyed in Zambia sold their crop to a trader who either came to the village or met the farmer at the local market depot. As Figure 1 illustrates, 68 percent of the respondents sold their maize to a trader who bought maize at the farm or village level, while 19 percent sold it directly to a consumer. Only four percent sold to hammer mills and one percent to large commercial mills. Forty-three percent of all these transactions were carried out at the farm--that is, the trader came to the farm to buy maize--and 30 percent at the local market depot. The rest of the transactions took place in a nearby town market (16 percent) or at the buyer's place of business such as a storage facility or a mill (11 percent). Figure 2 depicts transaction location percentages. The majority of surveyed farmers were small-scale farmers: 44 percent grew less than two hectares of maize, 22 percent grew 2- 4 hectares, and only six percent cultivated more than ten hectares as is shown in Figure 3. Further, many of the farmers had farms that were quite distant from the markets as Figure 4 indicates: 27 percent of farmers reported that the closest market is 6-8 km away, 23 percent said the distance is over 8 km, and only 22 percent stated that the closest market is less than 2 km away.







Currently there are no official quality controls on maize. The critical quality attribute of maize is the moisture content which mills require to be about 12 percent. The moisture content is a “hidden value” it cannot be assessed without a moisture meter. Farmers, in particular the small-scale farmers, typically do not own a meter and therefore are forced to rely on the trader’s quality assessment. In the event of a dispute there is no independent grading and inspection agency that could assist either party. Ninety-seven percent of the surveyed farmers reported that the quality of maize was determined by the buyer. However, farmers indicated that the quality of maize often did not affect the price. 60 percent of interviewed farmers said that the quality of maize did not influence the price they received.

Large-scale maize mills buy maize from large- and medium-scale traders as well as directly from large-scale farmers. Also, the Food Reserve Agency which maintains strategic food reserves for food security purposes sells maize that it buys on tender from traders on tender to millers. Traders transport the maize to the mill where a representative of the mill inspects its quality and negotiates the price. If the maize does not meet the mill’s quality standards, the mill either offers a lower price or rejects the crop.

Large-scale mills sell the produced maize meal primarily to retailers in city and town markets who will in turn sell it to consumers. Side products of milling are sold to manufacturers of other maize products such as stockfeeds. Most of the large-scale mills are in Lusaka and Copperbelt province. In 1996, mills in Lusaka accounted for 50 percent of all mill production in

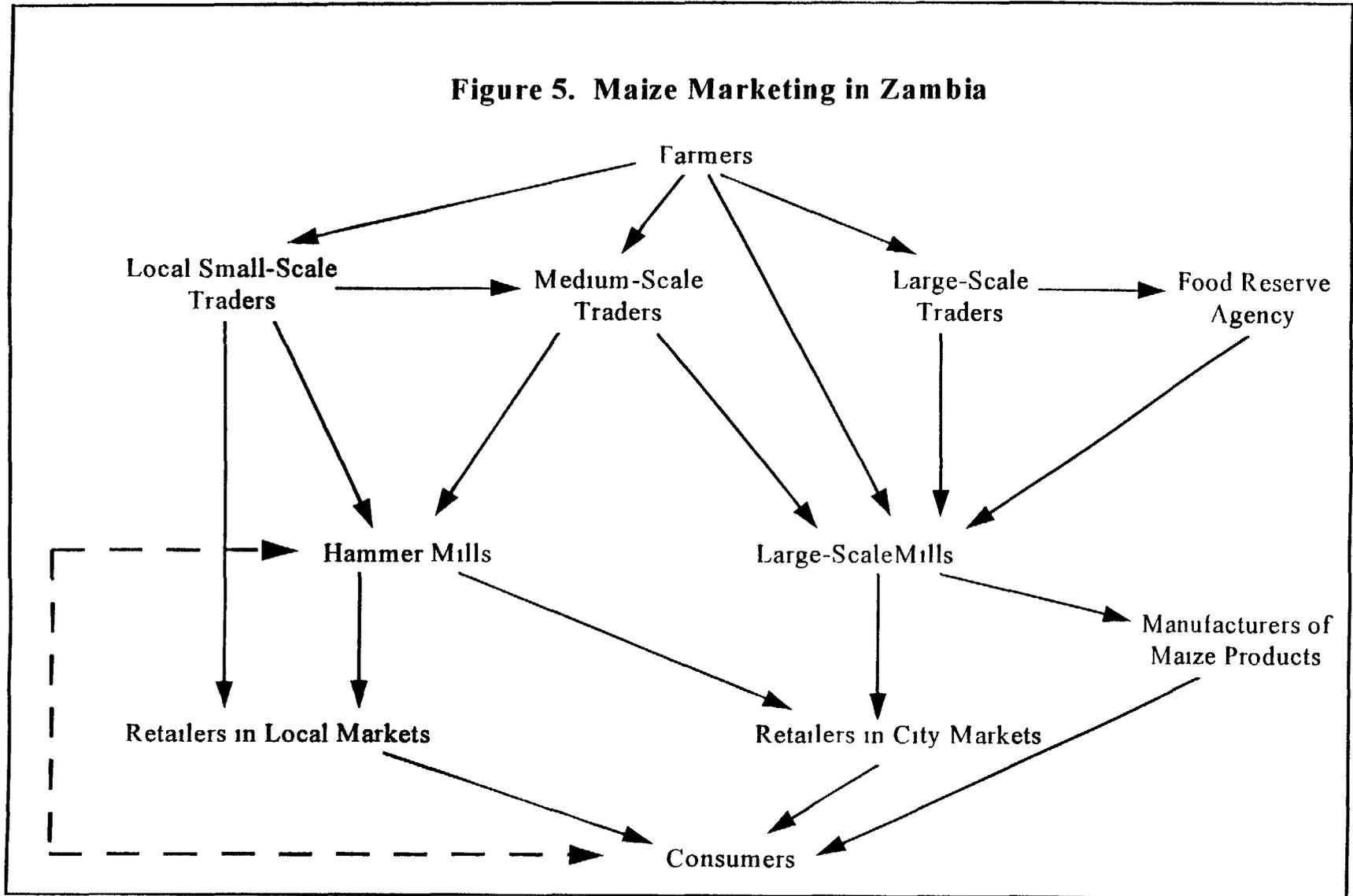
Zambia (Ministry of Agriculture, Food, and Fisheries 1996)

Since 1991 there has been a substantial decline in large-scale milling of maize and the demand for maize meal has become seasonal. According to the Ministry of Agriculture, this decline has been caused by a fall in real incomes and to some extent by the emergence of alternative crops in rural areas, and increased demand for wheat products in urban areas (Ministry of Agriculture, Food, and Fisheries 1996). The demand for maize meal nowadays has a clear seasonal pattern. Demand is at its lowest between April and September when maize is abundant in rural areas, and increases from September to January when the availability of maize grain declines. Another contributor to the decline in large-scale maize milling has been the expansion of small hammer mills throughout the country.

In recent years hammer mills have proliferated in Zambia. In 1990 there were about 2,200 hammer mills in Zambia. In 1995, the number of hammer mills was estimated to be about 6,000, and they were estimated to process about 70 percent of maize in the country (Ministry of Agriculture, Food, and Fisheries 1996). Hammer mills emerged as a response to the unreliability of maize meal supplies through the parastatal marketing system. Also, these mills process maize at a low cost. After the liberalization the reliance on hammer mills has continued, if not increased. According to the Ministry of Agriculture (1996), large-scale mills perceive hammer mills as serious competitors. These hammer mills sell milling services to consumers--that is, they process the maize that consumers bring in for a fee--or they buy maize from small- and medium-scale traders, mill it, and then sell the maize meal to consumers.

Figure 5 summarizes the main marketing channels for maize from the farmer to the consumer. For simplicity, foreign trade in maize is ignored in the graph.

**Figure 5. Maize Marketing in Zambia**

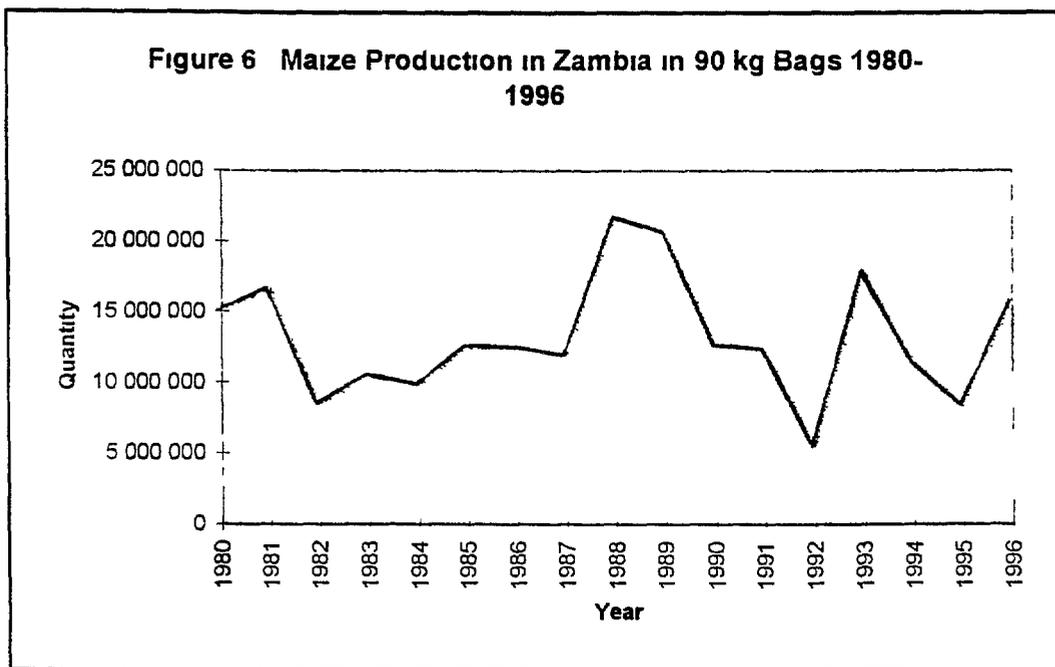


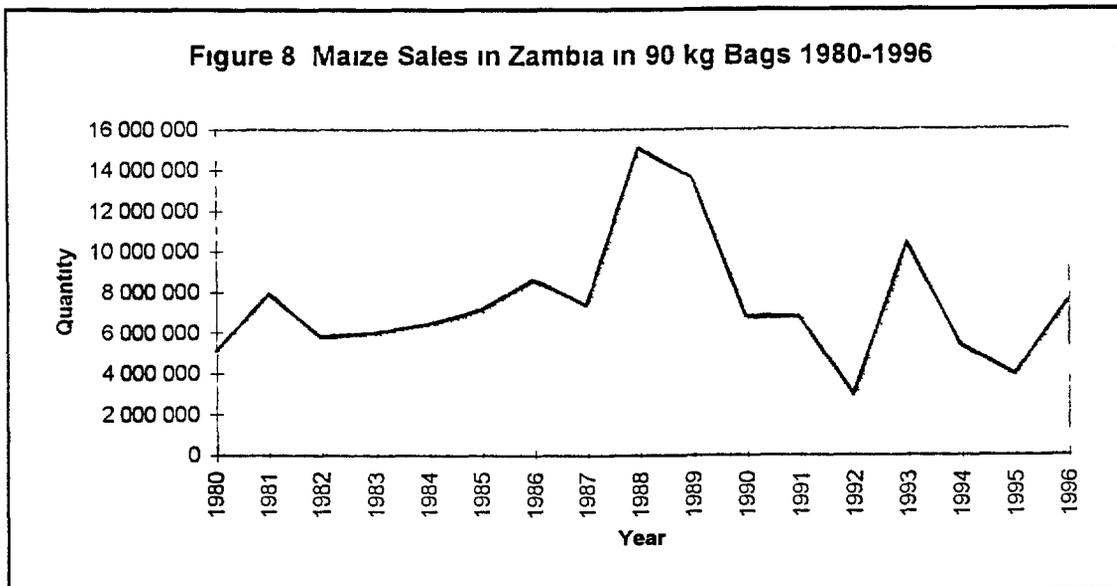
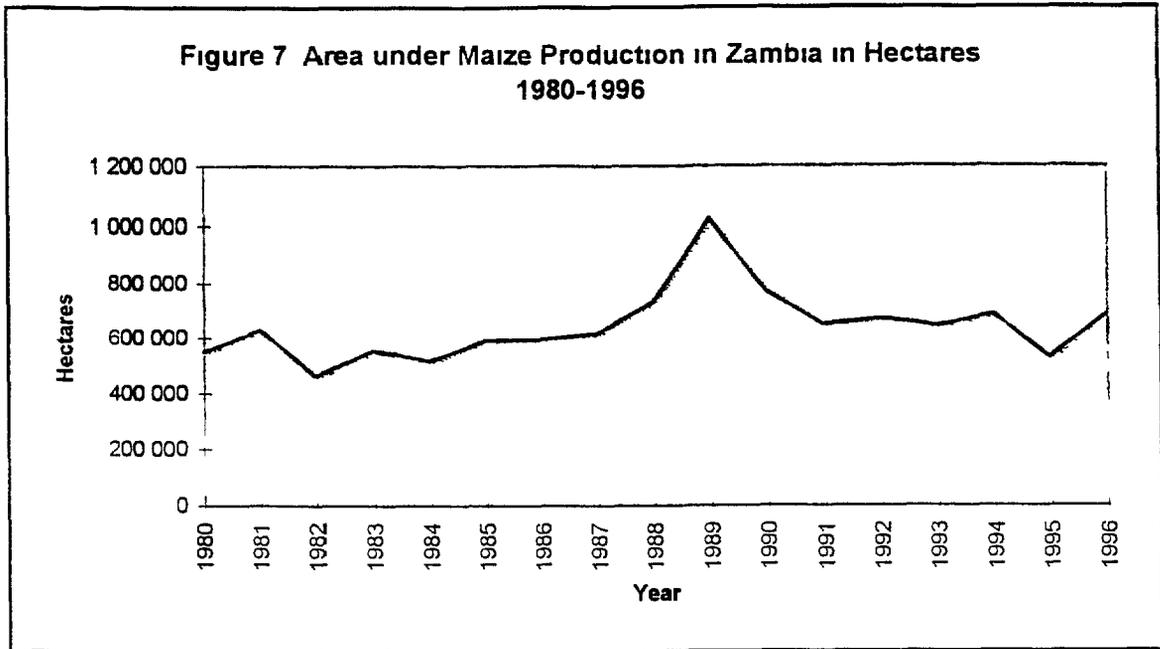
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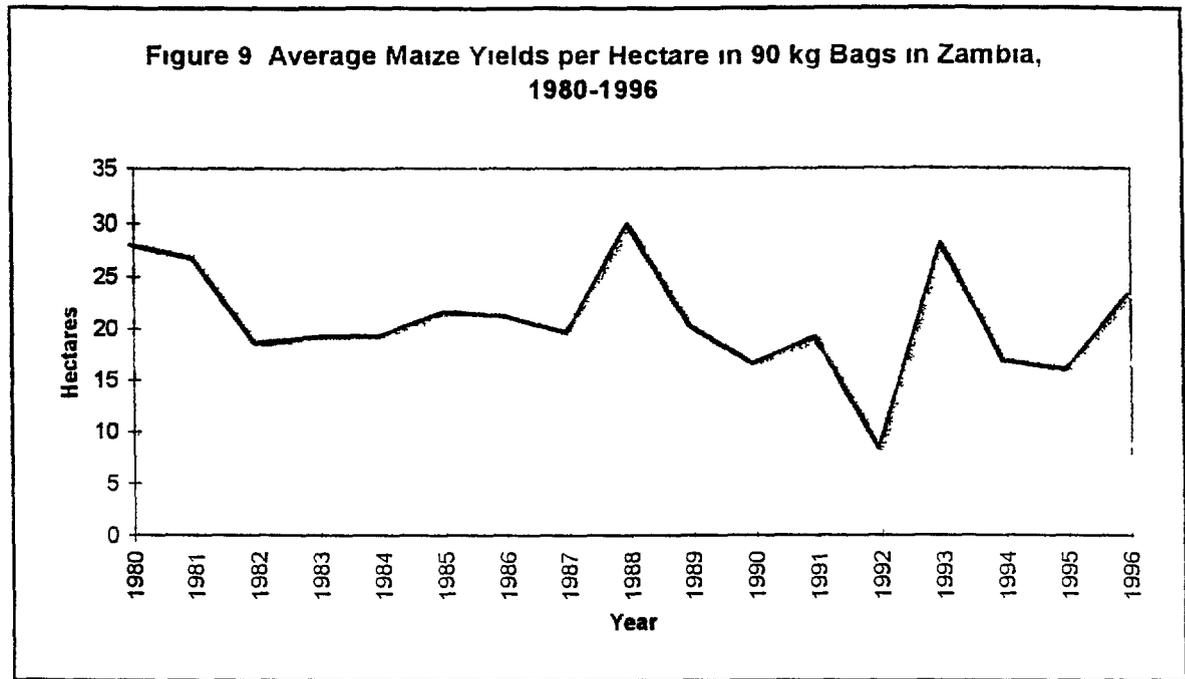
Given this new marketing structure what impact has liberalization had on maize production and prices? The next section will shed light on that question

### 5.1.4 Impact of Liberalization on Maize Production and Prices

The production of maize in Zambia has increased since the liberalization in 1995. This increase in production is explained by a jump in the area planted in maize back to 1994 level and by an increase in maize yields. Maize sales have also increased in the past years. Figures 6, 7, 8, and 9 depict the production, the area planted in maize, and average maize yield per hectare in Zambia, and maize sales in 1981-1996. However, the share of area planted in maize, in the total area under agriculture in Zambia has decreased during the same time period.







Maize producer prices (expressed in nominal Kwacha per 90 kg bag) rose from Kw 5,000 in 1993 to Kw 7,000 in 1994, to Kw 9,000 in 1995, and to Kw 12,000 in 1996. An average of prices received for sales in June and July of 1997 was Kw 110 per kg or Kw 9,900 per 90 kg bag.

How efficient is the current marketing structure? The next section will explore the efficiency of Zambian maize markets by analyzing the marketing margins.

## **5.2 Efficiency of Maize Marketing: Evidence About Marketing Margins**

This section examines the marketing margins in Zambian maize markets in order to assess the efficiency of current marketing arrangements and the magnitude of transactions costs. It will be shown that since liberalization mill-to-retail marketing of maize within cities has become more efficient, transactions costs have decreased in this segment of the marketing chain. However, there is a need to improve efficiency of farm-to-wholesaler marketing of maize between cities; transactions costs between cities appear to have increased in the past years.

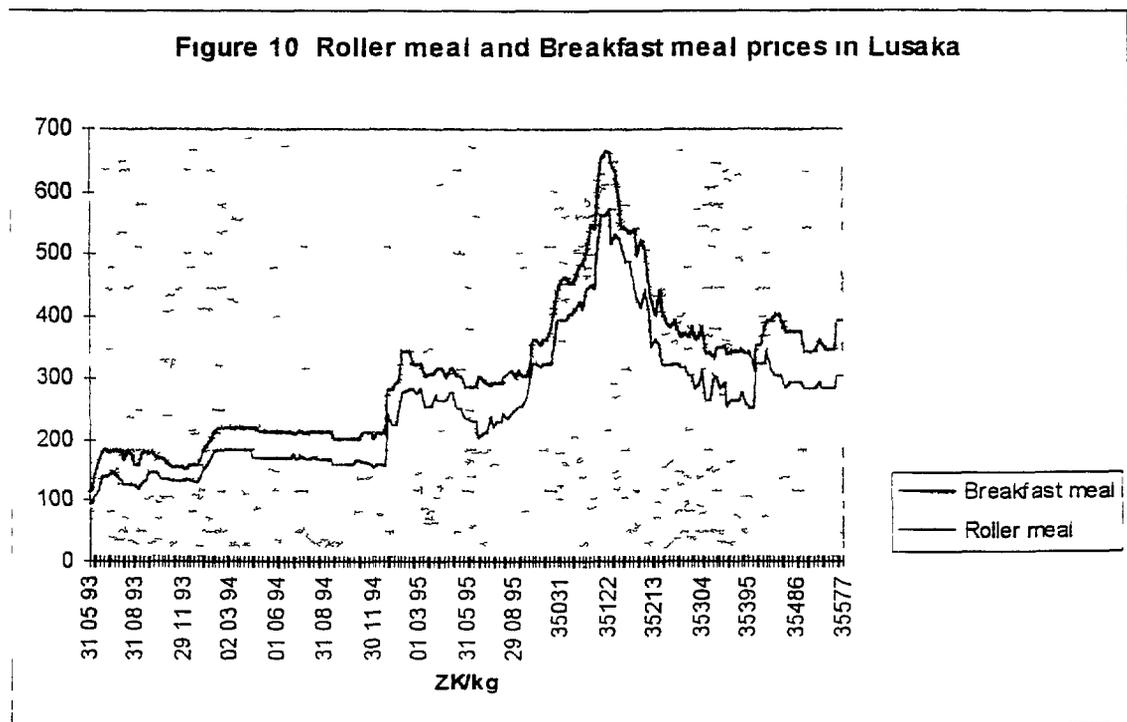
Two sources of information are used to assess the magnitude of marketing costs in maize marketing. First, the interviews and surveys carried out give an indication of inefficiencies in the

marketing chain. Second, government price data provide some evidence about marketing margins for maize over time and between cities.

Detailed information on maize prices was obtained from the Zambian Ministry of Agriculture, Food and Fisheries (MAFF). The data obtained include prices for nine cities for the following price series:

- wholesale prices for maize in 90 kg bags at public markets
- retail prices for maize in 15 kg bags at public markets
- into-mill prices for maize in 90 kg bags
- retail prices for breakfast meal in 25 kg bags
- retail prices for roller meal in 25 kg bags

In analyzing this data, breakfast meal prices are used as indicative of retail prices for meal. As Figure 10 shows, the breakfast meal and roller meal prices series are strongly correlated.



First, trends in marketing margins within a city over time are examined. One might expect to see a downward trend in marketing margins especially in the period immediately following privatization, as the free enterprise system learns about and takes advantage of new profit making opportunities. Such a trend, if found, would indicate that competitive pressures and learning-by-doing were increasing the efficiency of the marketing chain over time.

Two measures for within city marketing margins are used:

1. The retail price for maize at public markets minus the wholesale price for maize at public markets measures the spread needed to cover marketing costs at public markets.
2. The breakfast meal price minus the into-mill price measures the spread needed to cover milling and marketing costs of mealy meal produced at large roller mills.

Monthly average prices, adjusted for inflation (using the consumer price index in 1994 Kwacha), are used in the calculation. These two measures are plotted in Figures 11 and 12.

Figure 11 Zambia Difference between Retail and Wholesale prices for Maize in Public Markets (Real prices per kg)

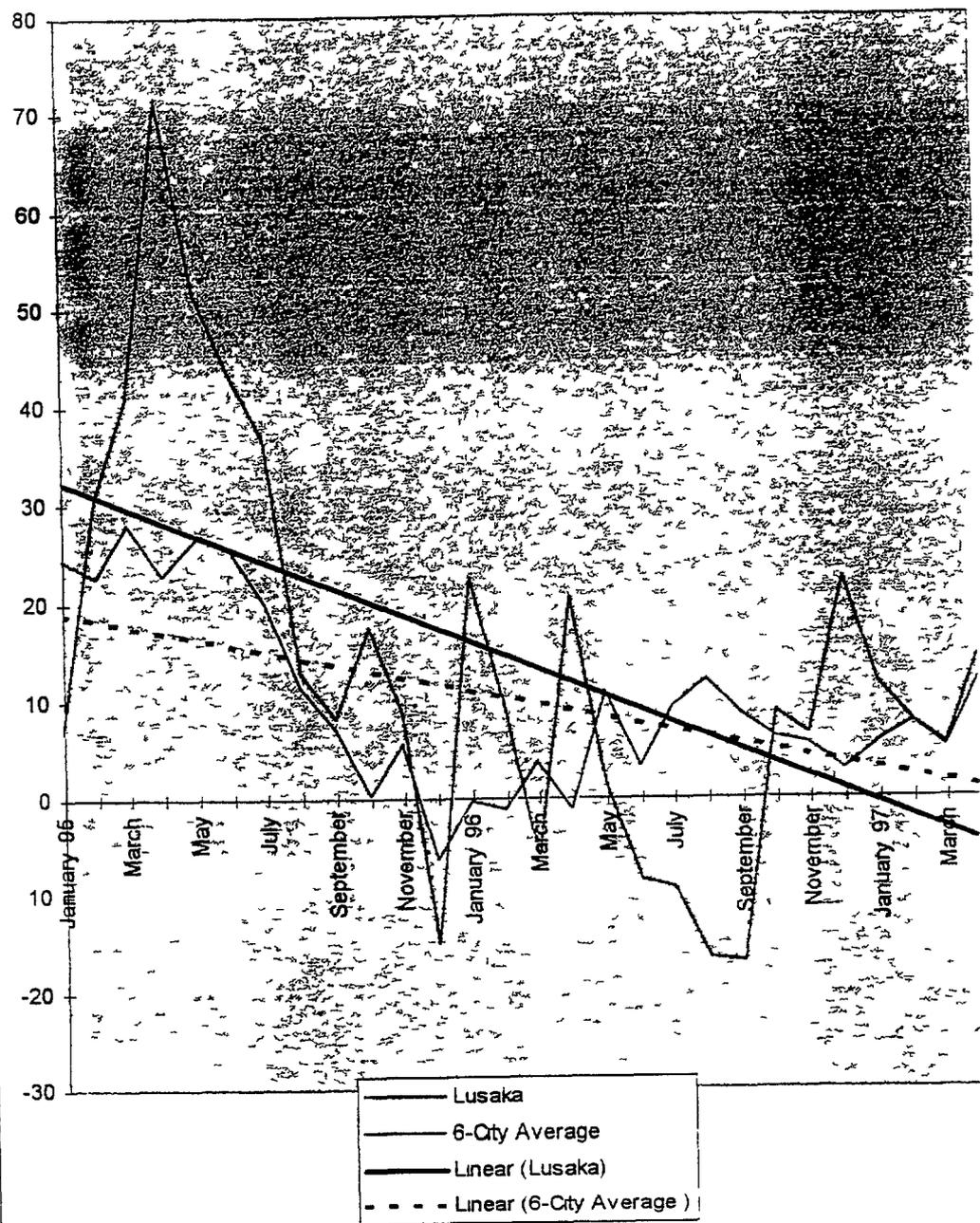
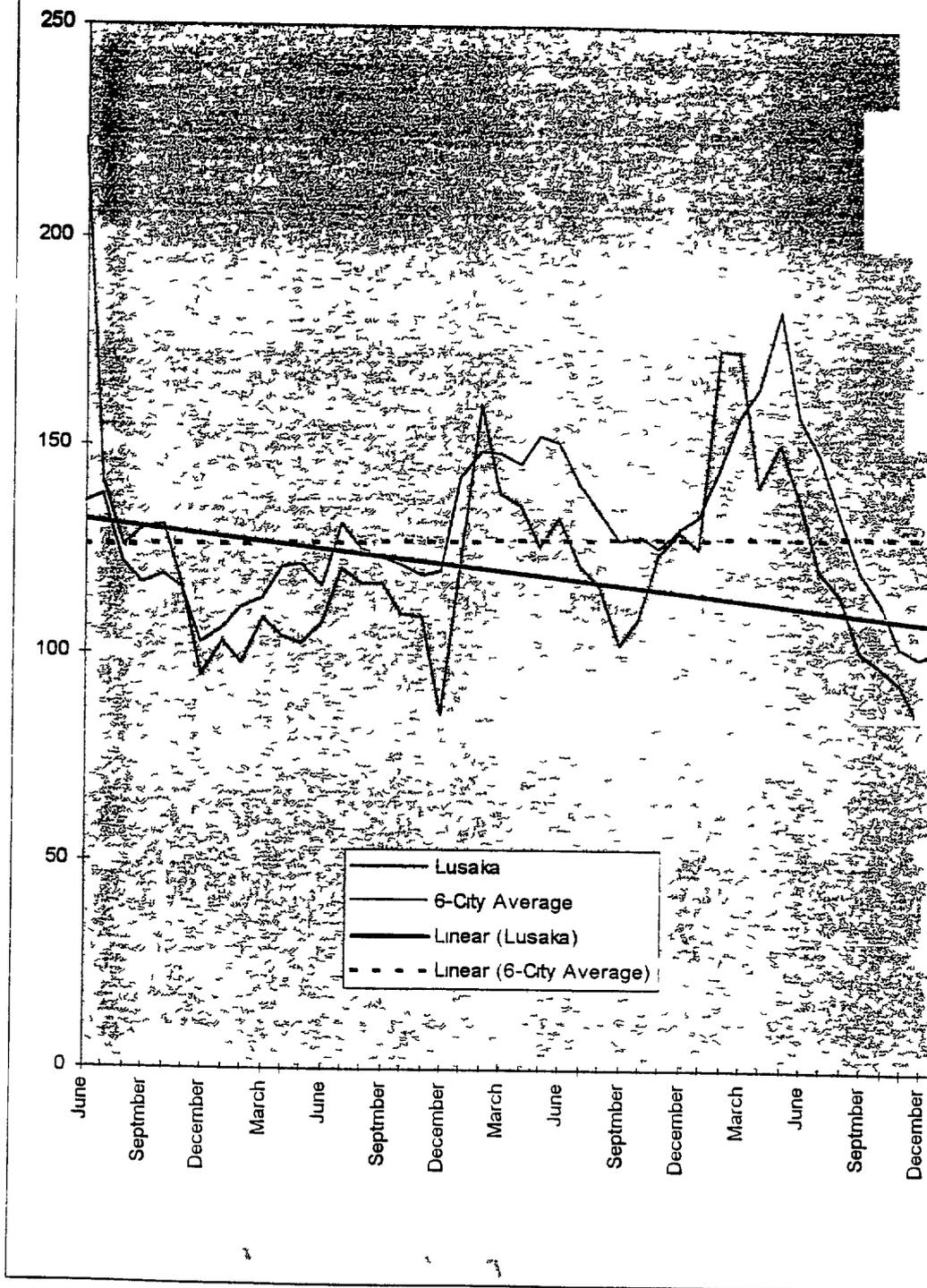


Figure 12 Zambia Difference between Breakfast Meal Price and Into-Mill Maize Price (real prices per kg)



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As Figures 11 and 12 show, both measures of within city marketing margins show a downward trend over time (except for the flat trend in 6-city average for the difference between breakfast meal and into-mill price) This is indicative of reductions in a certain category of transactions costs those costs associated with marketing within a city These costs include milling costs, retailing costs, storage costs, and costs associated with gathering information about prevailing prices in that city This decline in real margins, following as it does the privatization of the maize markets, suggests that the private sector has made progress in reducing marketing costs as market participants become more familiar with each other and the particular details of the evolving private trade, and as those participants are forced by competition to seek out efficiencies

There is additional evidence that the mill-to-retail margins have been lower since privatization Jayne et al (1995) report declines in real meal prices during the period of privatization They conclude that for countries including Zambia, "mill-to-retail marketing margins appear to have fallen since the major aspects of the reforms were initiated " <sup>1</sup>

National average movements in marketing margins before and after privatization are also compared to assess further the impact of liberalization on marketing efficiency To construct this comparison, data on farm maize prices, retail meal prices (average of June and December prices, weighted 60% roller meal and 40% breakfast meal), and government data on total quantity sold for years 1985-1990, and 1996 are used <sup>2</sup> In addition, the farm price and the retail price used for 1997 are obtained through the survey and interviews, and data on maize subsidies is from Mwanauo, Preckel and Farris (1994) <sup>3</sup> The results of this exercise are shown in the Table 1

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<sup>1</sup> Jayne et al "Trends in Real Food Prices in Six sub-Saharan African Countries FSII Policy Synthesis No 2 Michigan State University October 1995 internet address

<sup>2</sup> Data on total quantity of maize sold is obtained from Agricultural Statistics Bulletin (AFF Lusaka, February 1997)

<sup>3</sup> Mwanauo A Preckel P and Farris P Motivation for Marketing System Reform for the Zambian Maize Market ' J International Food and Agribusiness Marketing, 1994 pp 29-49

**Table 1 Cost of Zambian Maize Subsidies and Effect on Farm Prices**

| Year                           | Retail Price<br>Kw/kg | Subsidy<br>Kw/kg | Farm Price<br>Kw/kg | Farm Price as<br>% of Retail<br>+ Subsidy |
|--------------------------------|-----------------------|------------------|---------------------|---|
| 1985                           | 0 592                 | 0 210603         | 0 314667            | 0 392058                                  |
| 1986                           | 0 696                 | 0 738378         | 0 611111            | 0 426046                                  |
| 1987                           | 0 696                 | 0 972483         | 0 866667            | 0 519434                                  |
| 1988                           | 1 348                 | 1 047366         | 0 888889            | 0 371087                                  |
| 1989                           | 3 036                 | 1 300079         | 1 2                 | 0 276748                                  |
| 1990                           | 5 88                  | 6 58085          | 3 157778            | 0 253416                                  |
| <b>after<br/>privatization</b> |                       |                  |                     |   |
| 1996                           | 276                   | 0                | 133 3333            | 0 483092                                  |

Table 1 indicates that up to 1990, the marketing of maize was becoming increasingly inefficient in Zambia. The government subsidies were increasing and the producer price as a share of the consumer price and the subsidy was decreasing.

By contrast, after privatization, farmers have received nearly twice as much of the consumer dollar plus government subsidy per unit. Thus, the liberalization has benefitted farmers.

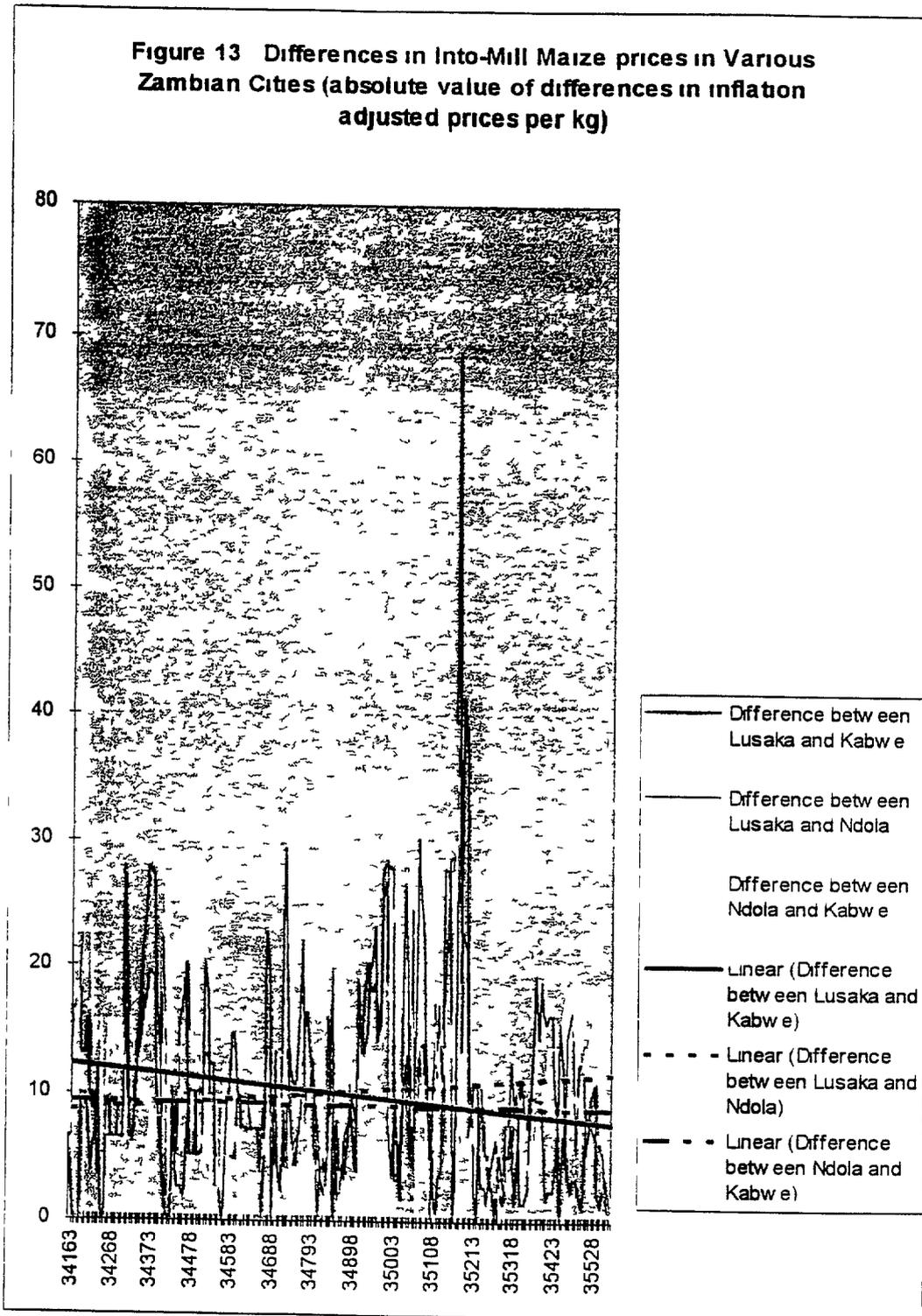
Next, the transactions costs of moving maize between cities in Zambia are assessed. These costs include the costs of moving commodity from one city to another and the search costs associated with price discovery in the two cities and matching of buyers and sellers. A persistent difference in prices between two cities would suggest that the costs of exchange--of gathering information about prices, finding a seller and buyer, and transporting the good from the low price city to the high price city--exceed the difference in prices. Figures 13-16 show differences for the weekly breakfast meal price, the into-mill price, the retail maize price in public markets, and the wholesale maize price in public markets, respectively. The figures show three inter-city differences: between Lusaka and Kabwe, between Lusaka and Ndola, and between Ndola and Kabwe. Figures 13-16 show the absolute value of price differences after prices have been adjusted for inflation using the consumer price index. The reason for showing the data as absolute value of difference is that one expects to see a rough symmetry in costs between moving commodity from Lusaka to Kabwe or moving it from Kabwe to Lusaka.

Differences in prices between cities at a given point in time do not necessarily reflect transactions costs of moving maize from one city to the other. For example, suppose the costs of moving maize between Lusaka and Kabwe are Kw2,000. If the price difference between the cities is Kw1,000 (e.g., Lusaka price 6,000 and Kabwe price 5,000), no one can make money by buying maize in Kabwe and selling it in Lusaka. If the price difference were to grow to over 2,000 (e.g., Lusaka price 6,500 and Kabwe price 4,400), then traders would buy in the low price city and sell in the high price city until the price difference declines to 2,000 (the cost of moving the maize). This illustrates how the price difference can move within a band (in the example a band between -2,000 and +2,000), where the size of the band reflects transactions costs. Therefore, in looking for evidence of changes over time in transactions costs between cities, we should examine whether the band of price differences seems to be shrinking or expanding.

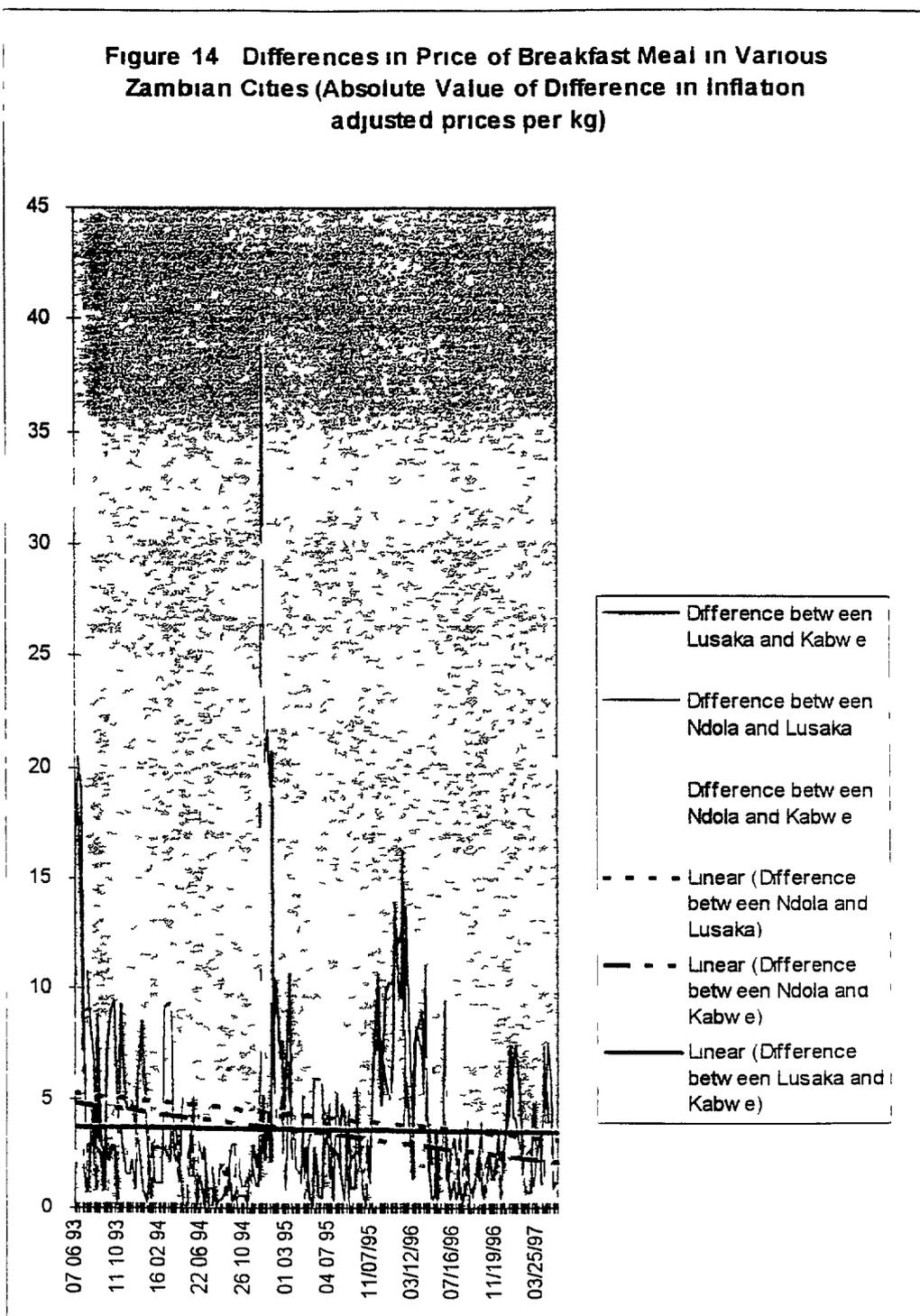
First, Figures 13 - 16 indicate that the price differences between cities are quite large and very volatile. As an extreme example, in April of 1996, the into-mill price of 90 kg bags of maize in Lusaka was Kw 20,000 at the same time that price in Kabwe was Kw 32,760. In May of 1996 the Lusaka price stayed relatively stable at Kw 19,750, but the Kabwe price dropped to Kw 12,000. In January 1997, retail prices for roller meal in Lusaka were Kw 10,000 per 25 kg bag, the price in Kabwe was Kw 8,300. By April the prices had flip-flopped Kw 8,600 in Lusaka, Kw 10,000 in Kabwe.

Second there does not appear to be evidence that transactions costs between cities are declining over time. If they were, that should be reflected in a shrinking of the band within which price differences fluctuate. Figures 13 - 16 fail to show a systematic reduction in the price band. For price differences for retail maize in public markets, there does appear to be a reduction over time but for differences in into-mill prices the largest differences appear in April-May of 1996.

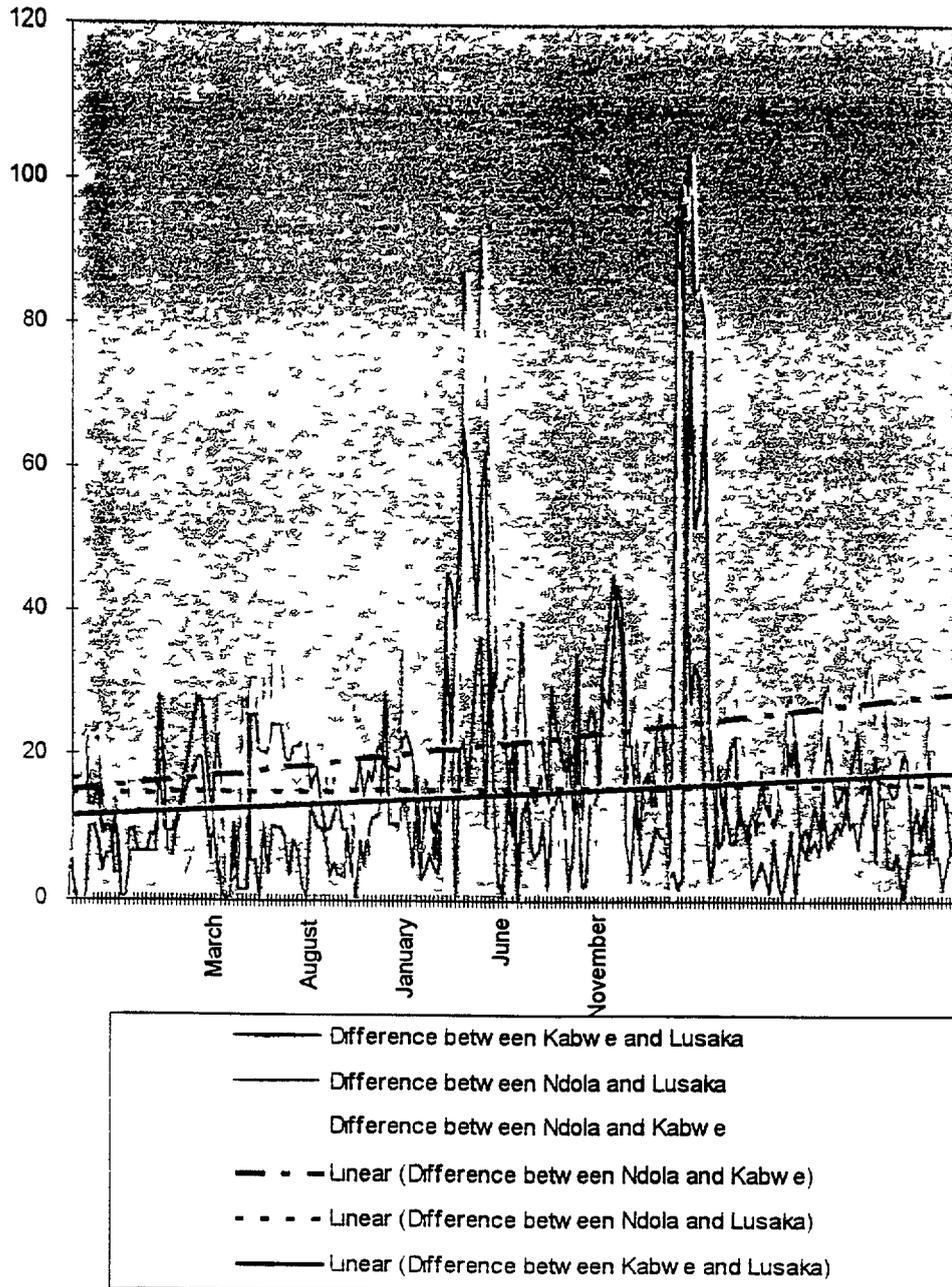
**Figure 13 Differences in Into-Mill Maize prices in Various  
Zambian Cities (absolute value of differences in inflation  
adjusted prices per kg)**



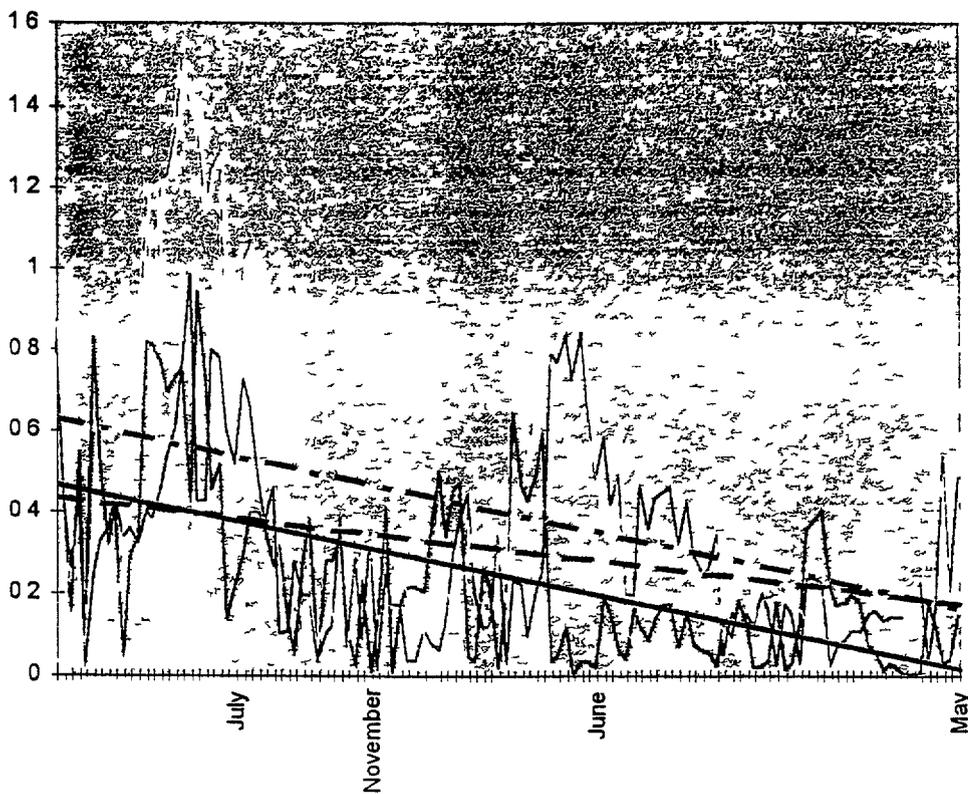
**Figure 14 Differences in Price of Breakfast Meal in Various  
Zambian Cities (Absolute Value of Difference in Inflation  
adjusted prices per kg)**



**Figure 15 Differences in Wholesale Maize prices in Public Markets of different Cities (inflation adjusted prices)**



**Figure 16 Between City differences in Retail Prices for Maize at Public Markets (Absolute Value of difference in Constant Kwacha)**



- Between Kabwe and Lusaka
- - - Between Ndola and Lusaka
- · · Between Ndola and Kabwe
- - - Linear (Between Ndola and Kabwe)
- - - Linear (Between Ndola and Lusaka)
- Linear (Between Kabwe and Lusaka)

These interpretations of the government price data are consistent with the evidence collected through interviews and surveys. As comments about “problems” in the maize marketing chain were solicited, many respondents focused on that part of the marketing chain between the farmer and the city. These comments and other observations indicated a lack of effective competition among traders who dealt directly with farmers. This lack of competition was exacerbated by the fact that farmers had very poor access to communications, transportation, and market information. Some of the more aggressive millers, apparently aware of these inefficiencies, had plans or programs to integrate their operations into this part of the marketing chain to take advantage of profit making opportunities.

On the other hand, within Lusaka (and generally within the part of the marketing chain between millers and consumers), there was ample evidence of vigorous competition and improved marketing efficiency. Perhaps the most notable examples of this were the dramatic growth in the hammermill sector, and the large number of small scale retailers and wholesalers at the Lusaka public market. Also, the hammermill operator interviewed was aware of prices charged by his competitors, and the managers of larger millers were well informed about the behavior and plans of their competitors.

This impression of transactions costs in the marketing of maize in Zambia is further buttressed by the data collected through the survey. For example, the price paid by mills for maize in Lusaka was virtually same in the mills interviewed, suggesting that maize sellers effectively competed in this market. A retail price for mealy meal observed at a farm outside Lusaka was quite close to the price observed in a large store in Lusaka. For each type of maize product, a common price prevailed in the Lusaka public market. At the same time, farm level prices collected in our survey show a huge variation. Thirty-four farmers reported prices received for sales during June-July 1997. Those prices ranged from Kw 13/kg (a sale of 150 kgs of unbagged maize for Kw 200) to Kw 200/kg (a sale of 8 50kg bags for a total amount of Kw 10,000).

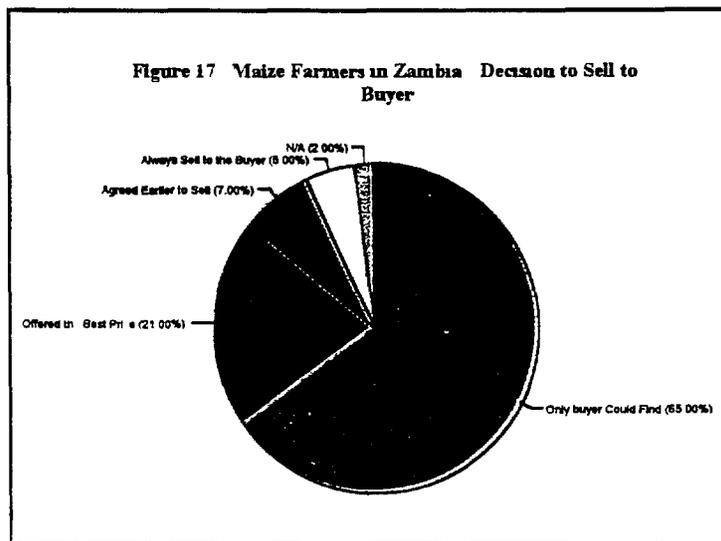
Why are transactions costs increasing in marketing of maize between cities? What explains the price differences between cities? The next section examines in a greater detail some of the factors and underlying institutional impediments that raise transactions costs and constrain effective competition in Zambian maize markets.

### **5.3 Factors Influencing Transactions Costs**

This section examines some of the key characteristics of the marketing chain that influence transactions costs for maize in Zambia. The attempt here is not to provide a comprehensive list of underlying causes for transactions costs. Instead, only those issues that the survey respondents and people interviewed considered to be the main constraints will be discussed.

Maize markets outside the major cities in Zambia are not well integrated and competition in these markets is often highly imperfect. Finding a buyer in these markets is often a problem. Farmers

outside major cities often have limited, if any, options for buyers as Figure 17 indicates. Sixty-five percent of the maize farmers surveyed reported that the trader who bought their maize was the only one they could find. Only about 21 percent of the farmers talked to two or more traders and then sold the maize to the trader that offered the highest price. When inquiring about the price determination, 52 percent of the farmers responded that the trader set the price, they could only accept or reject it. Twenty-three percent stated that the price was determined through negotiation, while, somewhat surprisingly, 19 percent of the farmers claimed that they set the price and the trader could either accept or reject it. Why is finding a trader often difficult? Infrastructural limitations, imperfect information, or other impediments to effective competition may provide at least a partial explanation.



### A Transportation Infrastructure

Infrastructural obstacles such as inadequate road network obviously hinder marketing efficiency. Remote location of farms coupled with poor road infrastructure results in high transport costs, further reducing the price that traders are prepared to pay farmers. In addition to increasing transport costs, inadequate transportation infrastructure raises search and monitoring costs.

The inadequate and sometimes dilapidated state of Zambian rural road network is impeding the physical movement of goods and, thereby, the integration of maize markets. The main roads are covered with potholes and many rural roads are impassable, except perhaps by tractor during the rainy seasons. In 1990 only about 20 percent of Zambian roads were judged to be in a good condition (Gananadha 1997). The poor quality of the roads results in delays in crop marketing and increased marketing costs.

The construction of rural roads is commonly viewed as the responsibility of the government because rural roads are public goods—many people can use the roads at the same time and it is costly to limit the use of the roads to people who paid for the construction. For the same reason, private traders and firms engaged in maize marketing generally lack the capacity and incentive to invest in rural roads. Private traders and firms prefer to wait for someone else to construct the road, and then free-ride on someone else's efforts. Yet the absence or poor quality of rural roads reduces producer incentives, raises marketing costs, and restrains trade. Unlike private traders, the government can coerce people to act collectively and curb free-riding by collecting taxes and using the tax revenues to finance the construction of rural roads (Olson 1965). Therefore, the construction of rural roads is often left for the government. However, as the experience in Zambia shows, leaving the responsibility solely in the hands of the government does not necessarily produce the desired outcome.

In Zambia, the underlying reasons for some of these transportation problems can be traced back to constraints in the Zambian fiscal system. In Zambia, road construction and maintenance have been financed by the government from tax revenues. There are, of course, competing demands on the use of these revenues and the government has not viewed roads as a priority. As a result, only meager funds have been allocated in government budgets to road maintenance and construction. By 1993, the allocation of funds to road maintenance had decreased to only about 15 percent of the requirements previously determined as necessary for adequate maintenance.

The deterioration of roads has been caused not only by inadequate government funding but also by the poor institutional framework within which roads have been managed. Five ministries in Zambia are responsible for roads. Lack of clearly defined responsibilities, ineffective and weak management structures and lack of managerial accountability have all led to inefficient use of the funds available (Gananadha 1997). Road agencies lack qualified and experienced staff to plan, organize, and monitor work on the roads.

However, since 1994 the government has taken steps to improve the road maintenance and reformed the road management by involving the users of roads—that is, the private sector—in the management. In 1993, the government imposed a fuel levy (currently Kw 40 per liter of diesel or gasoline), the proceeds of which will be deposited to an autonomous road fund. This fund is managed and administered by the National Roads Board which consists of seven private sector and five public sector members (Gananadha 1997). The road fund can be used only for road maintenance and its disbursement to private contractors who are hired to carry out the work needs to be approved by the National Road Board and the Committee of Ministers. It is still too early to tell how well this system will work, but results so far are encouraging. It is, however, important to note that this reform concerns only the maintenance and rehabilitation of existing roads. The management of the construction of new roads is still solely a government responsibility.

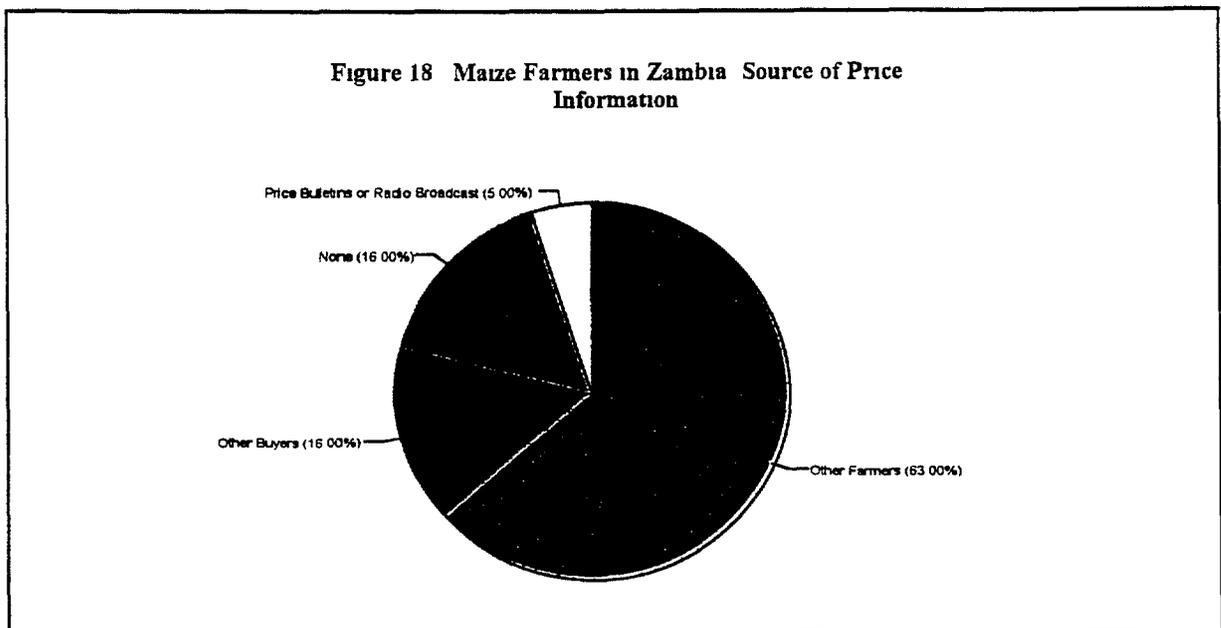
## **B Access to Information**

Effective competition and marketing efficiency is hindered not only by infrastructural but also informational bottlenecks which increase transactions costs by raising search, screening, and bargaining costs. The small-scale farmers are often unaware of prices of maize and opportunities in other markets.

### **1. Published and Broadcast Price Information**

The agricultural market information center of the Ministry of Agriculture is publishing a Weekly Market Bulletin which reports the prevailing wholesale and retail prices of selected agricultural crops and inputs, including maize, in major Zambian cities. Some of the provincial government offices also publish their own agricultural market information bulletins. These bulletins are distributed through government regional offices and major market centers to farmers and traders. This information is also radio-broadcasted on a weekly basis and made available to users through the internet.

This weekly price information, however, does not reach all the farmers, in particular the small-scale farmers. Only a fraction of the surveyed maize farmers had access to price information published in newspapers or broadcast on radio, and, unsurprisingly, fewer had access via the internet. Seventy-five percent of the farmers interviewed said that before selling their maize, they did obtain some information about the prevailing market prices. However, only 4.5 percent of the farmers had obtained that price information through published information bulletins or broadcast on radio. Most of the farmers, about 63 percent, relied on discussions with other farmers in the village. About 16



percent had negotiated with other buyers before selling in order to get information about the going prices. Figure 18 shows the use of various sources of information.

There are several reasons why the weekly price information collected and disseminated by the government does not reach farmers. First, most of the small-scale Zambian farmers are illiterate and, therefore, cannot read the bulletin. In 1995, the adult literacy rate for males was 14 percent and for females 29 percent in Zambia (World Bank 1997). Second, even those who can read do not necessarily understand English. English is the official language of the government in Zambia. Otherwise there are over 80 languages in the country, of which seven are recognized as "official" vernaculars. Most of the small-scale farmers speak a vernacular language. Yet, the Weekly Market Bulletin is published in English and is not translated into vernacular languages. Radio messages are broadcast, however, in vernacular languages. Third, not all the farmers own radios. Price information is broadcast on radio to reach illiterate farmers but not all of the farmers own a radio. Further, some farmers said that the information is broadcast at a time that is inconvenient for them. Finally, even if a farmer were literate and had access to the Weekly Market Bulletin, he/she may not be able to use the information. The bulletin contains only prices at regional centers. Farmers who live far away from regional centers may not be able to obtain the quoted prices. Traders typically refuse to give the listed price in remote places.

Presumably, government extension workers could also assist in the dissemination of weekly price information to villages. However, the government extension system is plagued by other internal organizational problems, including shortage of staff. Villages are not visited by extension workers on a weekly basis.

## **2 Rural Transportation Network**

Informational bottlenecks are also caused by the inadequate rural road network which not only impedes the physical movement of goods but also hinders the flow of information by reducing interaction among people and competition in the market. Improved roads would reduce transport costs, which is likely to increase the number of traders and the increased competition would presumably also promote the access to information.

## **3 Phone Lines**

Limited telephone services and congested mail services are as well limiting access to information, impeding long-distance trade and raising transactions costs of traders by necessitating alternative, more expensive communication methods such as private couriers or frequent direct visits to the buyer's or seller's place of business. For example, it takes today 116 years to get a phone line connection in Zambia (Washington Post 1997). These bottlenecks in communication, by restricting the access to information, limit the ability of the traders to respond to new market opportunities.

Inadequate phone lines and congested mail services are partly caused by fiscal and partly

by governance problems. Adequate funds are not allocated for the improvement and maintenance of Zambian telecommunication network. At the same time, agencies responsible for the operation and maintenance are not functioning most efficiently.

### **C. Contract Enforcement**

Most trade in maize markets is currently being conducted on the spot cash or barter basis to avoid high enforcement costs. If farmers do not honor all the contracts, neither do traders. On the spot exchange for cash or kind is a way to limit enforcement problems.

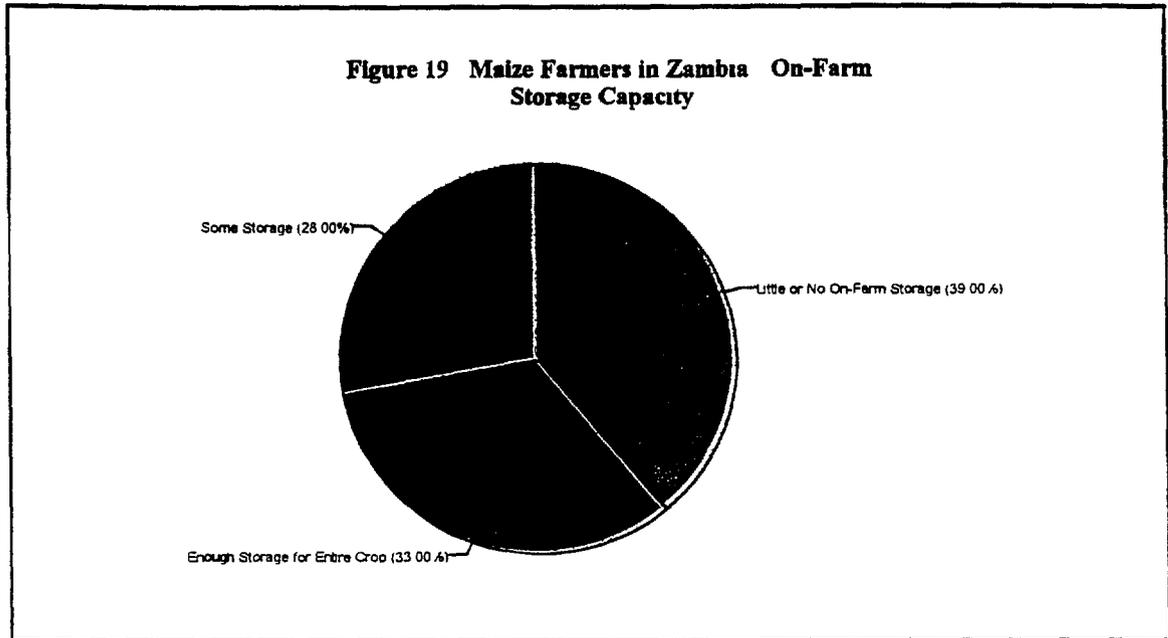
Credible institutions for contract enforcement that would limit opportunistic behavior of traders and, thereby reduce uncertainty inherent in exchange, are lacking in Zambian maize markets. This raises transactions costs by increasing enforcement costs. Farmers in general mistrust traders since "swindling" of maize by traders is common. For example, about 40 percent of the farmers interviewed in Mumbwa had been swindled by traders. These traders show up in a village and offer to buy maize at a high price. Farmers who are often desperate to find a buyer and tempted by a high price agree to the sale. Traders collect the maize and promise to come back the next day with payment, but they never return. Farmers have no recourse in these cases. Locating the trader is difficult since, although in principle traders are obligated to register with the government, in practice not all of them do. As a response, farmers, when they can, are insisting on a cash payment.

### **D. On-farm Storage**

Lack of on-farm storage restricts the opportunities for small-scale farmers to hold maize until prices rise or to guard maize from infestation when a farmer cannot find a trader quickly. This dampens producer incentives as well as effective competition in maize markets. After the liberalization, much grain was held on farms in temporary storage, because of farmers' inability to find a buyer. Maize may need to be stored often for several months and unless it is properly stored, it is vulnerable to infestation by pests. Small-scale farmers, however, typically do not have storage facilities. Of the farmers surveyed, 39 percent had little or no capacity for on-farm storage, 28 percent had some capacity but not enough to store the whole crop, and 33 percent reported to have enough capacity to store the entire crop. This is shown in Figure 19. Since small-scale farmers lack access to credit, they often are unable to construct storage.

At the same time that many private farmers lack on-farm storage capacity, many government-owned storage facilities in rural areas remain empty. These storage facilities used to belong to parastatal agencies prior to liberalization and are currently managed by the Food Reserve Agency. The Food Reserve Agency rents the space to the private sector, but the rental rates are far beyond the means of small-scale farmers. Kw 3 million per month for a shed with storage capacity of 55,000 bags (Tyler and Sakufiwa 1994). Small-scale farmers cannot afford these rates.

Tradition and social norms prevent a communal storage. Proposals for a group of farmers to rent a storage shed for joint use are considered suspicious, even if the proposed group consisted of members of an extended family. There is no tradition of communal storage in Zambia. As Tyler and Sakufiwa (1994) state "it is a strong tradition to secure one's own family's food and ensure that cash is obtained for the surplus, and this is a responsibility unlikely to be delegated to others."



In addition, there are other impediments to effective competition and efficiency in Zambian maize markets which raise transactions costs. These include access to credit and input supply.

#### **E. Access to Credit**

The private sector participation in maize trade is influenced by the access to credit, or lack of it. Lack of credit can severely constrain the development of the private sector.

Maize farmers' and traders' access to credit in Zambia is limited and the cost of credit high for several reasons. First, there is a general shortage of funds available for loan in the country. Banks have to rely on deposits to fund loans. International investment in the form of portfolio and foreign direct investment, has not flocked to the country because of the perceived macroeconomic uncertainty. Second, even the funds available for loan are often not directed towards maize marketing, as banks have other more profitable investment opportunities than

maize marketing Third, Zambia's legal framework and the modalities of recovery procedures make it difficult for the bank to recover its loan or collateral in the event of a default The Agricultural Credit Act criminalizes defaulting on repayments, but since the legal infrastructure is not sufficiently extensive to allow rural prosecutions, the Act can be meaningless (Mano Consultancy Services 1997) Also, the court system is perceived to be highly inefficient Fourth, bank lending in general is hindered by the non-existence of credit check agencies in Zambia Banks typically have to contact other banks to assess the applicant's credit worthiness This reliance on informal information network increases the bank's transactions costs

At the time of liberalization, the government formed a so-called Market Revolving Fund to provide financial support to emerging private traders, but the program was recently terminated because of widespread abuse The government perceived that the emergence of private trade might be hindered by the lack of access to credit The government created a fund that could be used to grant credit to traders to procure, handle, and store maize The established fund was managed by the Bank of Zambia and disbursed by commercial banks Unfortunately, the fund was widely abused many people posing as traders obtained funds that were never paid back

#### **F. Input Supply**

Private input markets are still undeveloped in Zambia which negatively impacts maize production and, thereby, marketing Maize farmers lack access to fertilizers, seeds, and packaging materials Recently, the Times of Zambia featured an article on farmers who were unable to sell their produce because of lack of grain bags

Some maize traders and millers have started to trade inputs in addition to maize, to farmers Some traders who buy maize from farmers also sell the farmers fertilizer either on cash, or barter (fertilizer for maize) basis Further, some maize mills, through their agents provide farmers an opportunity to exchange part or all the maize they deliver to fertilizer The typical rate of exchange is either two or three 50 kg or 90 kg bags of maize for one 50 kg bag of fertilizer In 1995 this system was very beneficial to traders since the price of a 90 kg bag of maize in 1995 was Kw 9,000, while the price of a 50 kg bag of fertilizer was Kw 12, 000 Based on this experience traders, eager to make profits, continued the system in the next marketing season The price of fertilizer (D compound), however, shot up to Kw 36,000 per a 50 kg bag Since the price of a 90 kg bag of maize was only Kw 12,000, traders ended up losing in this arrangement

Of 89 farmers responding to the survey, 41 bought inputs with cash, 15 with credit (to be repaid with bags of maize), and nine bought some inputs with cash and some with credit Of farmers reporting a repayment rate, 11 reported repaying two bags of maize for one bag of fertilizer, five reported three bags of maize for one bag of fertilizer and one farmer reported a one-for-one exchange

Government's frequent intervention in input marketing through agricultural credit

programs has, however, hindered the emergence of private suppliers. Even though the input marketing has been liberalized, the government has been intervening in fertilizer marketing by importing fertilizer from abroad and distributing it to farmers on credit through agricultural credit programs with local commercial banks. The price of fertilizer has been fixed by the government. This kind of government intervention has limited private sector interest in the input business, as long as there is the possibility that the government will intervene, the private sector is reluctant to step in. ly of inputs. In May 1997, the government announced again that it intends to withdraw completely from the provision of input and marketing credit, and the supply of inputs. Government withdrawal is attributed to the poor performance of their credit programs; the recovery rate for loans has been less than 50 percent.

The government's agricultural credit programs for inputs have performed poorly in terms of loan repayment for two reasons: poorly designed institutional management structure and ineffective contract enforcement mechanisms. One of the major management failures was that banks did not request any collateral from credit coordinators who were commissioned to identify farmers for credit, enter into contracts with them, and then distribute the fertilizer to these farmers. Therefore, if a farmer failed to pay back the loan to the credit coordinator who then was unable to pay back to the bank, the bank had no way to recover the funds. Second, commissions to credit coordinators were not linked to repayment rates. As a result, credit coordinators had little incentive to enforce credit agreements with farmers. Third, when they tried, credit coordinators had difficulties enforcing the credit agreements. Many farmers treated these credits as grants from the government. They did not honor the loan contracts. Instead of delivering the agreed amount of maize to the credit coordinator at the harvest time, these farmers sold it to private traders. When taken to the court, farmers were ordered to pay back the maize to the credit coordinators next season. These orders were, however, never enforced. As a consequence, banks were never repaid.

To summarize, the private sector has responded strongly to the liberalization of maize marketing in Zambia. The efficiency of mill-to-retailer marketing of maize has increased and transaction costs in that portion of the marketing chain have decreased. However, problems remain in the farm-to-wholesaler marketing of maize. Transaction costs in that segment of the marketing chain appear to have increased, not decreased, since liberalization. This development is partly due to problems in transportation infrastructure, access to information, contract enforcement, on-farm storage, and access to credit and inputs. Many of these problems can be traced back to ineffective governance arrangements, fiscal system, or legal and regulatory institutions in Zambia.

## **6. Marketing of Cotton in Zambia**

This chapter explores the impact of liberalization on cotton marketing in Zambia changes in the structure and the efficiency of marketing and factors influencing transactions costs. It will be shown that cotton marketing is presently being conducted in Zambia by the private sector, with large monopsonistic ginnery operators as the key players. Even though these ginnery operators do not necessarily reap gross profits, some characteristics of their involvement in the marketing chain lead to unnecessarily high transactions and decrease the efficiency of cotton marketing.

### **6.1 Institutional Structures and Marketing Arrangements**

Cotton is an important cash crop in Zambia. About six percent of the total agricultural area planted was devoted to cotton in 1996 (Ministry of Agriculture, Food, and Fisheries 1997). Originally cotton was grown as a traditional crop for home spinning and weaving. Currently, it is primarily grown for exports. In 1996 cotton lint accounted for about 13 percent of Zambia's exports in terms of value (Ministry of Agriculture, Food, and Fisheries 1997).

Over 90 percent of cotton is grown by small-scale farmers. The average farm size in cotton is 1-2 hectares (Institute for African Studies 1995). Cotton is grown mainly in the Southern, Central, and Eastern provinces and it is commonly grown in rotation with a food crop such as maize.

Cotton is rainfed and cultivated using simple tools such as hoes, axes, and ox-drawn ploughs. Large-scale farmers also use tractors. Pesticides but not fertilizers are commonly used among Zambian cotton farmers.

#### **6.1.1 Background to Liberalization**

Until 1995 the marketing of cotton was controlled by the government through marketing boards, as was the marketing of other agricultural crops. The government marketing arrangements were, however, adjusted several times over the years.

The National Agricultural Marketing Board (NAMB) was the first board established to handle agricultural marketing. It was charged with the tasks of procurement and handling of agricultural crops, buying and selling of fruits and vegetables, buying and selling of fertilizers, seeds, pesticides, and ox-drawn implements, and managing strategic maize reserves.

The producer as well as the consumer prices of agricultural products including cotton.

were set by the government. These prices were pan-territorial and pan-seasonal.

The Lint Company of Zambia (LINTCO) was established in 1977 to buy and sell seed cotton on behalf of the government. In addition to buying seed cotton from farmers at the government set fixed price, LINTCO provided certified seed, pesticides, sprayers, bags, and extension advice to farmers. Further, all ginning of cotton was carried out in ginneries owned by LINTCO. Cotton seeds were stored at these ginneries until they were distributed to other depots for sale.

In 1986 the government permitted Lonrho, a multinational company, to open a ginnery in Zambia.<sup>1</sup> This happened at the time when there was a shortage of foreign exchange in the country. Because of this shortage, the government encouraged private companies through export incentive schemes to generate the needed foreign exchange. Lonrho recognized an opportunity to export cotton, and in 1986 opened a ginnery in Mumbwa to export cotton lint (Cargill Technical Services 1996).

Lonrho was generating export earnings in excess of US \$5 million per year, but it soon turned out that LINTCO was unable to provide sufficient seed cotton for Lonrho.<sup>2</sup> The total production of cotton in Zambia had declined sharply between 1986 and 1993. This decline was caused not only by the low rainfall in the preceding years but also by inefficiencies in LINTCO's operations, and by disincentives to grow cotton created by the fact that producer prices did not necessarily rotate with world prices (Cargill Technical Services 1996).

### **6.1.2 Liberalization of Cotton Marketing**

The liberalization of the Zambian economy and its agricultural sector started in 1992 as the government of Zambia embarked on a structural adjustment program. Privatization of parastatals was part of the program.

In 1994, LINTCO's monopoly in cotton marketing ended. The parastatal company was sold to Lonrho Cotton.

### **6.1.3 Impact of Liberalization on Cotton Marketing Structure**

The sale of LINTCO to Lonrho Cotton replaced a state monopoly with a private monopoly in cotton ginning and marketing. Thus, liberalization did not result in immediate

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<sup>1</sup> Interview with Lonrho

<sup>2</sup> Interview with Lonrho

changes in the marketing structure. Since then, however, further changes have taken place in cotton marketing.

The privatization of LINTCO provided Lonrho an opportunity to expand its operations in Zambia. Lonrho bought two ginneries in Lusaka and one in Gwembe in the Southern province. Table 1 provides the list of Lonrho ginneries, and their installed and used capacities in 1994-95.

**Table 1. Lonrho Ginneries: Installed and Utilized Capacity in 1994-95**

| <b>GINNERY</b> | <b>CAPACITY</b> | <b>% USED</b> |
|----------------|-----------------|---------------|
| Mumbwa         | 20,000 MT       | 85%           |
| Lusaka         | 14 000 MT       | 50%           |
| Lusaka A       | 12 000 MT       | 58%           |
| Gwembe         | 20,000 MT       | 0%            |

Source: Cargill Technical Services (1996)

Lonrho's monopoly power over the Zambian cotton market was divided as the Clark Cotton opened its ginnery in the Eastern province. However, instead of competing, these two companies appear to have struck a "gentleman's agreement". Clark is operating in the Eastern region where Lonrho has no ginneries, while Lonrho is handling the rest of the country. Currently, there is also a sixth ginnery in the country. It is located in the Southern province and owned by the Swarp Spinning. This ginnery is, however, a minor operator compared to Lonrho and Clark. It is primarily ginning cotton for exports. The regional monopolies of Lonrho and Clark may, however, be shaken in the near future since Amaka jointly with Mulungushi Textiles is planning to open a ginnery in Kabwe.<sup>3</sup>

Lonrho regarded the availability of cotton as the greatest obstacle to the expansion of its business and thereby, Lonrho set out to increase the volume of cotton grown in Zambia. Lonrho aimed to provide farmers incentives not only to increase the area planted in cotton but also to increase cotton yields. The average yield of cotton per hectare in Zambia was about 500 kg in the early 1990s, while cotton growers in other African countries such as Zimbabwe, Mali, Sudan, and Egypt obtained 600 kg to over 2,000 kg per hectare (Ministry of Agriculture, Food, and Fisheries 1997).

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<sup>3</sup> Interviews with Amaka holding group and Mulungushi Textiles

To increase the area planted in cotton and cotton yields in order to raise the availability of cotton to its ginneries Lonrho (1) launched an outgrower scheme, (2) added an extension component to this scheme, and (3) revised the cotton producer pricing policy. These measures were designed to attract farmers into cotton farming.

Lonrho started its outgrower scheme with 15,000 small-scale farmers and 25,000 hectares. Hence, each farmer had 1-2 hectares planted in cotton.<sup>4</sup> Currently, the scheme covers 90,000 hectares and 60,000 small-scale farmers are participating in it.<sup>5</sup> Lonrho provides free seeds to these farmers. Extension services and packaging materials are also provided free of charge. Pesticides and sprayers are supplied to farmers on credit. In return, farmers agree to sell all their cotton to Lonrho. Lonrho picks up the cotton from the farmgate and transports it to its ginnery.

Initially, Lonrho purchased inputs from local markets but after foreign trade was liberalized Lonrho started importing them directly from abroad. Imports reduced the input costs by about 300 percent (Cargill Technical Services 1996).

To raise cotton yields Lonrho included a package of extension services to its outgrower scheme. Lonrho's extension service is based on the World Bank's teach and visit (T&V) extension system. All farmers in this system are placed in groups of 8-10 farmers. Since each farmer has about 1-2 hectares planted in cotton, each group controls 15-20 hectares of cotton. All groups are scheduled to receive a bi-weekly visit from an extension officer who delivers inputs, provides training and advice to outgrowers as well as monitors weeding and pesticides application. Lonrho initially had 125 extension officers, each one of them responsible for 200 hectares. These 125 extension officers were supervised by 30 Center Coordinators who were each responsible for 830 hectares. Center Coordinators were in turn supervised by three Zone Agricultural Managers each of whom covered 8,333 hectares. Finally, the overall management of the system was taken care of by the Regional Agricultural Manager. According to Lonrho, this system tripled the number of extension workers in the field from LINTCO's time.

Finally, Lonrho also changed its pricing policy: all sales were struck on a US dollar price. Farmers were paid a price based on the exchange rate on the day of sale, in local or hard currency.<sup>6</sup>

Currently, Clark and Swarp are also running their own outgrower schemes.

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<sup>4</sup> Interview with Lonrho.

<sup>5</sup> Interview with Lonrho.

<sup>6</sup> Interview with Lonrho.

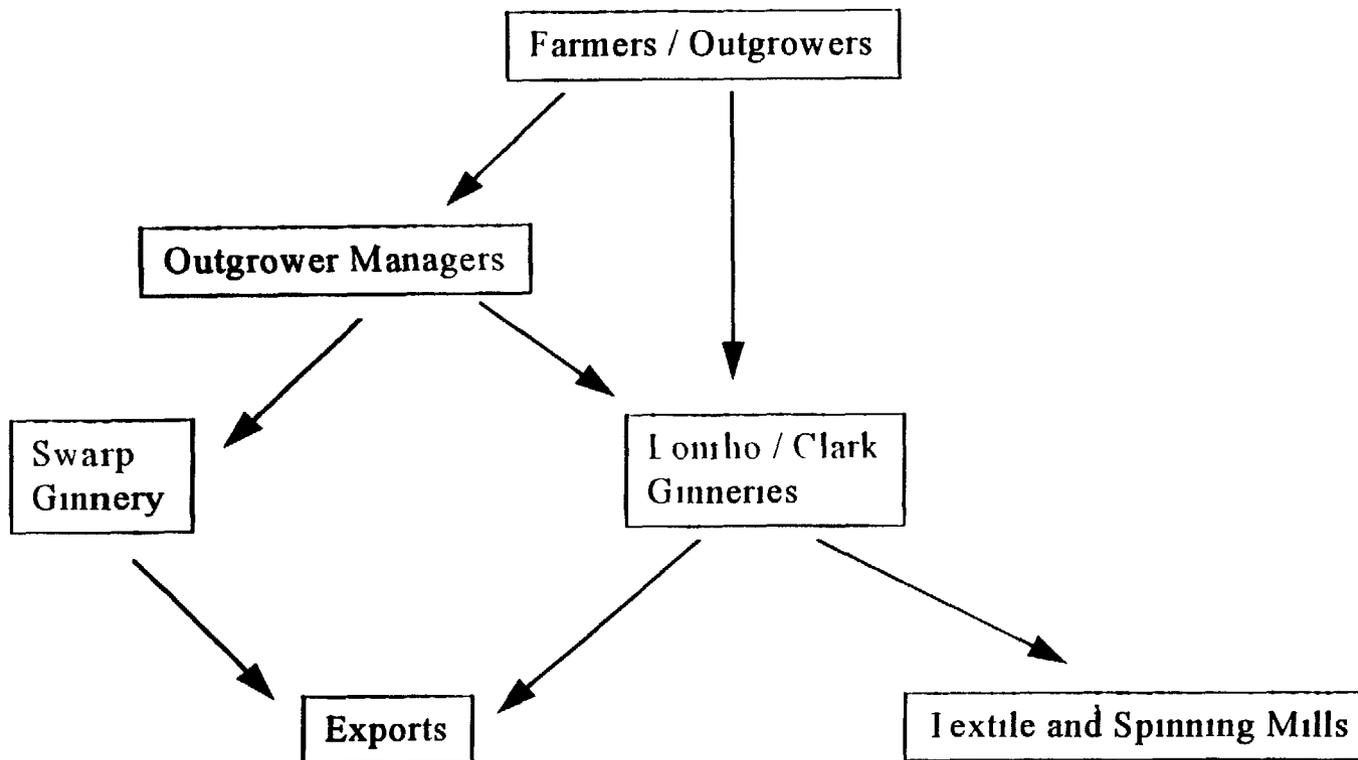
In addition to Lonrho Clark and Swarp, there are a number of traders or outgrower managers that run their own outgrower schemes and buy cotton from farmers. Some of these traders export the seed cotton, but many of them run the schemes for Lonrho or Clark. They obtain the inputs from a ginnery operator for distribution to farmers and at harvest time sell a specified amount of cotton to the ginnery operator. They also provide extension advice to farmers. Transportation of cotton is provided by either outgrower managers or the ginnery operator. Ginnery operators pay these outgrower managers a slightly higher price than they do for their farmers directly. Currently, Lonrho buys about 90 percent of its seed cotton from its farmers and outgrower managers and the rest from farmers outside the scheme.

Currently, almost all cotton in Zambia is grown under outgrower schemes. Ninety percent of the cotton farmers surveyed grew cotton on contract under outgrower schemes. Seven percent of farmers sold their crops to a marketing cooperative and three percent sold to private traders on the spot market after the harvest. Of the farmers that participate in outgrower schemes, 88 percent agree with the buyer how many hectares of cotton the farmer will plant and the farmer agrees to sell whatever quantity is grown on those hectares. The rest of the farmers agree with the buyer either about a minimum or maximum quantity of cotton that farmer will deliver.

Cotton lint produced is either exported or sold to domestic textile and spinning mills. Lonrho exports about 70 percent of its production.

Figure 1 summarizes the structure of cotton marketing from the farmgate to the consumer.

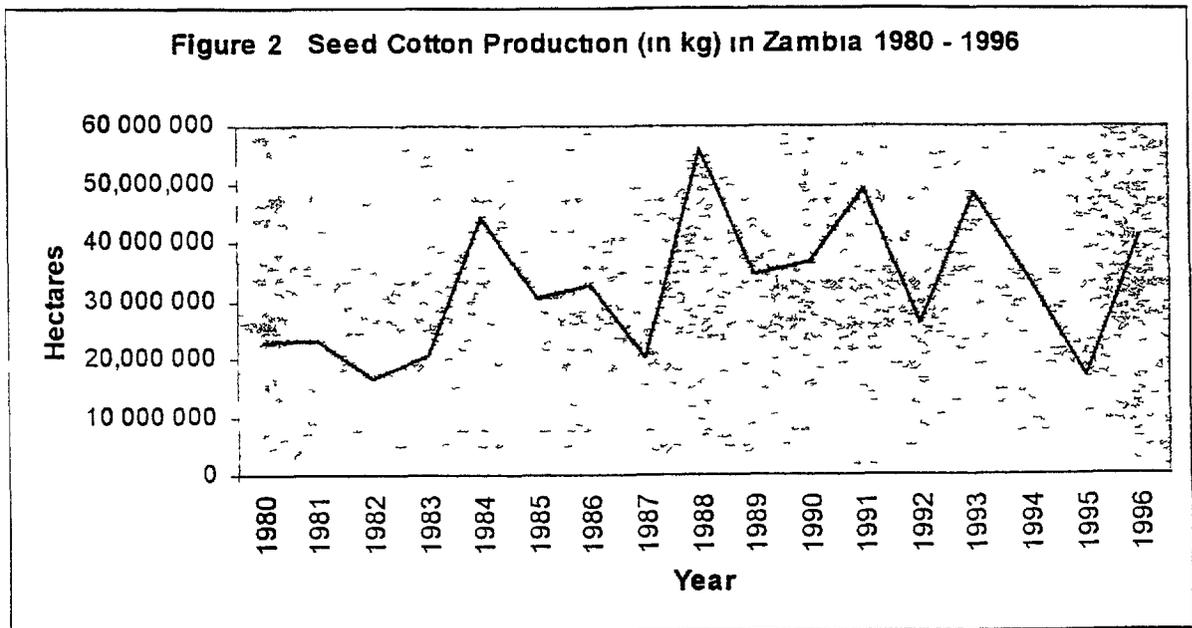
**Figure 1. Cotton Marketing in Zambia**



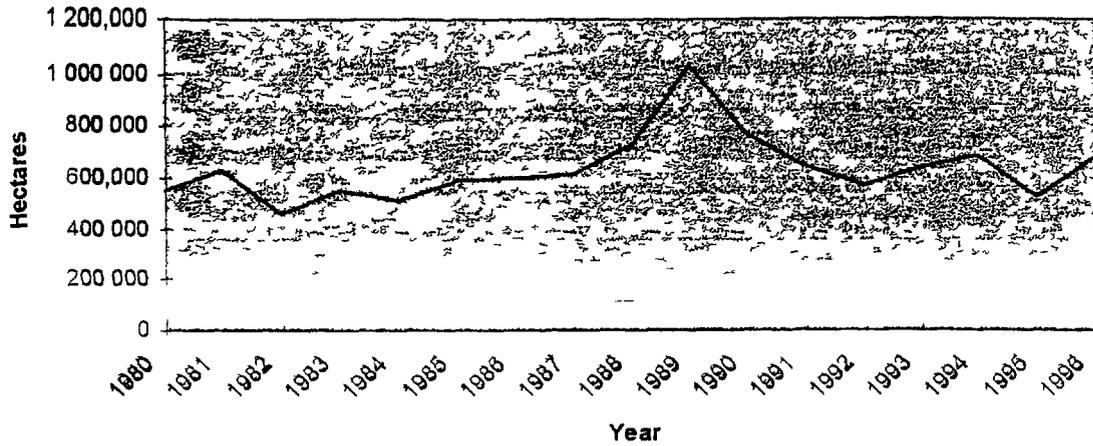
What has been the impact of these changes on the production cotton? That will be examined next

#### 6 1 4 Impact of Liberalization on Cotton Production and Prices

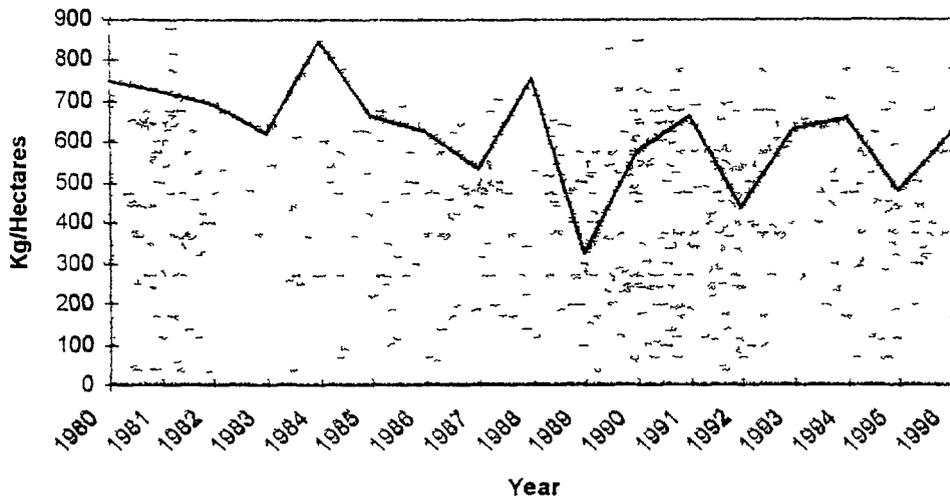
Liberalization and the resulting structural changes seem to have had a positive impact on cotton production After the liberalization of cotton marketing in 1994, the production of cotton hit its lowest level in ten years in 1995 The area planted in cotton as well as cotton yields decreased However, by the 1996-97 season the production of cotton began recuperating, as the average yield per hectare in Zambia climbed to 617 kg, and the area planted in cotton also rose Figures 2-4 show this development



**Figure 3 Area under Seed Cotton Production in Zambia in Hectares  
1980 - 1996**



**Figure 4 Average Cotton Yield per Hectare in Zambia in  
1980 - 1996**



The production of cotton may have increased, but how efficient is the marketing structure for cotton? The next section will aim to illuminate a response to this question

## **6.2 Efficiency of Cotton Marketing: Evidence on Marketing Margins**

This section will address the efficiency of cotton marketing in Zambia calculating marketing margins and transactions costs for a typical large ginnery. The analysis will indicate that Zambian ginneries are not necessarily making huge profits. Marketing of cotton is not, however, necessarily efficient. transactions costs of ginneries may be unnecessarily large

Compared to the variety of pricing data available for maize in Zambia, there is relatively limited data for cotton. On the other hand, the relative simplicity of the marketing chain means that the degree of marketing efficiency is, to a very large extent, determined by the actions and costs of the ginneries

Ginneries running extension programs in Zambia do not necessarily make large profits. A breakdown of transactions costs for a typical large Zambian ginnery is shown in Table 2.<sup>7</sup>

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<sup>7</sup> These costs are based on information obtained through interviews of ginnery operators

**Table 2 Transactions costs for a typical large Zambian ginnery**

| Cost/Revenue Category  | \$U S per kg of seed cotton |
|--|-----------------------------|
| Revenue from sales of cotton lint<br>33 kgs x \$1 76/kg (\$0 80 per pound) | 0 58                        |
| Revenue from sales of cotton seed<br>65 x \$0 143/kg (\$130 per short ton) | 0 09                        |
| <b>Total Revenue to the Ginnery</b>  | <b>0 67</b>                 |
| Transport costs  | 0 07                        |
| Ginning costs  | 0 07                        |
| Storage Costs (\$0 04/kg/month X 2 months)                                 | 0 08                        |
| Extension Costs  | 0 09                        |
| <b>Total Costs other than raw material</b>                                 | <b>0 31</b>                 |
| Funds available to pay farmers   | 0 36                        |
| Price paid to farmers  | 0 35                        |
| <i>Profit/Loss</i>   | 0 01                        |

As Table 2 indicates, the profit margin for a ginnery with an extension program is not necessarily large

These numbers are also supported by data about prices received by independent outgrower managers. The independent outgrower managers take over the extension and transport activities, but are able to sell the cotton to the ginneries at about \$0 50/kg, while farmers sell cotton at about \$0 35/kg. From the standpoint of the ginnery, this is a wash--paying 15 cents more for the cotton, but saving 16 cents per kg in costs of extension and transport.

However, some of the figures in Table 2 require further explanation.

First, the \$0 80 per pound cotton lint price reflects an international price. (The domestic price for lint is somewhat higher. Mills reported paying in excess of \$1 80 per kg of lint.) As mentioned earlier, the contract between the ginnery and the farmer specifies that the farm price will be based on an international price. The differential shown here (80 cents per pound lint price being equivalent to a 35 cents per kg farm price) is one reported as reflecting recent marketing conditions. This 45 cent differential works to the ginneries' advantage if the world price is lower, but works to the ginneries' disadvantage if the world price is higher. For example, if the lint price were 90 cents per pound and the farm price 45 cents per kg, the ginnery would have only 29 cents per kg to cover its ginning and other costs (compared to 31 cents in the table). If, on the other

hand the lint price were 70 cents per pound and the farm price 25 cents per kg, the ginnery would have 35 cents to cover costs

Second the revenue from sales of cottonseed for processing into oil and cake is an estimate based on U S farm price for cottonseed of \$130 per ton (2,000 pounds) Data on price of cottonseed in Zambia are not available

Third, for a ginnery with a fixed capacity, average ginning costs decline as the ginnery capacity is more fully utilized The \$0.07 number here can be higher or lower as utilization rates drop or rise

Fourth and finally, storage costs can be reduced (or increased ) by reducing (or increasing) the average length of storage

In short the profit margin for a ginnery may be higher and thus marketing of cotton less efficient than Table 2 indicates Also some characteristics of the marketing chain lead to unnecessarily high transactions costs and decrease efficiency What are these characteristics? The next section addresses this question

### **6.3 Factors Influencing Transactions Costs**

Three main characteristics of the marketing chain that influence transactions costs for cotton in Zambia stand out the monopsony position of the large ginneries, the role of ginneries in providing production inputs to cotton farmers, and the high costs of extension Again, it is important to recognize that this is only a partial list of causes for transactions costs

#### **A Monopsony**

Monopoly markets whether controlled by a public or a private monopoly are seldom efficient A private monopoly may be more efficient than a public one, though However monopolies, both on the buying or the selling side, are bound to hurt consumers and producers because the selling prices are typically higher and buying prices lower in monopoly markets than they would be under perfect competition Typically, a monopolist is able to earn profit because it can select its own price It is a price setter not a price taker in the market However, when a monopolist earns profits, other willing entrants to the market are bound to appear If a monopoly persists there must be barriers to the entry of other firms into the industry

Lonrho and Clark are monopsonists in the Zambian cotton markets and their monopsony position has persisted for several years. To a great degree these ginneries are constrained from exercising monopoly power on the selling side most of their sales are in the competitive world market. However, on the buying side ginneries appear to be classical monopsonists. The above Table 2 of transactions costs does not indicate huge monopoly profits, and in fact, one market participant said that ginneries lost money in the 1996-97 marketing year, on which the above table is based. There are several reasons why the above table may understate actual or usual profits. First, as already mentioned, because of the fixed differential method of determining producer prices, ginnery profits are higher at lower price levels. Second, profits on domestic sales of lint are higher. Third, to the extent that the ginnery can reduce average storage length by more rapid turnover of shipments, profits will be increased. Fourth, the ginnery makes profits on custom ginning (charging \$0.12 per kg above the \$0.07 cost). Fifth, the ginnery bills farmers at a 50% markup above the costs to the ginnery of seed and chemicals. According to Lonrho management, this markup is not intended to earn profits, however, if the repayment exceeds 67%, then the ginnery can make a profit on these transactions. (Reportedly, Clark ginnery has a higher markup on farm inputs and uses the profits from this part of the operation to subsidize higher farm prices for cotton.)

This raises a question: how did this ginnery monopsony in Zambia develop in the first place and how has it been preserved so far?

The existence of a monopsony position of Clark in the Eastern province and Lonrho in the rest of Zambia indicates the absence or ineffectiveness of anti-monopoly and anti-trust laws in the country. Replacing the government monopoly with private monopoly in 1994 was a move toward deregulation of markets. However, despite the prohibition of competition between Lonrho and Clark, the fact that they are allowed to co-exist on their own terms reflects a lack of effective anti-trust laws which do not impinge on this type of a conduct. It also reflects a lack of concerns for farmers since they, in addition to consumers, are the ones who lose in this monopsonist arrangement.

Lonrho's and Clark's outgrower schemes further reinforce their geographical cartel. By linking farmers contractually to ginneries in their respective regions they hinder farmers' ability to sell to other ginneries and thereby break the arrangement between the two ginnery operators.

What is constraining the entry of new operators? There are a couple of factors that constrain entry.

High cost or lack of access to credit is probably the greatest barrier to the entry into ginning. The loan rates in Zambia are currently between 40-50 percent. As discussed in the

section on maize marketing, the high cost of credit is partly a result of the shortage of loanable funds in Zambia. Banks have to rely primarily on deposits for loanable funds since their access to international finance markets is limited. International investors are reluctant to invest in Zambia as long as they perceive her macroeconomic situation uncertain. Also, securing loans with a collateral can be difficult because of inefficiencies in the judicial and court system. Liquidating the collateral in the case of default is time consuming, cumbersome, and costly. Under these circumstances, banks sometimes simply choose to overwrite the loan. All this raises the lending risk and, as a consequence, the cost of credit.

Also, the entry of new ginneries may be hindered by the fact that the existing ginning capacity is underutilized and sufficient to gin the current Zambian production of cotton. There may not simply be need for another ginnery.

Given these obstacles, what factors, if any, might then weaken the monopsony position of Lonrho and Clark in the future? Will there be any new entrants?

The monopsony position of Lonrho and Clark may be shaken by a planned new ginnery by Amaka and Mulungushi Textiles. The new ginnery will be a joint venture between these companies. Mulungushi Textiles is in turn a joint venture of the Chinese government textile corporation and the Zambian government. These new ginnery operators are planning to compete, rather than merely co-exist, with Lonrho and Clark. Mulungushi Textiles indicated that it will be able to produce cotton lint at 20 percent lower cost than Lonrho has been charging.<sup>1</sup> Further, it will have a guaranteed market for its lint in China.

Additional competition among ginneries would likely change the marketing of cotton in fundamental ways. The existence of outgrower schemes in which the ginnery provides production credit and extension services to farmers is a result of the ginneries' monopsony position. As mentioned earlier, the ginneries began the outgrower schemes with a particular objective in mind--increasing the supply of raw cotton to the ginnery in order to utilize more fully the ginning capacity. In a market where there are many possible buyers for farm output, outgrower schemes are less likely to occur--if one processor succeeds in increasing aggregate output, there is no guarantee that the processor will obtain that increased output for its own plant.

Competition among ginneries for farm output has already increased by the existence of independent outgrower managers. The emergence of such firms is likely to weaken the agreed

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<sup>1</sup> Interview with Mulungushi Textiles

geographical split of markets between Lonrho and Clark since the independent operators are not bound by any such agreement. Moving cotton across the informally erected boundaries by Lonrho and Clark is eroding their arrangement.

## **B. Input Provision**

Production credit has become inextricably linked to marketing of output. In countries where credit markets and institutions are fully developed, one set of firms (banks or lenders) provide production credit to farmers, and a second set of firms purchase the output from the farmer. In a country where enforcing repayment is more difficult, the buyer is in a particularly advantageous position. The buyer can simply deduct the required repayment from the amount paid for the commodity at the time of sale. No other agent in the economy has this ability. It is this inextricable link between marketing and production credit that led to the inclusion of production credit as an element of transactions costs in the Zambian cotton market.

However, the cost to the ginnery of running its own outgrower scheme in Zambia is increased by "side-selling" or "piracy" which is a common problem in Zambian cotton markets. It is difficult to enforce that farmers indeed sell their cotton to only either Lonrho or Clark. The side-selling has been facilitated by the emergence of independent outgrower managers. These traders often buy cotton from farmers who are part of Lonrho's outgrower scheme and then resell it to Lonrho at a higher price. Lonrho loses this way at least the margin between the trader and outgrower price and the cost of chemicals if the farmer cannot pay back the loan. Lonrho estimates that it loses 20 percent of its contracted cotton to side-selling.<sup>2</sup>

Of course, the ginneries could eliminate the independent outgrower managers by refusing to buy from them. In fact ginneries are taking the opposite tack--encouraging the growth of the independent outgrower sector. The apparent reason for this is that, from the perspective of the ginnery, independent outgrowers are a more cost effective means of delivering extension services and production credit. As noted above, ginneries can increase their profits from the production credit part of their business if they can increase the loan repayment rate, given the fixed mark-up. The advantage of making the loan to an independent outgrower manager rather than to a number of small farmers is that outgrower manager has capital assets which can be claimed as collateral, and has an incentive to repay to protect the firm's reputation for credit-worthiness.

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<sup>2</sup> Interview with Lonrho

The prevalence of "piracy" in Zambian cotton markets reflects problems with contract enforcement. All ginneries and outgrower managers enter into written contracts with outgrowers. However, since outgrowers and traders know that the enforcement of these contracts is cumbersome and costly because of the existing regulations, and inefficiencies and slowness of the Zambian court system, they are often ready to break them if they obtain a better offer from another trader. In fact, under the earlier Agricultural Credit Act the penalties for piracy were so insignificant that it was not worthwhile to take these cases to the court, according to traders. Some traders also complained that when a case was taken to the court, the court tended to favor the farmers. In other words, the existing system did not always deter illegal action. However, the Act has now been reformed and the penalties have been stiffened. It will be interesting to see whether that will have any deterrent effect on "piracy."

Other institutional changes may also be effective in reducing transactions costs associated with the provision of input credit. Since those changes also influence the cost of providing extension services, they will be discussed below.

### **C Extension**

The rationale for a ginnery providing extension services to farmers is essentially the same as the rationale for providing production credit. Both services improve the yields of participating farmers, and thereby increase profitability. Both the direct effect (increasing output per hectare) and the indirect effect (increasing the number of farmers who grow cotton as it becomes more profitable) are to increase aggregate cotton output.

The extension component of these outgrower schemes is, however, costly and often ineffective. For example, the cost of Lonrho's outgrower scheme is approximately 8 to 10 cents per kg of seed cotton. This accounts for nearly one-third of the total transactions costs associated with marketing cotton in Zambia. Further, the feedback from the field makes the effectiveness of these schemes questionable. 59 percent of the farmers surveyed reported that the buyer never sent an employee to provide information about the best way to grow cotton. Most of those farmers who said that an employee was sent to provide information were visited 1-2 times during the last growing season. Again, 57 percent of the farmers interviewed said that nobody was sent to monitor the progress of the cotton crop, whether weeds were controlled and plants thriving. Further, 34 percent of the farmers did not attend any meeting where an extension officer representing the buyer provided information to the group. The rest attended such meetings between one and three times.

Under these circumstances, one has to question whether the provision of extension advice by a company like Lonrho makes economic sense. Should Lonrho terminate its programs? Is

there a way to improve the performance of outgrower schemes reduce the cost of extension and reduce piracy?

There appears to be a natural synergy between the provision of production credit and the provision of extension services. The availability of credit greatly expands the effectiveness of extension advice, by relaxing the constraint that the advice must be affordable with existing resources. The farm visits of the extension agent provide an inexpensive method of monitoring the health of the crop and therefore the borrower's ability to repay the loan.

The practical difficulties of realizing these apparent synergies stem from the inability of a large firm like Lonrho to monitor extension agents and farmers, and the impossibility of replacing monitoring with performance incentives. When a farmer fails to repay (by failing to deliver a sufficient quantity of cotton to Lonrho to cover the costs of inputs), Lonrho is unable to determine whether the default is "legitimate"--the farmer has delivered his entire crop, but the crop was a very poor one--or "illegitimate"--the farmer is side-selling to a "pirate". In addition, Lonrho has no capacity to punish the borrower for default. Typically, the loan agreements do not stipulate physical collateral to be forfeited in the case of non-repayment. Indeed most Zambian farmers lack title to sufficient land or capital goods that could be pledged as collateral. Lonrho seems to have relied mostly on "reputation" as an incentive to repay--a farmer repays the loan in order to maintain his/her creditworthiness. Even this method is problematic if it is applied on a large scale level. Farmers who default can reapply for credit the following year under a different name, or a wife can apply in the place of a defaulting husband. Detecting such circumvention of contract provisions can be very costly, if not impossible, when farmers are in remote areas.

The emergence of independent outgrower managers seems to be a manifestation of the real or perceived advantages that a small scale firm can have in monitoring and enforcing borrower repayment. From the standpoint of the ginnery, the independent outgrower manager undertakes the role of extension provider, transporter and credit manager. In fact the outgrower manager is responsible to the ginnery for repayment of all farmers managed by that manager. The outgrower manager must build in an allowance for default on the part of some individual farmers when that manager sets his/her producer price. But if the outgrower manager can monitor repayment in a more cost-effective manner than the ginnery, the outgrower can afford to pay farmers a higher price than the ginnery. The reason to think that an outgrower manager may have a cost advantage over the ginnery is that the managers operate on a smaller scale, and are physically and culturally closer to the farmers.

This insight can be applied at the next level. Rather than making each farmer individual liable for his/her loan repayment, why not make a group jointly liable for repayment of all loans for members of the group. Joint responsibility for loans has potential for reducing the monitoring

costs associated with loan repayment and for reducing costs and increasing effectiveness of extension. Suppose ten neighboring farmers were jointly liable for each other's loans, and suppose one of these farmers was tempted to sell his crop to another buyer. This farmer might receive a higher price, and in any event would be absolved from the necessity to repay any part of the loan. If the farmer succumbs to this temptation, the other farmers will see a decline in the net price received, as some of their crops will be seized for absconding farmer's share of the loan. Therefore, each farmer would have an incentive to monitor the activities of the others and to exert social pressure to keep group members from outside selling and loan default.

The transactions cost advantages of this kind of peer monitoring stem from three things: monitoring costs, mutual group insurance, and effective ways of punishing default.

The most obvious cost advantage from groups is that it is cheaper to monitor neighbors than to monitor from a distance. In many cases, the neighbors can observe directly the condition of crops and the ability to repay the loan, and thus can easily differentiate between a legitimate claim and a false claim that a certain farmer is unable to repay. Even if direct observation is not possible, neighboring farmers are more likely to make correct inferences about the conditions of a neighbor's crop. If a group says, "my crop failed because of the drought or pest infestation," the other group members know whether or not there was a severe drought or infestation.

The second transactions cost advantage is that in the case where a group suffers a disaster and is truly unable to repay, other group members may voluntarily make up the difference, in effect operating the group as a kind of mutual insurance system. The reduction in transactions costs arises from the fact that the repayment is voluntary--the lender can avoid the costs associated with pursuing and enforcing a repayment provision.

Finally, the group may have available to it means of punishing default that are not available to lenders outside the group. Social pressure, especially within a remote rural area, can be a very strong motivation for behavior. In addition, traditional tribal governance may provide methods of punishing group members who impose costs on other group members. For example, traditional rules may hold other family members responsible for the debt of group member, even if those family members are not group members. Or, a farmer who cheats his group may be punished in the allocation of tribal lands in the future.

The formation of credit groups also serves as a mechanism for more effective delivery of extension services. Here too each member of the group has an incentive to improve the production practices of other group members. Other group members will have to repay the loan of a group farmer whose crop fails because that farmer failed to spray at the appropriate time, or failed to weed diligently, or waited too long to harvest. Therefore one would expect more

conversations among group members about appropriate farming practices with the result that the general level of farming practice improves

The formation of farmer groups has the potential to improve the cost effectiveness of extension even without joint liability for credit

The formation of farmer groups has the potential to improve the cost-effectiveness of extension even without joint liability for credit. CARE and CLUSA have undertaken programs to make rural Zambians more familiar with concepts of group formation, governance, and cooperation. These programs encourage the formation of rural groups for the purposes of sharing information and experiences about seed varieties, crop choices, and farming practices. These efforts illustrate the ways in which small groups of farmers can serve as a mechanism for extension.

These theoretical advantages that group schemes have over farmers contracting independently need to be confirmed empirically. That effort should also help describe the kinds of characteristics of groups that lead make the group most efficient. It is also critically important to assess the relative importance of these characteristics. The empirical evaluation could be developed as follows. The measures of effectiveness are the probability of default (described by a zero-one variable depending on whether a farmer repaid the loan), the yield per hectare of the farmer, or perhaps the profitability per hectare of the farmer, and the quality of the cotton produced. The effectiveness of the extension/input-credit effort depends on a large number of factors, which can be categorized in three groups

- characteristics of the farmer including, how long has the farmer grown cotton, how educated is the farmer what assets does the farmer own
- characteristics of the group size of the group, average experience of the group in growing cotton geographical location of the group members tribal affiliation of group members experience/training in group formation and governance rules within the group about the monitoring, sanctions, and dispute-resolution among group members
- characteristics of the extension effort including, the number of group meetings, number of farm visits number of farmers assigned to the extension agent age, experience, and education of the extension agent
- characteristics of the village includes social capital the existence and quality of other local organizations, village norms and traditions and village governance mechanisms

In short, the marketing of cotton in Zambia does not appear to be largely inefficient. However, the monopsonistic structure of cotton markets, the role of ginneries in providing inputs to cotton farmers and the high cost of extension services contribute to increased transaction costs and decreased marketing efficiency.

## **7. Marketing of Maize in Tanzania**

In this chapter, it will be shown that the private sector has responded strongly to liberalization currently, virtually all surplus maize is procured by private traders in Tanzania. However, since liberalization, efficiency of maize marketing has decreased. Farm-to-retail marketing margins have widened over time. High transactions costs in maize marketing are influenced, among other things, by infrastructural impediments, limited access to credit, lack of storage capacity, and contract enforcement problems.

### **7.1 Institutional Structures and Marketing Arrangements**

Maize is the staple food for more than half the population of Tanzania. Other food crops, such as rice, cassava, sorghum, millet, potatoes, and beans, are produced in smaller volumes. In 1994-95, maize accounted for about 41 percent of total planted agricultural area (Bureau of Statistics 1996b). In terms of volume traded, maize is also the most important food crop in the country.

Maize is grown in Tanzania mainly by smallholder farmers. The average farm size for maize is less than one hectare, reflecting the fact that maize is a subsistence crop (Bureau of Statistics 1996a). The major surplus regions of maize in Tanzania are Arusha, Dodoma, Iringa, Mbeya, Rukwa, and Ruvuma. These regions together account for about 50-60 percent of the total annual maize production in the country (Mdadila 1995).

Maize is raised and produced commonly using traditional methods: family labor and a hand hoe. Fertilizers and pesticides are applied by some farmers. Farmers in the southern highlands are estimated to use fertilizers more intensively than in other regions. In the 1980s, it was estimated that 90 percent of maize farmers in Ruvuma and 60-70 percent in Rukwa apply fertilizer (Rasmussen 1987).

#### **7.1.1 Background to Liberalization**

The government took control of the maize marketing in the 1960s, after Tanzania gained independence. The sub-sector remained in state hands for the next twenty years until the liberalization started slowly in the mid-1980s.

In 1964, the government assigned the responsibility for sales, transport, storage, and processing of maize to the National Agricultural Products Board (NAPB). Cooperative unions were responsible for the procurement of maize from farmers. Since NAPB did not own any mills, the National Milling Company milled the maize for NAPB.

The government set minimum prices for maize at different stages of the marketing chain.

each season. The into-store and out-of-store retail prices were the same throughout the country, but producer prices were different reflecting the markups of primary societies and cooperative unions (Suzuki and Bernard 1987). The producer price was, thus, a residual after all the intermediary handling charges were deducted.

In 1973 the National Milling Company, renamed the National Milling Corporation (NMC), took over most of the maize marketing activities that had been handled by NAPB. It was charged with purchasing, processing, storing, and selling of staple grains, including maize. Imports and exports of foodgrains, if any, were also made the responsibility of NMC.

In 1976 cooperative unions were dissolved and NMC was saddled also with their former task: the purchasing of grain, including maize, from villages throughout the country. In addition, NMC was asked to sell maize flour to consumers in major cities and towns (Putterman 1995).

NMC had to procure the maize at a unified and pan-territorial producer price set by the government regardless of transportation costs. Its selling price--that is, the consumer price--was also set by the government. Since the operating costs of NMC were escalating as its responsibilities increased, and since NMC incurred losses due to the procurement pricing policy, these consumer prices became heavily subsidized. The aim of these government policies was to ensure Tanzania's self-sufficiency in maize.

This single channel marketing system was, however, plagued with problems and as a result, parallel markets for maize emerged. Low official producer prices, late payments by NMC, and unreliability of crop pick-ups led farmers in many parts of the country to stop or reduce their sales to NMC and turn to private trade. Further, in the late 1970s, over 46 percent of the grain purchased by NMC was sent to Dar es Salaam, leaving areas such as Mbeya, Morogoro and Mwanza without adequate supplies (Putterman 1995). To cover the shortages, people in these areas had to resort to private trading of maize.<sup>1</sup> This trade was for the most part illegal, and hence in government announcements private traders were repeatedly attacked as "economic saboteurs." Private interregional maize trading was discouraged by the government: there was a strict limit on the amount of maize that could be moved outside the official procurement network (Bevan 1993). In 1984, this limit was only 30 kg per person (World Bank 1994).

By the early 1980s, private trading of maize had become widespread and the amount of maize sold through NMC was drastically reduced. The volume of official maize purchases had fallen from 220,400 tons in 1978-79 to 104,600 tons in 1980-81 and to 71,000 tons in 1983-84 (Suzuki and Bernard 1987). At the same time, in 1980-81 to 1982-83, total sales of maize averaged 263,000 tons, of which 133,000 were sold in Dar es Salaam and Coast region (Putterman 1995).

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<sup>1</sup> According to Putterman (1995) Mbeya, Morogoro and Mwanza depended for 70-80 percent of their food needs on private parallel markets.

In an attempt to improve the situation, the government reinstated cooperative unions in 1984. The unions were established as agents of NMC to distribute inputs to and procure maize from farmers. Also, the National Milling Corporation Act No 22 was passed in 1984. This act established NMC as a sole dealer in grain milling and procurement. These measures did not, however, salvage the situation.

The pan-seasonal and pan-territorial pricing policy led to the accumulation of massive debts by NMC and spiraling government subsidies. The pricing policy encouraged uneconomic cultivation and food production shifted to regions far from the main consumption centers, thereby increasing transportation costs. Because its purchase and selling prices were fixed, and because the government stood ready to cover any gaps in its revenues and expenses, NMC lacked incentives to operate efficiently. NMC's cumulative debt to the state-owned banks reached TSh. 2.3 billion in 1981, and it accounted for 88% of the subsidies allocated to agricultural parastatals between 1978-79 and 1983-84. As Putterman (1995) states

*"The grain monopoly had become a financial black hole, an operation encouraging high-cost producers to produce climatically risky crop for a guaranteed buyer whose internal accounts were unaudited over long periods inviting massive waste and fraud."*

In response to these problems and the flourishing parallel markets, the government began to gradually decontrol maize marketing.

### 7.1.2 Liberalization of Maize Marketing

As the first step towards liberalization, the government loosened the rules about private interregional trading. The limit on private grain movements was first raised from 30 kg to 500 kg per person. In 1987 interregional movement restrictions on maize within the country were abolished (World Bank 1994). Private traders were also legally permitted to buy grain from cooperative unions though not directly from farmers. However a ban on private imports and exports continued.

Finally, in 1989 the single channel marketing system through cooperative unions and NMC was officially dismantled and private traders were legally allowed to purchase maize directly from farmers. In other words, private traders were legally allowed to compete with NMC and cooperative unions in maize markets. Private exports and imports of maize against a government license were also permitted in 1989.

In 1991-92 cooperative unions disengaged themselves from maize marketing. The retreat of cooperative unions was prompted by unions' financial problems.<sup>2</sup> Partly due to the withdrawal of cooperative unions, NMC started to buy maize from private traders instead of farmers. The

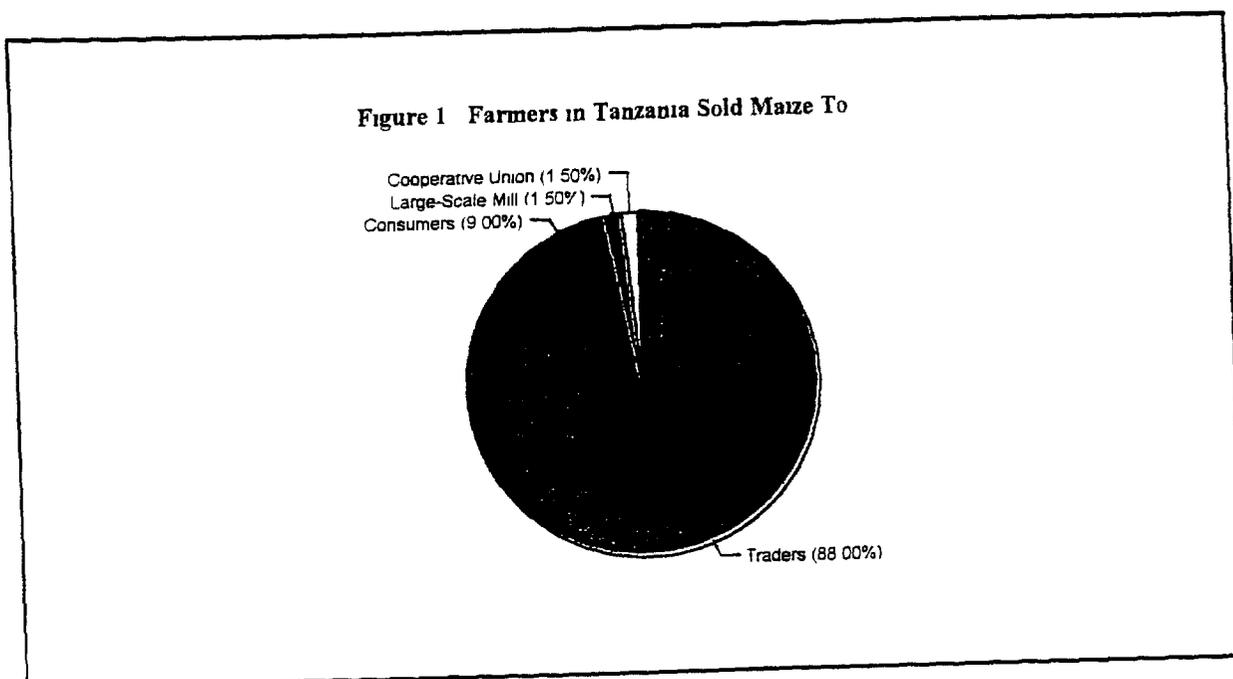
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<sup>2</sup> See section on cotton marketing for further details.

volume of NMC purchases was however, swindling

### 7 1 3 Impact of Liberalization of Maize Marketing Structure

Private sector has responded vigorously to liberalization measures currently, virtually all surplus maize of farmers is procured by private traders Eighty-eight percent of the maize farmers surveyed sold their maize to a trader who came to the farm or village The rest sold their maize as follows 9 percent sold maize directly to consumers, 1 5 percent to large-scale millers, and only 1 5 percent sold maize to cooperative unions as Figure 1 indicates Over 90 percent of these transactions took place in the farm or village



The majority of traders are small-scale operators with little or no assets In fact, farmers themselves often act as traders Interestingly, only about 22 percent of maize traders interviewed reported that they earn their income solely from maize trading The rest, 78 percent, said that they engage in other income-earning activities About 56 percent of these traders said to engage themselves in other non-farming activities, while 44 percent told that they either farm maize or other crops to make adequate living

Traders in general can be divided into two categories local and interregional traders The characteristics of these traders are as follows

Local traders buy maize directly from farmers (unless they are farmers themselves), transport it to the market and then sell the crop either on a wholesale basis to local retailers,

hammer mills, or on the local market directly to consumers. The traders interviewed included both local and interregional traders. Combined, 26 percent sold the maize to retailers and 13 percent directly to consumers.

A major change that has taken place in the marketing of maize in the past years is that, instead of maize flour, maize grain is currently being traded from the farmer all the way to the retailer or consumer. The unreliability of NMC's supply of maize flour was the catalyst for this change. Private traders who filled in the food shortage, sold maize grain, not flour. Because all the large-scale maize mills in the country belonged to NMC, commissioning a mill to process the grain was not feasible. As a result, since maize is consumed in flour form, small hammer mills sprouted. In 1980-91, small hammer mills were mushrooming all around Tanzania which allowed households to mill the grains they bought from traders (Mdadila 1995b). Some hammer mills also buy maize from traders, mill it and then sell the produced maize flour to retailers to consumers. Nine percent of traders interviewed sold maize to hammer mills.

Inter-regional traders buy maize from farmers, transport and sell it to a wholesaler in a major town or directly to a maize mill. Thirty-nine percent of the traders interviewed sold maize to wholesalers.

The wholesalers--so called dalalis--act as commission agents for interregional traders. They sell the maize the trader has brought in to large-scale mills against a commission. The main market for surplus maize is Dar es Salaam. Dar es Salaam has three major wholesale markets: Tandale, Bugurumi, and Mbagala. Of these, in terms of volume of maize handled, the Tandale market is the largest. In the 1993-94 marketing season about 70 percent of maize delivered to wholesale markets in Dar es Salaam was taken to the Tandale. Table 1 documents the volume of maize delivered to these three markets in 1990-97. Maize is delivered to the Tandale market by interregional traders primarily from Iringa, Dodoma, and Mbeya as Table 2 indicates.

**Table 1**      **Volume of Maize Deliveries (100 kg bags) to Wholesale Markets in Dar es Salaam in 1990 - 1997**

|              | <b>MAIZE BAGS</b>     |                       |                        |                  |
|--------------|-----------------------|-----------------------|------------------------|------------------|
|              | <b>Tandale Market</b> | <b>Mbagala Market</b> | <b>Buguruni Market</b> | <b>Total</b>     |
| 1990- 91     | 190,249               | N/A                   | 149,015                | 339,264          |
| 1991-92      | 412,385               | N/A                   | 173,135                | 585,520          |
| 1992-93      | 266,688               | 98,021                | 162,933                | 527,642          |
| 1993-94      | 470,894               | 109,911               | 90,147                 | 670,952          |
| 1994-95      | 503,424               | 128,165               | 156,337                | 787,926          |
| 1995-96      | 522 823               | 134,296               | 91,511                 | 748,630          |
| 1996-97      | 214 413               | 106,933               | 47 077                 | 368 423          |
| <b>Total</b> | <b>2,580 876</b>      | <b>577 326</b>        | <b>870 155</b>         | <b>4,028 357</b> |

Source Marketing Development Bureau (MDB), Ministry of Agriculture, Tanzania

**Table 2. Source of Maize Deliveries (100 kg bags) to Tandale Market in 1990 - 1997**

| Source      | MAIZE BAGS |         |         |         |         |         |         |
|-------------|------------|---------|---------|---------|---------|---------|---------|
|             | 1990-91    | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 |
| Dodoma      | 23 2%      | 32%     | 30%     | 43%     | 46%     | 60%     | 81%     |
| Songea      | 10%        | 9%      | 8%      | 2%      | 1%      | 1%      | 0%      |
| Tanga       | 1%         | 4%      | 5%      | 0%      | 3%      | 0%      | 2%      |
| Iringa      | 44%        | 38%     | 36%     | 19%     | 15%     | 9%      | 6%      |
| Shinyanga   | 1%         | 0%      | 0%      | 0%      | 0%      | 0%      | 0%      |
| Mbeva       | 19%        | 17%     | 20%     | 36%     | 32%     | 24%     | 11%     |
| Arusha      | 0%         | 0%      | 0%      | 0%      | 0%      | 0%      | 0%      |
| Kilimanjaro | 0%         | 0%      | 0%      | 0%      | 0%      | 0%      | 0%      |
| Morogoro    | 2%         | 0%      | 2%      | 0%      | 1%      | 1%      | 0%      |
| Tabora      | 0%         | 0%      | 0%      | 0%      | 0%      | 0%      | 0%      |
| Other       | 1%         | 0%      | 0%      | 0%      | 2%      | 0%      | 0%      |

Source Marketing Development Bureau (MDB), Ministry of Agriculture, Tanzania

Maize mills have recently started to bypass wholesalers and buy maize directly from interregional traders to cut down transactions costs. As Table 1 shows, in 1990-91 total maize deliveries to Tandale and Bugurumi markets were about 339,000 bags (100 kg each)<sup>3</sup>. The amount of maize nearly doubled to 585,000 bags in the following season. The deliveries declined by about 58,000 bags in 1992-93, but increased again to about 788,000 bags in 1994-95. Since then maize supplies to these wholesale markets have decreased dramatically: only about 368,000 bags were delivered to these markets in 1996-97. This indicates, since consumption of maize in Dar es Salaam has not decreased dramatically, that maize which enters Dar es Salaam is being supplied directly to mills. This is consistent with the reports of millers interviewed: they buy maize from both interregional traders and wholesalers--increasingly from interregional traders--and sell the processed maize meal to retailers in city markets.

<sup>3</sup> The Ministry of Agriculture collects data on the supply of maize from these three wholesale markets in Dar es Salaam. Of these Mbagala was added to the list only in 1992-93.

In Tanzania, private investment in large-scale maize mills started in 1992 with the installation of a maize mill by Zainabu Grain Millers Ltd in Dar es Salaam (Mdadila 1995b). By 1995 at least five large scale private mills were operational in Tanzania, bringing the total number of large-scale mills to ten. All but one of these private mills are in Dar es Salaam. Table 3 lists the names and capacities of these private mills in 1995.

**Table 3. Large-Scale Private Maize Mills in Tanzania in 1995**

| Name                  | Number of Mills | Installed Capacity (tonnes/day) | Location      |
|-----------------------|-----------------|---------------------------------|---------------|
| E R Investments LTD   | 2               | 120                             | Dar es Salaam |
| Kizota Prime Products | 1               | 60                              | Dodoma        |
| Zainabu Grain Millers | 1               | 60                              | Dar es Salaam |
| Coast Miller LTD      | 1               | 120                             | Dar es Salaam |

Source: Mdadila (1995b)

The private mills raised the milling capacity of large-scale mills in the country by 360 tons per day. The total milling capacity in Tanzania is now at least 780 tons/day or 195,000 tons per year, while the quantity of maize available per year in Tanzania is assumed to be about 550,000 tons (Mdadila 1995b). This indicates that hammer mills play an important role in maize milling, especially in the rural areas where the products of the large-scale mills are not available. This is particularly the case because not all large-scale mills operate at a full capacity.

While all private large-scale mills are reported to operate at the full capacity, the five mills owned by NMC operate at only about 25-35 percent of the installed capacity (Mdadila 1995b). Since investment in a mill is calculated to be profitable if the mill is run at least at 75 percent of its installed capacity, mills owned by NMC are likely to be loss making.

All these private mills were constructed illegally. The National Milling Act No. 22 of 1984, which granted to NMC the sole rights to grain milling, was still in place in the early 1990s. The government revised the Act in 1995-96, after the mills were already in operation.

Another player in the maize markets is the Strategic Grain Reserve (SGR) which buys maize for food security purposes. SGR was established in 1977 with the objective of providing food during times of shortage. Initially, SGR was managed by NMC, but in 1990 the Ministry of Agriculture took SGR under its direct control under the Food Security Department. SGR was

charged with the task of managing the strategic food grain reserve. In addition, it was assigned the task of crop monitoring and providing early warning of possible food shortages.

SGR buys maize for the foodgrain reserve from farmers and traders, who deliver maize to SGR godowns. The size of the foodgrain reserve is currently about 106,00 tons of grains of which 50,000 is maize (Tanzania Food Security Bulletin 1997). According to SGR, the desired level of storage would be about 150,000 tons, but due to budgetary constraints the level of stocks has been lower. The maize is bought early in the season at open market prices and stored at most for 18 months. In the case of shortage, SGR sells part of the maize in reserves to millers, and part to consumers in rural areas through an open market, and the remainder SGR distributes as food aid <sup>4</sup>. During the years of shortage, the government imposes movement restrictions on maize trade and bans any exports of maize from Tanzania.

Private traders also export maize. Table 4 reports the official exports and imports of maize in 1988-93. In order to export or import maize, a trader needs a permit from the Food Security Department of the Ministry of Agriculture. The Food Security Department maintains a record of foreign trade as traders are obligated to submit to the department returns on their external trade (Mdadila 1995a). However, in order to avoid taxes, traders export a substantial amount of maize illegally each year to Tanzania's neighboring countries.

**Table 4 Official Maize Export and Import (Metric Tonnes) in Tanzania**

| Year | Export | Import |
|------|--------|--------|
| 1988 | 18 711 | 373    |
| 1989 | 30,348 | N/A    |
| 1990 | 57 039 | 2 208  |
| 1991 | 7 000  | 1 651  |
| 1992 | 4 141  | N/A    |
| 1993 | 9 637  | N/A    |

Source: J. Mdadila Marketing Development Bureau, Dar es Salaam.

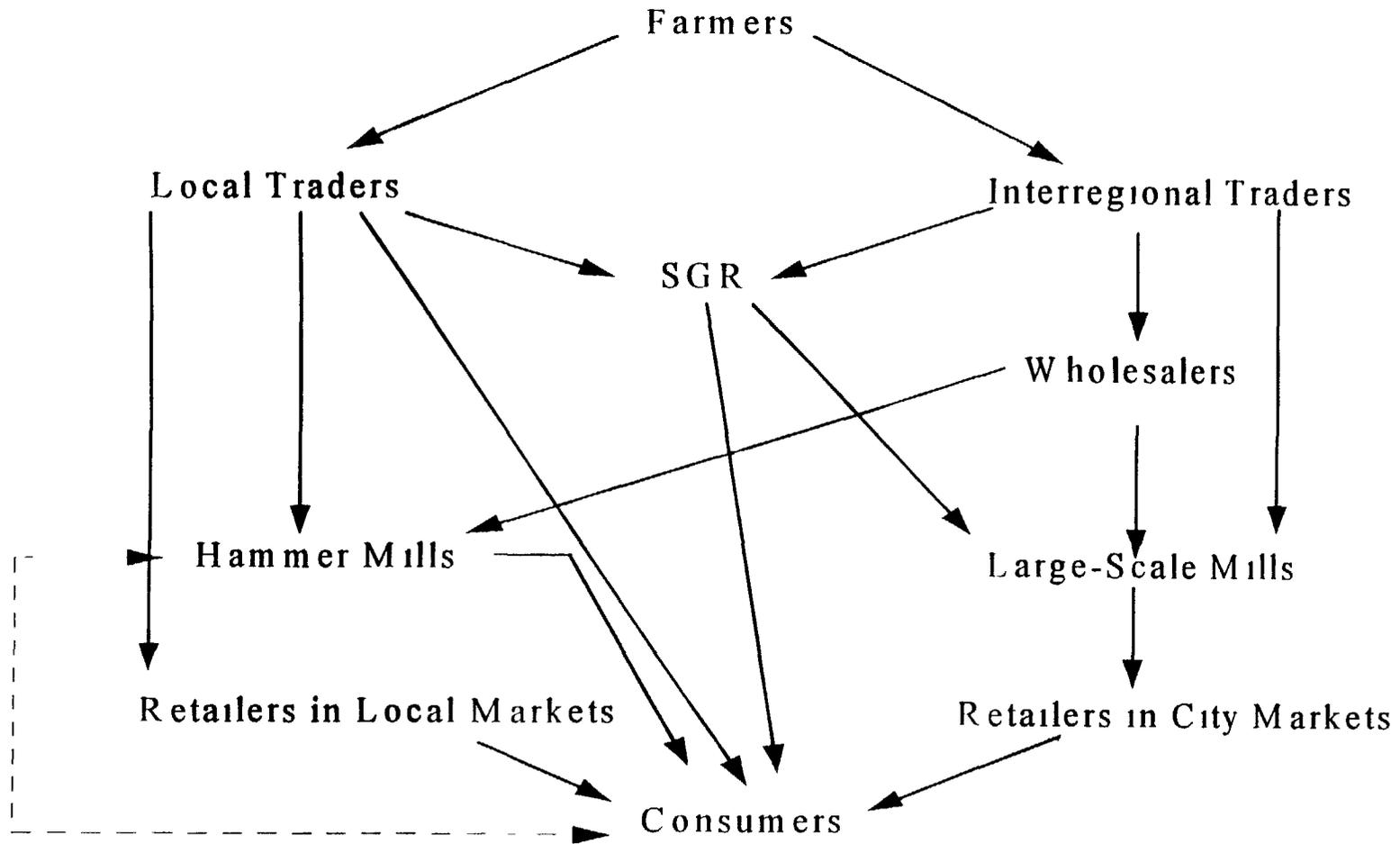
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<sup>4</sup> Interview with officials of SGR.

About 18,686 tons of maize were exported illegally from Tanzania to its neighboring countries (Kenya, Uganda, Zambia, Congo, Malawi) in 1995-96. In terms of volume, Zambia, Congo, and Kenya were the most important destinations. Interestingly, not only maize grain, but also maize flour was exported across the border without a permit. Major trading partners for illegal maize flour trade were Kenya and Uganda in 1995-96. The illegal cross border trading is not surprising since most of the major maize producing areas are near the country's borders. Some of these maize growing areas are relatively inaccessible and distant from internal markets. The neighboring countries are their natural markets.

Figure 2 summarizes the main marketing chains of maize in Tanzania. It is important to note that in Figure 2, local and interregional traders can also be farmers.

**Figure 2. Maize Marketing in Tanzania**



Finally, compared to Zambia, the input markets for maize seem to be further developed in Tanzania. Eighty-five percent of the farmers interviewed reported to apply fertilizers and pesticides or both. Ninety-five percent of these farmers bought their inputs (fertilizers and pesticides) from private input dealers. The remainder bought them from a government agency. Over 99 percent of these purchases were made in cash. Only one farmer had bought inputs on credit.

How efficient is this marketing structure? The next section will attempt to shed light on this question.

## **7.2 Efficiency of Maize Marketing: Evidence on Marketing Margins**

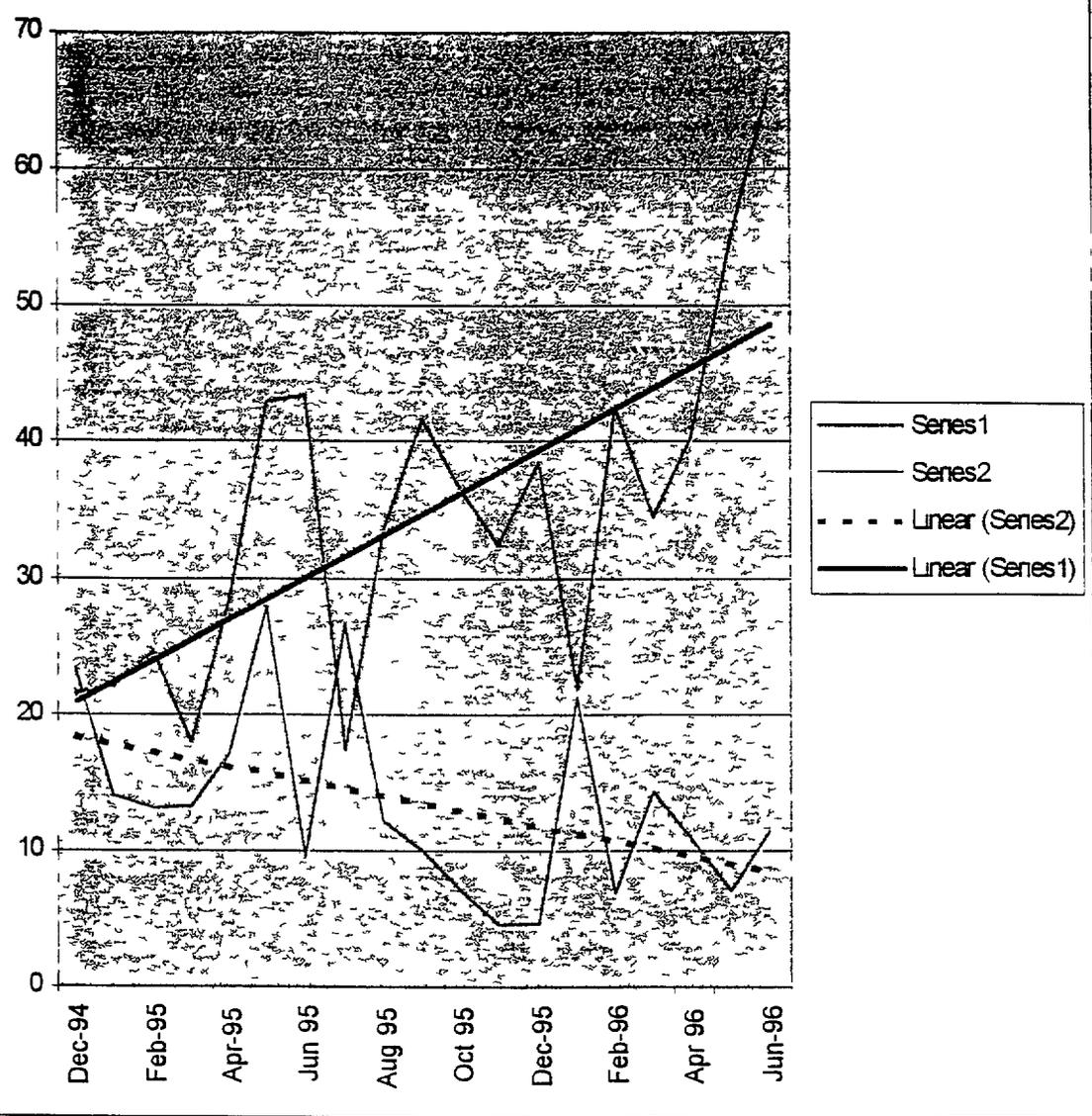
This section analyzes the marketing margins in Tanzanian maize markets in order to assess the efficiency of current marketing arrangements and the magnitude of transactions costs. It will be demonstrated that since liberalization the marketing of maize has become less efficient: the farm-retail marketing margin has been widening over time and price differences across regions and farms have been large and volatile.

As with Zambian maize, the empirical evidence for transactions costs in Tanzanian maize markets comes from two sources: (i) interviews and surveys, and (ii) government price data. However, the price data from Tanzania are not as extensive. Monthly retail and wholesale prices, as well as producer prices, were obtained for several cities.

Maize marketing in Tanzania has become less efficient -- transactions costs have increased -- since liberalization. Comparing retail prices in Dar es Salaam to wholesale prices in Iringa (which along with Dodoma is one of the large cities supplying maize to Dar es Salaam) produces a margin that is consistently positive and increasing over time over the 19-month period (December 1994-June 1996). The margin between the wholesale price in Iringa and the farm price is positive but declining over the same period. As Figure 3 indicates, the overall margin between the retailer and the farm does show a slight upward trend.

In addition, comparison with Zambia suggests that maize marketing is relatively inefficient in Tanzania. The data available do not permit computation of exactly comparable figures for the marketing margins in maize in Tanzania and Zambia. However, the following calculations can be made. Nominal monthly retail prices for maize grain in Dar es Salaam are available for the period July 1995-June 1996. During this 12-month period, these retail prices averaged about 20 cents per kg. During the same 12-month period, producer prices in Iringa averaged 10.5 cents per kg. The "farm-retail" margin calculated from these is 9.5 cents per kg. For Zambia, the retail price for maize in public markets in Lusaka is available weekly and as a monthly average. The simple average of the 12 monthly averages for 1996 yield a retail price of about 16.5 cents per kg. The producer price reported for Zambia for all of 1996 is about 10.5 cents per kg. The "farm-retail" margin calculated from these is 6 cents per kg. This supports the view that maize marketing in Tanzania is somewhat less efficient than in Zambia.

**Figure 3. Inflation Adjusted Price Differences.  
Tanzania. Series 1 = Retail Price (Dar) minus  
Wholesale Price (Iringa) Series 2 = Wholesale Price  
(Iringa) minus producer price (Iringa)**



The between city price differences in Tanzania are also quite large and volatile. For example, the wholesale prices for 100 kg bags of maize during August 1994 were virtually the same in Iringa and Dodoma--TSh 6,800 in Iringa and Tsh 6,250 in Dodoma. One year later, in August or 1995, the Iringa price was Tsh 4,600 and the Dodoma price was TSh 8,500--almost twice as high as the Iringa price. By June and July of 1996, the Dodoma price had again fallen below the Iringa price. Likewise, producer prices show large differences from one area to another. Reported prices for June 1996 range from Tsh 3,625 per a 90 kg bag in Sengerema (and Tsh 3,750 in Mpwapwa) to Tsh 10,000 in Njombe and TSh 10,500 in Mafinga. Even within the South Highlands region, prices range from Tsh 5,250 in Momba to Tsh 10,500 in Mafinga. Retail prices are only slightly less disintegrated during May 1996, in the Northern Coast region, the price per debe (18 kg) was Tsh 1,550 in Morogoro and Tsh 2,800 in Dar-es-Salaam. During the same month, the retail price was Tsh 1,300 in Njombe and Tsh 2,225 in Iringa, both cities in the central highlands.

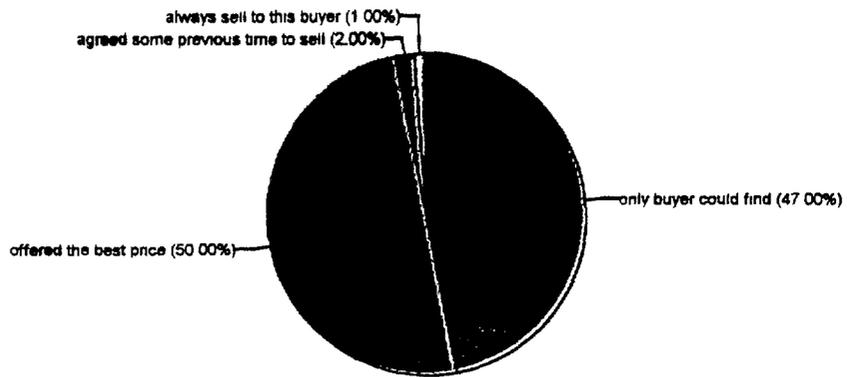
The survey results also support the view that there is substantial variability of prices from farm to farm. Table 5 shows the distribution of prices reported by farmers in Tsh/bag. All these prices are reported for recent trades of "more than one month in the past." Therefore, the price differences reflect differences over time as well as differences between farms. However, it is likely that all of the trades took place in the year from July 1996 to July 1997. This is consistent with other aspects of the survey, which show that farmers do not have access to market information or transportation.

**Table 5 Distribution of Prices Reported by Farmers in Tsh/bag**

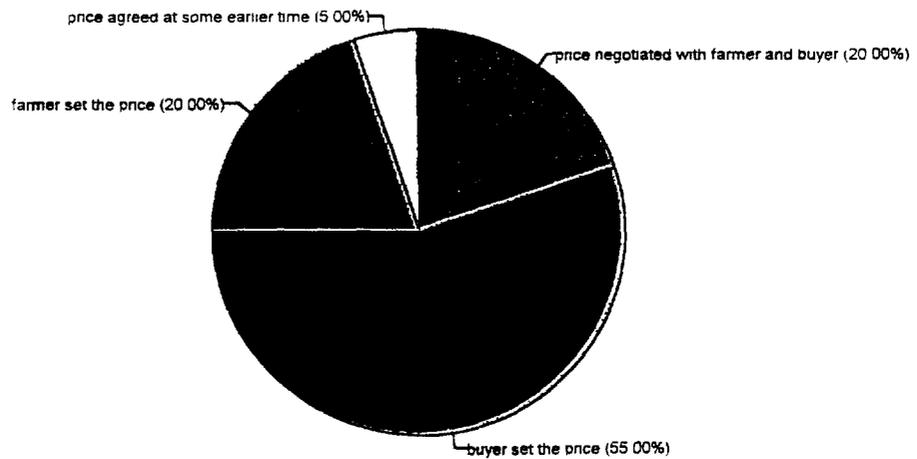
| Price Range | Number of farmers reporting price in this range |
|-------------|---|
| 0-1000      | 1   |
| 1000-2000   | 4   |
| 2000-3000   | 1   |
| 3000-4000   | 3   |
| 4000-5000   | 19  |
| 5000-6000   | 17  |
| 6000-7000   | 8   |
| 7000-8000   | 21  |
| 8000-9000   | 22  |
| 9000-10000  | 19  |
| 10000-11000 | 3   |
| 11000-12000 | 2   |
| 12000-13000 | 1   |
| 13000-14000 | 1   |
| 14000-15000 | 1   |

The survey results indicate that in Tanzania competition at the farmgate level is still imperfect though keener than in Zambia. Forty-seven percent of the farmers interviewed said that the buyer they sold their maize to was the only one they could find. Fifty percent of the farmers talked to a couple of buyers before they sold their maize to the one that offered the highest price. Interestingly, according to the survey results, almost all the maize in Tanzania is sold on the spot markets: only two percent of the farmers had agreed some previous time to sell maize to a particular buyer as Figure 4 indicates. Further, 55 percent of the maize farmers reported that the buyer set the price, they could only accept or reject it. As Figure 5 shows, only 20 percent of the farmers indicated that the price was determined through a negotiation. Finally, most farmers said that the quality of maize influenced the price, and in 76 percent of the cases the buyer was reported to have determined the quality.

**Figure 4 Maize Farmers in Tanzania Decision to Sell to Buyer**



**Figure 5 Maize Farmers in Tanzania Price Determination**



What explains this lack of effective competition in Tanzanian maize marketing and the resulting wide marketing margins and large and volatile price differences? An attempt to answer this question is made in the next section

### **7.3 Factors Influencing Transactions Costs**

Competition in Tanzanian maize markets is adversely affected by a number of factors movement restrictions, infrastructural impediments, limited access to credit, lack of storage capacity, and contract enforcement problems are all the ones that survey respondents and interviewed market participants considered as major impediments. All these factors, while hindering effective competition, raise transactions costs in maize trading

#### **A. Infrastructural Impediments**

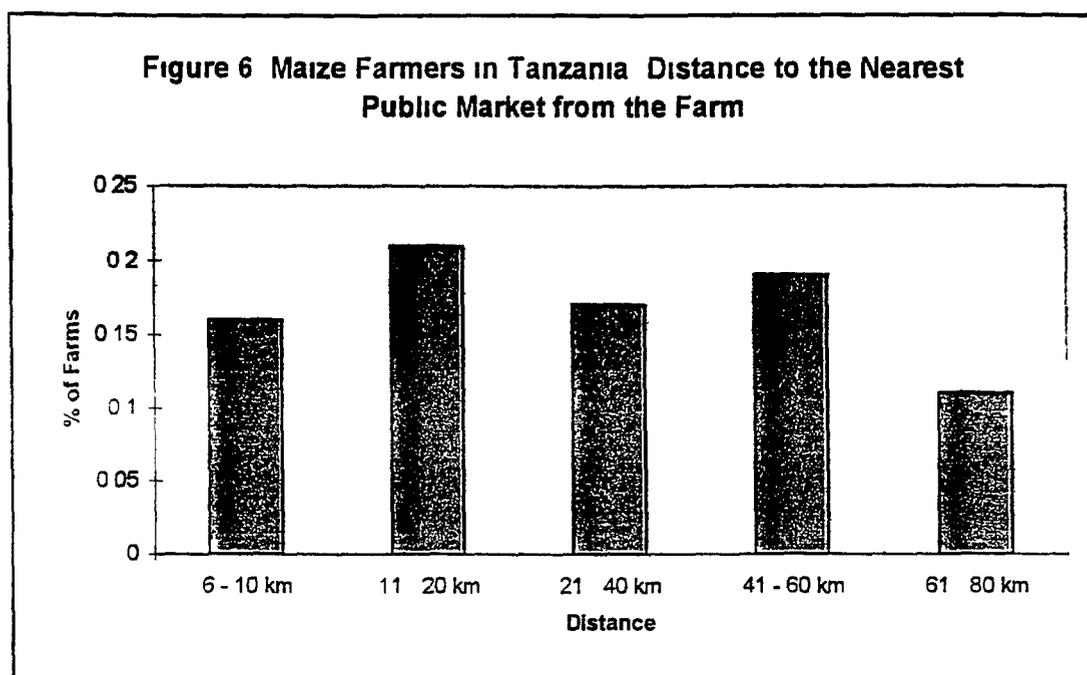
Infrastructural impediments increase the cost of physical movement of the produce, and hinder the processing and marketing process in various ways for example, by raising search costs. The major infrastructural constraints pointed out by farmers, traders and millers surveyed relate to transportation, water, and electricity supply

##### ***1 Transportation***

The road network in Tanzania, while better than in Zambia, is still inadequate and many roads are impassable during the rainy season. In 1990, the World Bank estimated that only 24 percent of Tanzania's paved roads were in a good condition and the rest 76 percent in fair or poor state. This was a result of weak management of roads and because road management was not given a high priority in budget allocations. Since then road maintenance management has been reformed and some of the roads have been rehabilitated. A lot of work, however, still needs to be done

By raising transportation costs, the poor quality of Tanzanian road network limits competition and entry into maize marketing. Maize production areas are often located far from centers, and there is a substantial distance from farms to the nearest town markets. For example, only 16 percent of the interviewed maize farmers said that the nearest town market is 0-5 km away, while 19 percent reported to travel between 41-60 km to the public market. Eleven percent of the farmers even indicated that they travel 61-80 km before they can get to a market with reasonable prices for inputs and maize. Figure 6 shows the distribution of distance to the nearest public market from the farms surveyed. Only 22 percent of the farmers surveyed said that they have the capacity to transport maize to the town market. This implies that farmers sell their maize at the farmgate which may not give them a competitive price if competition among traders is imperfect. Also, long distance means high transportation costs both for input purchasing and ferrying the maize to the market. Since the

distances are large, the quality of the transportation network is of major importance. The neglect of road maintenance leads to high expenditures on vehicle spare parts and repairs which translates into even higher transportation costs. This discourages marketing activities.



## 2 *Water Supply*

According to maize millers interviewed, the limited water supply impedes their milling operations. The industrial area of Dar es Salaam typically has water for only six hours per day (Rauth, Spence, and Morrill 1996). This shortage is a major constraint for milling, which uses water as an input in the production process.

Water shortages are caused by (i) technical, financial, and managerial problems which result in an underutilization of existing capacity, (ii) inefficient allocation of existing resources, and (iii) lack of funds to exploit new resources (World Bank 1994). Power shortages, faulty pumping systems and filtration plant inefficiencies, and inefficient management of these systems have led to low capacity utilization rates. Also, the price of water has been set too low--it does not reflect the scarcity value of water--which has encouraged inefficient use and wastage of water (World Bank 1994).

## 3 *Electricity Supply*

Unreliable supply of electricity not only impedes the water supply but also raises the cost of running a mill, either by causing the mill to run at a less than optimal capacity utilization rate or by

forcing the miller to invest in a generator. Both translate into increased costs in milling.

The reason for the erratic electricity supply can be traced back to the institutional framework that governs the electricity provision in Tanzania. The production and distribution of electricity is governed by a government monopoly, the Tanzania Electricity Supply Company (TANESCO). TANESCO is plagued by similar governance problems as the other government agencies in Tanzania, in particular lack of accountability of workers. For example, customer arrears are high, because the billing has not been taken care of properly.

## **B. Movement Restrictions on Maize**

As mentioned earlier, the government imposes movement restrictions on maize, and bans any exports of maize from Tanzania when SGR predicts a shortage of maize. The aim of this policy is to secure the availability of maize in the country during the years of shortage. At the same time, however, this policy distorts the maize markets and, in general, the allocation of resources in the agricultural sector.

These movement restrictions on maize--in particular the prohibition of exports--repress producer incentives by pushing down producer prices in the country. Maize prices are often substantially, even 50-300 percent, higher in the neighboring countries than in Tanzania. Given these price differences, farmers and traders, specifically those located close to the country's borders, have incentives to export maize. Even after taking into account the transport cost, they would be better off by exporting maize than selling it in the domestic market at repressed prices. Limiting increases in producer prices by imposing movement restrictions creates disincentives for farmers to grow maize. In particular, since these bans are often imposed without a warning, long-term planning by farmers and traders is made difficult, thereby discouraging investment in the sub-sector.

Removing restrictions on external trade of maize would allow Tanzanian farmers to capture potential gains from maize trade with other countries in the region that face shortages, and possibly increase maize production in Tanzania. Elimination of controls would allow an upward adjustment in producer prices in Tanzania during the years of shortages in the region and allow the resources to flow to areas where they are used best. An increased producer price would provide farmers an incentive to expand the production of the crop. This, in turn, would help to alleviate potential domestic shortages. A World Bank study of 1994 indicates that good and bad production years in Tanzania do not typically closely correlate with those in countries of Southern Africa. Thus, regional trade would not hurt domestic consumers. The trade would also likely bring net foreign exchange to the country and reduce the illegal trade in maize.

## **C. Access to Credit**

Farmers and traders lack access to credit. Only one of the 139 maize farmers interviewed had obtained credit. Also, traders interviewed expressed that the lack of credit, in addition to the

inefficient transport system. was a major problem and a constraint to the expansion of their business. In fact, due to the lack of finance many of the traders have to rely on hired transport services instead of buying their own vehicles which in the long-run is not cost-effective. Seventy-eight percent of the traders interviewed depended on hired transport. Lack of access to credit and the high cost of credit when it is accessible also prevent farmers from expanding their production.

There are several reasons for the shortage of credit. First, the financial sector is simply not geared to channeling credit to agricultural activities. Agriculture is viewed as a risky area partly because of its dependence on weather. Second, in general, there is a shortage of loanable funds in Tanzania. International finance in the form of portfolio and foreign direct investment has not flown in large volumes to Tanzania because of the perceived instability of Tanzanian investment climate. Uncertainty about macroeconomic policies resulting from some sudden policy reversals has kept international investors at bay. Third, the current collateral laws are inadequate. The existing laws state that banks cannot take control of collateralized property in case of a default (Rauth, Spence, and Morrill 1996). This completely defeats the purpose of the collateral--to mitigate the risk in lending--and obviously raises the cost of credit. Fourth, the inefficiencies in the court system also increase the cost of loan contract enforcement.

#### **D. Storage Capacity**

About 30-40 percent of maize produced in Tanzania is lost due to poor or non-existent on-farm storage every year (FEWS Bulletin 1996). Sixty-five percent of the maize farmers surveyed reported that they have enough capacity to store their entire crop, but 35 percent said that they have some, but not enough, storage capacity. Even if there were enough storage capacity, the quality of that storage is often questionable. For example, most of the farmers interviewed in Iringa used a type of storage that does not maintain the produce in good quality for a long time.

Lack of proper on-farm storage facilities distorts the maize trade and raises transactions costs specifically transfer costs. Obviously, losing over one third of the crop after the harvest is a major inefficiency in the marketing system. Fear of this loss tempts farmers to sell their maize soon after harvest, thus preventing them from benefitting from seasonal changes in maize prices. Maize prices in Tanzania exhibit a pronounced seasonal pattern; they are highest in May and then drop dramatically, bottoming out in September. The lack of storage hinders the evening out of seasonal fluctuations in maize prices.

Many maize millers also voiced their concern about inadequate storage space. Due to the lack of adequate storage space, they as well are unable to take advantage of seasonal fluctuations in prices--which is, according to the millers, a prerequisite to remaining competitive and making profits.

Inadequate storage capacity at the farm and mill level reflects the farmers' and millers' lack of access to credit. Constructing appropriate storage requires funds, which, as discussed earlier, are in short supply. Interestingly, while traders and farmers are struggling for storage space, a large share

of NMC's storage is said to be empty throughout the country

#### **E. Contract Enforcement**

Most transactions in maize markets are spot market exchanges with cash payments. These transactions involve an instantaneous exchange of goods and money. Some millers did report however, that they extend a very short term credit (2-3 days) for their better-known customers.

This spot market nature of deals reflects the ineffectiveness of state contract enforcement institutions in Tanzania.<sup>5</sup> The fact that millers are willing to extend very short-term credit only to their better-known customers indicates that the enforcement of written contracts through the court system is not effective. Instead, businesses seem to rely on reputation as an enforcement mechanism. A survey of manufacturing firms (ESRF/IRIS 1997) carried out in Tanzania in July 1997 also indicates that judicial process and procedures are considered by firms to be inefficient, unpredictable, non-disciplined, non-transparent, and not cost-effective. Further, a study of Ringo, Nditi, and Mjema (1995) also shows that small enterprises in Tanzania view the courts as the most unsuitable forum for dispute settlement for two reasons. First, a court suit would tarnish one's image and lead to a loss of future business. Second, settling disputes in the court is the most expensive in terms of time, money, and corruption.

Reliance on cash transactions on spot markets hinders the expansion of markets and also raises transactions costs. It tends to reduce the size of transactions because of cash constraints and risks involved in carrying cash. Traders buying maize from farmers need to carry substantial amounts of cash with them. Stories of robberies were not uncommon; these traders are naturally lucrative and easy targets for criminals. It also severely limits the expansion of markets by curbing inter-temporal trade. Finally, cash constraints limit the entry of new traders.

In sum, the efficiency of maize marketing -- as evidenced by widening marketing margins -- has decreased in the past few years. Problems with infrastructure, access to credit, storage and contract enforcement partly explain this downward trend in efficiency. Ineffective governance, fiscal planning and legal and regulatory institutions are at the root of these problems.

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<sup>5</sup> See Kahkonen and Meagher (1997) for a discussion on the role of state institutions of contract enforcement in facilitating business transactions and development.

## **8. Marketing of Cotton in Tanzania**

This chapter will assess the impact of liberalization on Tanzanian cotton marketing changes in and efficiency of marketing arrangements. It will be shown that since liberalization, marketing of cotton in Tanzania has somewhat increased the gap between the producer and the export price has narrowed. However, ginnery costs in Tanzania are still high compared to Zambia. Several factors are limiting competition and raising transactions costs in cotton marketing. These include various entry barriers to cotton trading, lack of access to finance, and infrastructural constraints.

### **8.1. Institutional Structures and Marketing Arrangements**

Cotton is the second most important cash crop, after coffee, in Tanzania. Along with coffee it is also the leading export crop (World Bank 1996). It is grown primarily in two areas: the Western cotton growing area south of Lake Victoria which comprises of Mwanza, Shinyanga, Mara, Tabora, Singida, Kagera, and Kigoma, and the Eastern cotton growing area which consists of Morogoro Coast Region, Arusha, Mbeya, Tanga, Kilimanjaro and Iringa. About 90 percent of Tanzania's total cotton production originates from the Western cotton growing area (World Bank 1994).

In Tanzania, cotton is a small-holder crop. It is grown on farms whose size varies from 0.5 to 10 hectares, the average farm size being 1-2 hectares. Farmers typically grow cotton in rotation with food crops such as maize, sorghum, millet, cassava, and legumes.

Cotton in Tanzania is rainfed and less than 10 percent of farmers use fertilizers to grow the crop. The hand hoe is still the principal tool of most cotton farmers, although in the Western growing area oxen are increasingly used for land preparation and weeding (Undolle 1994).

The Tanzanian cotton variety is of the medium staple American Upland staple which can be either saw or roller ginned (Undolle 1994). Most of the seed cotton in Tanzania is roller ginned. The roller ginned lint has a smaller lint wastage factor and therefore obtains a premium price in the world market.

#### **8.1.1 Background to Liberalization**

Up to 1993/94 cotton marketing in Tanzania was controlled by cooperative unions and a parastatal marketing board. Until 1975 cooperative unions were in charge of ginning and the marketing of cotton. This system, however, changed drastically in 1975.

In 1975, government dissolved cooperative unions and turned all aspects of cotton

marketing over to the Tanzanian Cotton Authority, a parastatal marketing board. The Tanzanian Cotton Authority was made responsible for delivering to villages the required inputs and transporting, storing, ginning, and arranging for export the cotton produced by farmers. The impact of this new system on cotton production was, however, not encouraging. By the early 1980s, Tanzanian farmers had reduced the production of the crop as the real return of cotton fell due to increasing devaluation of the Tanzanian shilling and a growing share of receipts devoted to finance the operation of the Tanzanian Cotton Authority (Putterman 1994). From the 1976-77 season to that of 1985-86, cotton production fell from 65,930 to 32,846 tons (Bevan et al 1989). To reverse the spiral, the government decided to revise the marketing system once more and revive the cooperative unions.

In 1984, cooperative unions were reinstated to handle the marketing of cotton jointly with a parastatal marketing board, renamed Tanzania Cotton Marketing Board (TCMB). The cooperative unions and the village-level primary societies were established as agents of TCMB (Consultants for Development Programs 1988). TCMB distributed inputs to the cooperative unions which in turn distributed them to the primary societies for sale to the farmers. The quantities of inputs to be purchased were established by TCMB in consultation with the unions. Farmers delivered cotton they had produced to primary societies which stored and sold cotton to specified cooperative unions for a fixed price. The unions then ginned the seed cotton in their own ginneries for a fixed margin for TCMB. Finally, TCMB sold the cotton lint to domestic and international buyers.

The purchasing price and the selling price of cooperative unions were fixed by the government. The purchasing price--that is, the producer price--was uniform and pan-territorial. The setting of it, however, seemed to be arbitrary. In principle the government followed the world market price in the price setting, but in practice producer prices were at times set above the world market prices ensuring that cooperative unions ran at a loss (World Bank 1994). The selling price, however, was said to be set by taking into account, among other things, the unions' costs.

However, by international standards neither the cooperative unions nor the primary societies could be considered as cooperatives since membership in unions was automatic for adult villagers and there was no share capital. The cooperative unions were financed by grants and loans from the government and donors. In fact, since unions' purchasing and selling prices were fixed they simply could not operate as independent, commercial entities. As Putterman (1995) writes:

*"Although attempts were made to assess the unions' costs and to include appropriate margins in the prices at which they in turn sold to the government marketing authorities, [union] managers were obligated to fulfill their charge whether a particular transaction was profitable or not. In many cases the government was asking the union to engage in crop purchasing exercise without any possibility of recovering its cost. When unions*

*incurred losses through a combination of internal inefficiencies and unreasonable government demands the banks (also owned by the government) routinely tied them over with credit”*

Further cooperative managers were appointed by the government, not by union members  
Cooperative unions were thus effectively public entities, agents of TCMB

Most of the cooperatives were kept alive only by increasing governmental subsidies and donor support. At the end of 1980s and early 1990s, partly as a result of the pressure from donors, this marketing system was reformed as the liberalization of the agricultural sector in Tanzania commenced

## **8 1 2 Liberalization of Cotton Marketing**

The seeds for the liberalization of cotton marketing were sown in 1989/90 as the government of Tanzania launched the Tanzania Agricultural Adjustment Program. Under this program, in 1990/91, the legislation that specified the role of TCMB in cotton marketing was altered. The new legislation ‘reversed’ the roles of TCMB and cooperative unions: instead of cooperative unions and primary societies providing services for TCMB against a fixed fee, the new legislation granted cooperative unions the ownership of cotton from the point of production up to the final sale. TCMB’s new role was to provide fee-based marketing services for cooperative unions for final sales and input purchases.

The reform of the Tanzanian cooperative movement was initiated at the same time. A new Cooperative Societies Act was crafted in 1991. The aim of this Act was to make Tanzanian cooperative unions conform with international cooperative principles. Primary societies were to be formed by farmers who would freely elect to join the society and provide share capital. These primary societies would then control the cooperative unions through their elected representatives (Co-operative Societies Act of 1991). The government also ordered national banks to withhold credit from any cooperative unions that did not pass the commercial lending criteria (Putterman 1995).

The price controls on cotton were also gradually relaxed. In 1991/92, the government announced only indicative producer prices. In the next season 1992/93, cooperative unions were given the freedom to determine their own producer prices. In principle, this marked the end of the period of uniform and pan-territorial producer pricing policy. In practice, cooperative unions throughout the country agreed on a uniform producer price.

The liberalization of cotton marketing was properly initiated only in 1993/94 as the private sector was permitted to enter the marketing and processing of cotton, that is to buy cotton directly from farmers and then to gin and sell it. The government passed in August 1993 the

Crop Boards (Miscellaneous Amendments) Act which removed the monopoly of cooperative unions and marketing boards in the marketing of cotton, coffee, cashewnuts, and tobacco (Undolle 1994) TCMB was renamed the Tanzania Cotton Lint and Seed Board (TCLSB), and its role was changed to that of an enforcer of marketing regulations to coordinate the production and marketing of cotton within the country. The legislation, however, still permits TCLSB to undertake commercial activities (World Bank 1994). All price controls were also removed and private traders were allowed to set their own producer prices.

How did the private sector respond to these changes in marketing policies and how has the marketing system evolved since 1993/94? The next section attempts to answer these questions.

### 8.1.3 Impact of Liberalization on Cotton Marketing Structure

The private sector's response to reforms in cotton marketing started to surface significantly only in the 1995/96 season. Only at that time private agents were adequately informed about the change.

The emergence of private ginneries to process cotton set in motion changes in cotton marketing.<sup>1</sup> The construction of eight private ginneries commenced in November 1994 in Tanzania. Up until that time, practically all ginneries in Tanzania were owned by cooperative unions.<sup>2</sup> Since the mid-1980s there had been a backlog of unginning seed cotton in the country (Undolle 1994). The unginning seed cotton had been stored at the end of the season until the next season causing it to deteriorate. The primary reason for this backlog was inadequate ginning capacity. Even though the ginning capacity on paper in 1990/91 was about 674,000 bales of lint per season--enough to process all cotton produced in Tanzania--the effective ginning capacity in Tanzania was substantially less because of mechanical and electrical failures of the production equipment and inefficient management of ginneries (Undolle 1994). Most of the cooperative ginneries, with gins installed in the 1930s and 1960s, had aged and deteriorating equipment. Maintenance of this equipment was problematic because of the availability of spare parts. Frequent power failures further aggravated the situation. Inefficient management also contributed

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<sup>1</sup> Seed cotton processing or ginning is the process of separating lint from the seeds. This is carried out in ginneries. One kilogram of seed cotton produces approximately 620-640 grams of cotton seeds, 340 grams of cotton lint, and 20 grams of wastes and other foreign matter (Undolle 1994).

<sup>2</sup> The ginneries not owned by cooperative unions were regarded as branches of them.

to the poor performance of ginneries<sup>3</sup> Private ginneries emerged to take advantage of this situation Their emergence reduced the backlogs of unginned cotton Table 1 lists the names, locations and capacities of each private ginnery As Table 1 indicates all private ginneries are located in the Western cotton growing area

**Table 1: Private Ginneries in Tanzania**

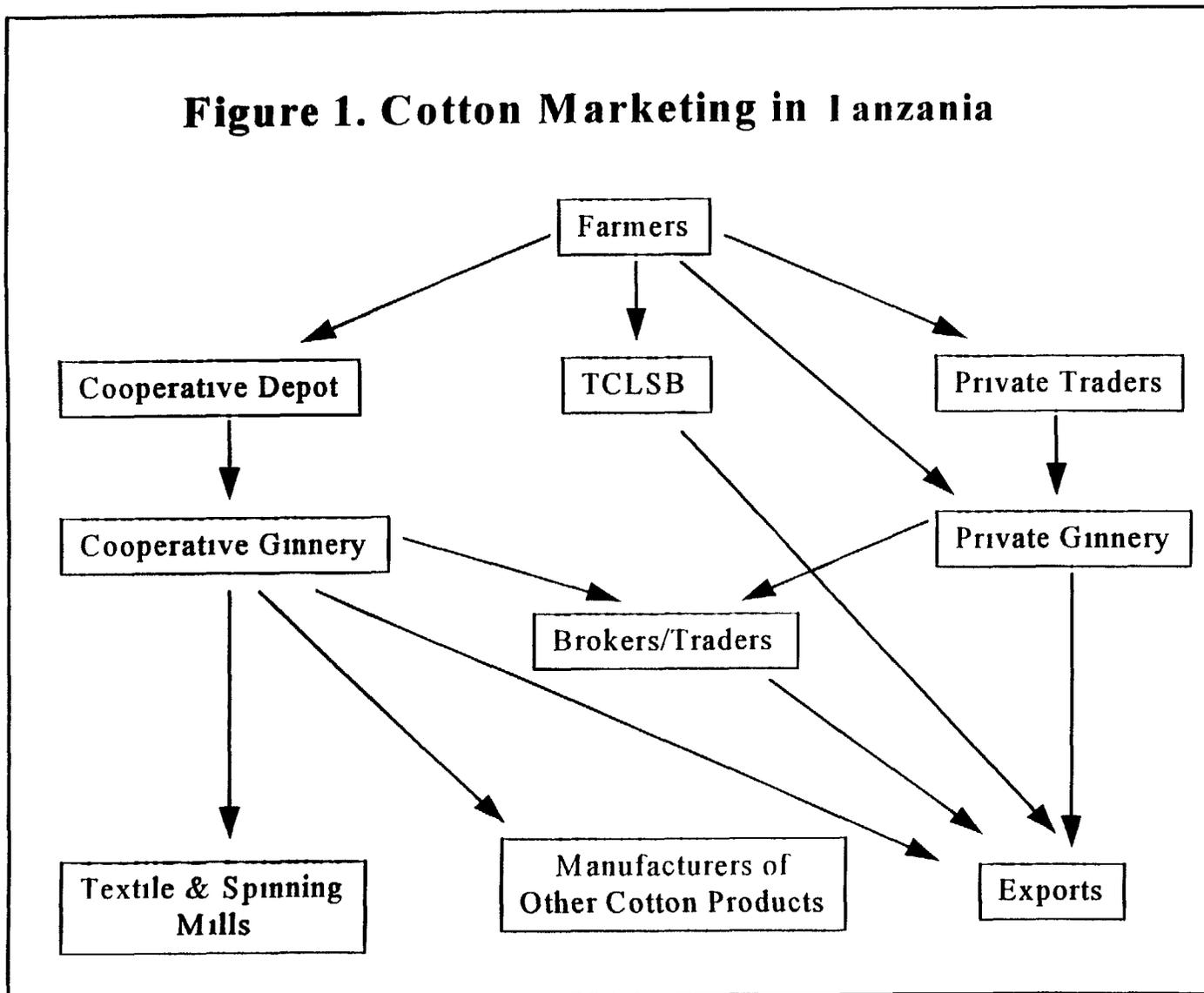
| NAME           | DISTRICT  | MACHINERY                              | TECHNICAL CAPACITY<br>(Bales per shift) |
|----------------|-----------|--|---|
| Cargill        | Maswa     | 5 saw gins                             | 200                                     |
| Lalago         | Maswa     | 15 roller gins                         | 30                                      |
| Mwanhuzi       | Meatu     | 3 saw gins                             | 120                                     |
| Dynamic        | Mwanza    | 22 roller gins                         | 44                                      |
| Farai          | Mwanza    | 30 roller gins                         | 60                                      |
| Virian         | Bunda     | 7 saw gins                             | 280                                     |
| Bulamba        | Bunda     | 40 roller gins                         | 80                                      |
| Mara Oil Mills | Musoma    | 30 roller gins                         | 60                                      |
| Aquva          | Magu      | 3 saw gins                             | 120                                     |
| Ushrombo       | Bukombe   | 40 roller gins                         | 80                                      |
| Mhumbu         | Shinyanga | 3 saw gins                             | 120                                     |
| Mwalujo        | Kwimba    | 20 roller gins                         | 40                                      |
| Igoma          | Mwanza    | 20 roller gins                         | 40                                      |
| <b>TOTAL</b>   |           | <b>21 saw gins<br/>217 roller gins</b> |   |

Source Tanzania Cotton Lint and Seed Board (TCLSB)

<sup>3</sup> According to the study on the quality of Tanzanian ginnery staff carried out by the Netherlands government in 1990 90 percent of cooperative ginnery operators are unqualified for their posts most ginnery managers have no formal training and above 80 percent do not meet the required minimum educational qualifications

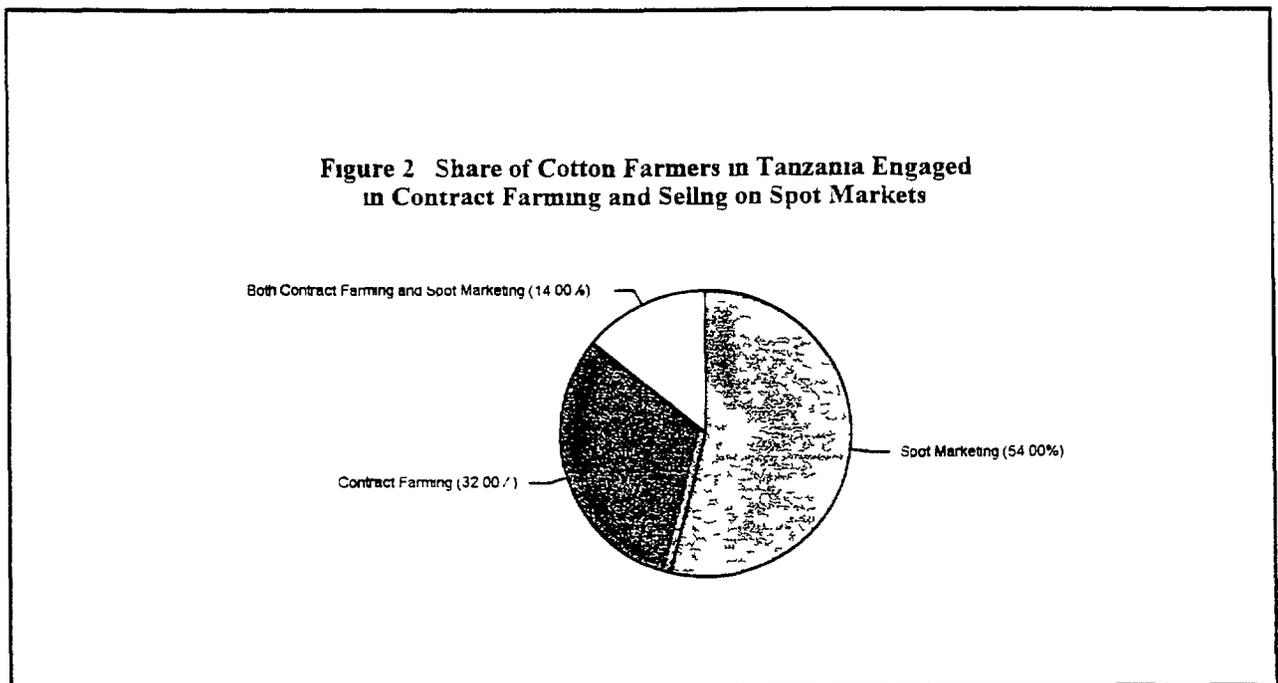
The establishment of private ginneries led to the emergence of another marketing channel for cotton and, thereby, the emergence of private traders and brokers of cotton. Instead of being obligated to sell the crop to a local cooperative union, a cotton farmer has today a choice of options: (i) take the seed cotton to a local cooperative depot of the primary cooperative society and sell it to a cooperative union, (ii) sell the seed cotton at the farmgate or at a nearby buying station to a private trader who assembles cotton from several farmers and then transports it to a private ginnery; (iii) transport and sell the seed cotton directly to a private ginnery; or (iv) sell the seed cotton to TCLSB. Figure 1 maps the main marketing channels of cotton from the farmgate to the consumer. The options available for a farmer, however, depend on the growing area. Since all private ginneries are located in the Western cotton growing area, private traders are also operating there. Farmers interviewed in the Morogoro area in the Eastern cotton growing area indicated that they still rely on cooperative unions for the marketing of their crops.

**Figure 1. Cotton Marketing in Tanzania**



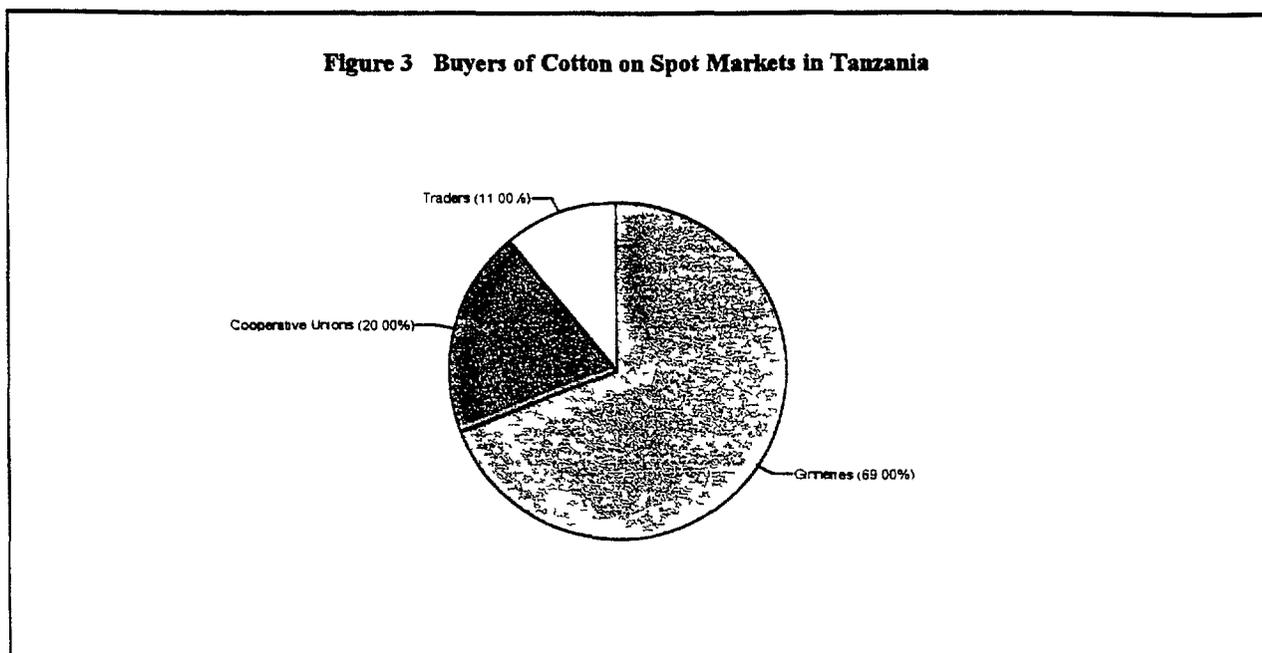
Over half of the cotton produced in Tanzania is currently marketed through the private sector (i.e. private traders and private ginneries). The Ministry of Agriculture estimates that in the 1996/97 season 47 percent of cotton was bought by cooperatives, 51 percent by the private sector, and the remaining 2 percent by others, including TCLSB.<sup>4</sup> The share controlled by the private sector is, however, likely to be higher since private buyers tend to understate their purchases of cotton to avoid taxes.

The survey results confirm the increased role of private ginneries and traders in cotton marketing and indicate that the majority of farmers sell their cotton on spot markets even though contract farming is also fairly common. Of the cotton farmers surveyed about 54 percent sought out a buyer only after the cotton was harvested. These farmers sold their cotton on so-called "spot markets," mostly channeled through private markets. In contrast, about 32 percent of farmers interviewed had agreed to sell the cotton to a specific buyer at the beginning of the growing season, before the cotton was planted. These contracts were written with either cooperative unions or with some private ginneries which have lately launched outgrower programs. About 14 percent of farmers sold cotton both on contract and on the spot markets. This is depicted in Figure 2. Most of the farmers interviewed were small-holders. Sixty-eight percent of interviewed farmers cultivated only between 0.6-1.9 hectares, about 23 percent of farmers had a farm size less than 0.5 hectare and very few had a farm that was over 2 hectares.



<sup>4</sup> Interview with officials of the Ministry of Agriculture

Most farmers selling cotton on spot markets after the harvest sold cotton directly to ginneries. Sixty-nine percent of the interviewed farmers sold cotton to ginneries, 20 percent to cooperative unions, and 11 percent to private traders as Figure 3 shows. In all of these cases, the farmer met the buyer at the buyer's place of business. The physical possession of cotton also changed hands at these places. Farmers transported the cotton to the buyer often on foot. Only about 30 percent of all the farmers surveyed owned oxen and a cart.



Most of those farmers who sold their cotton on contract sold it to cooperative unions. Some private ginneries were also involved in contract farming. These buyers provided inputs--either seeds or both seeds and fertilizers--to farmers on the condition that farmers market their cotton to these traders. In most cases farmers agreed with the buyer how many hectares to plant and promised to sell whatever quantity was grown on those hectares. Some farmers had, though, signed a contract by which they agreed to sell only a specified minimum quantity of cotton to the buyer. Typically, a minimum price for cotton was established at planting time but was adjusted if the market price for cotton turned out to be higher at the time of harvest.

Private traders and private ginneries have been able to corner a major share of the market by offering farmers somewhat higher prices for the seed cotton than cooperative unions and above all, cash payment. Because of their financial difficulties most cooperative unions are

unable to pay cotton farmers in cash. Instead, they typically buy cotton from farmers on credit. However, a common complaint among farmers, in particular in the Eastern cotton growing area, was that cooperatives never compensate them fully. Farmers receive only a partial payment shortly after the delivery of cotton with a promise of another installment at a later date--a promise which is seldom kept. Except for a few financially solvent cooperative unions in the Western cotton growing area, cooperatives lack access to bank credit to finance the purchase of seed cotton.

Another reason for the declining role of cooperative unions in Tanzanian cotton marketing is that the Cooperative Act of 1991 does not seem to have been able to transform the cooperative unions into genuine member-based organizations. The staff and management of these unions have hardly changed (Ministry of Agriculture 1997). As a result, a major overhaul of the organization has happened only on paper, not in practice. In terms of staff, unions are still bloated. Table 2 lists the number of workers in each cooperative union. Cooperative funds are often mismanaged and book keeping has been found to be inadequate (Ministry of Agriculture 1997). These factors have led to a reduction in the cooperative membership. Farmers choose to leave the unions, in particular because the services of the unions can be obtained without paying the membership dues. Cooperatives are buying seed cotton from non-members at the same price as from non-members. The performance of unions obviously varies. Some cooperative unions in the Western cotton growing area are performing well. Most unions, however, are on the verge of a collapse.

**Table 2. Number of Workers in Cooperative Unions in Tanzania**

| <b>Cooperative Union</b> | <b>Number of Workers</b> |
|--------------------------|--------------------------|
| Tabora                   | 119                      |
| Lindi                    | 3                        |
| Moshi                    | 403                      |
| Mara                     | 25                       |
| Singida                  | 23                       |
| Kigoma                   | N/A                      |
| Coast Region             | 51                       |
| Tanga                    | 37                       |
| Iringa                   | 79                       |
| Shinyanga                | 928                      |
| Songea                   | 321                      |
| DSM                      | 54                       |
| Mbeva                    | 122                      |
| Dodoma                   | N/A                      |
| Kagera                   | 525                      |
| Mtwara                   | 73                       |
| Mwanza                   | 1071                     |
| Rukwa                    | N/A                      |
| Morogoro                 | N/A                      |
| Arusha                   | N/A                      |

Source Review of the Cooperative Movement in Tanzania. Ministry of Agriculture 1997

After ginning, cotton lint is either sold domestically or exported. Almost all of the cotton lint produced is currently exported. Table 3 documents the domestic sales and exports of cotton

lint Tanzania gets a premium price for its cotton in the world market because it is hand picked. However, the portion that Tanzanian lint constitutes in the world market is as small as 0.35 percent. Lint in Tanzania is used mainly by textile industries which do spinning and weaving of textiles. In addition, cotton lint is used by makers of sanitary and surgical products and makers of cotton twine and rope. The demand by the domestic textile industry has, however, drastically decreased in the past ten years: the consumption of cotton lint by domestic textile mills has fallen from 85,000 bales in the early 1980s to 488 bales in 1994/95. The Tanzanian textile industry has not been able to withstand the international competition and, as a result, textile mills are closing down.

**Table 3. Volume of Cotton Lint Exports and Domestic Sales**

| Years   | Export Sales (Tons) | Domestic Sales (Tons) | Total Sales (Tons) |
|---------|---------------------|-----------------------|--------------------|
| 1981/82 | 44 100              | 16 157                | 60 257             |
| 1982/83 | 27 711              | 14 357                | 42 068             |
| 1983/84 | 33,245              | 15 134                | 48 379             |
| 1984/85 | 16,286              | 16 315                | 32 601             |
| 1985/86 | 32 422              | 11 081                | 43 503             |
| 1986/87 | 27 293              | 10 369                | 37 662             |
| 1987/88 | 35 452              | 13 153                | 48 605             |
| 1988/89 | 61 598              | 10 964                | 72 562             |
| 1989/90 | 36 999              | 11 137                | 48 136             |
| 1990/91 | 39 128              | 6,611                 | 45 740             |
| 1991/92 | 62 837              | 8 577                 | 71 414             |
| 1992/93 | 57 579              | 4 475                 | 62 054             |
| 1993/94 | 65 619              | 2 142                 | 67 761             |
| 1994/95 | 35 379              | 3 589                 | 38 968             |
| 1995/96 | 55 931              | 25                    | 55 956             |

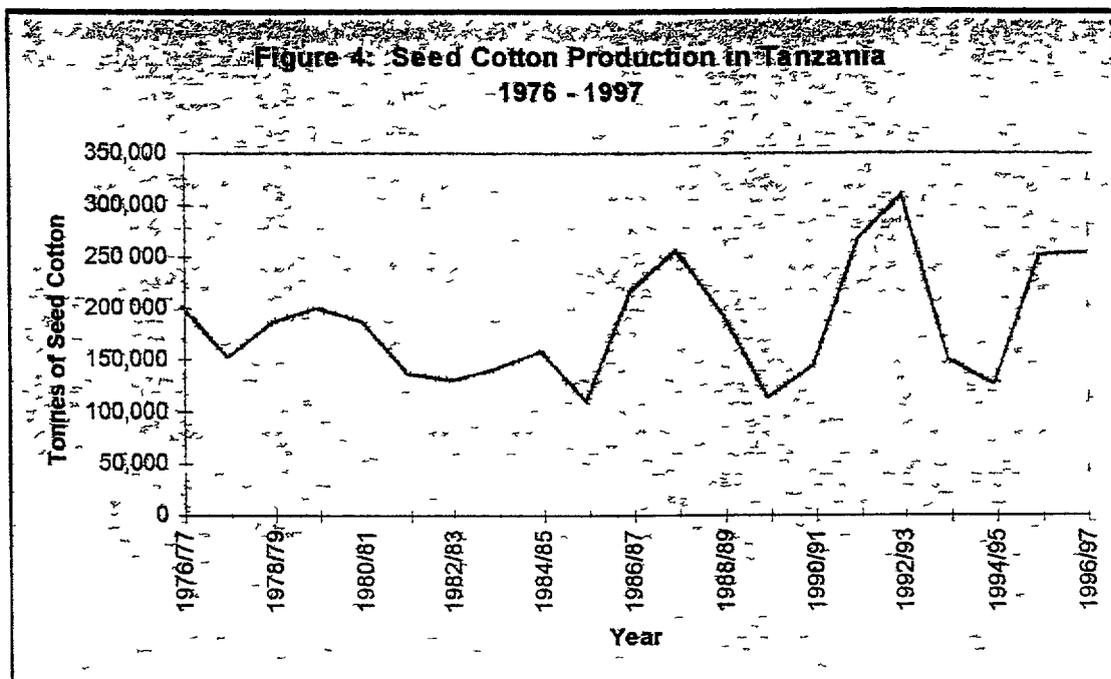
Source: TCLSB

Cooperative and private ginneries either export the cotton lint themselves or use a trader or a broker to trade the lint. These traders and brokers assist ginneries to locate buyers in the world markets and take care of the paperwork involved in exporting. All these traders and brokers are required to be licensed with TCLSB.

Finally, TCLSB is also participating in cotton marketing as both a buyer and seller. It buys cotton (small amounts though) from farmers, has it processed in a ginnery, and then exports the lint.

### 8 1 4 Impact of Liberalization on Cotton Production

Cotton production in Tanzania has fluctuated a lot over the years. Figure 4 graphs the production of seed cotton (in tonnes) from 1976-1997. As the figure shows, the production of cotton plummeted in 1994-95, immediately after the liberalization, but has since then picked up, according to the statistics of the Tanzania Cotton Lint and Seed Board. Unfavorable weather and inadequate supply of inputs such as chemicals and fertilizers, however, adversely affected production in the 1996-97 season.



### 8 2 Efficiency of Cotton Marketing Evidence on Marketing Margins

This section will explore the efficiency of cotton marketing in Tanzania. The analysis will indicate that since liberalization the efficiency of cotton marketing has somewhat increased; the gap between producer and export price has slightly narrowed. However, compared to Zambia, the ginner's costs in Tanzania still appear high.

As in Zambia, in Tanzania the sources of empirical evidence on transactions costs is more limited for cotton than for maize. But here too the marketing chain is to a great degree described by the activities and costs associated with ginning.

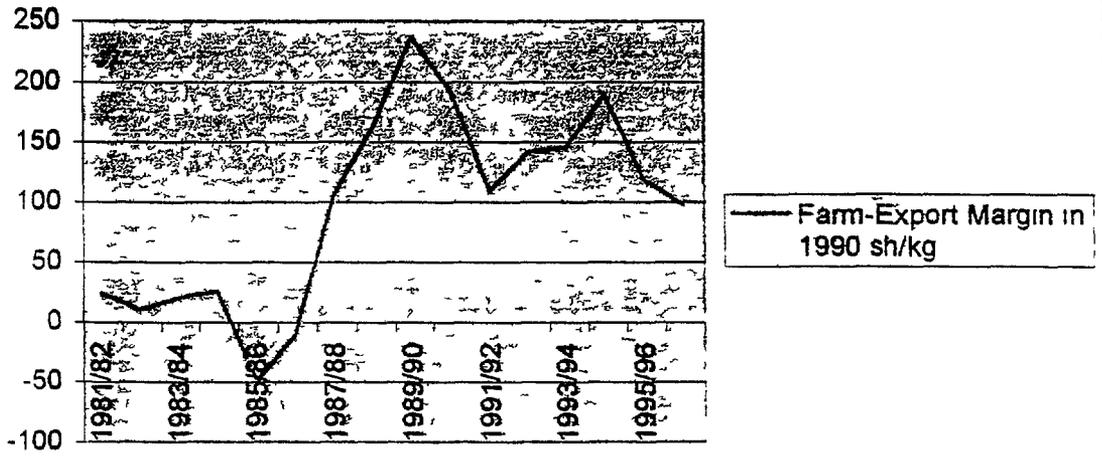
Since liberalization the gap between the producer price and the export price of cotton lint has somewhat narrowed down. This conclusion is based on data on national producer prices and export prices by marketing year. Comparison of producer price to export price only up to 1995/96 would raise a question whether liberalization has failed since the gap between the prices was widening. However, adding 1996/97 price data shows large improvement narrowing the gap. The share of the producer price in the cotton lint export price was about 53 percent in 1996-97 season according to the Tanzania Cotton Lint and Seed Board. Table 4 lists and Figure 5 maps the real export prices to producer margins from 1981-97.

Interviews with ginnery operators provided an insight into the breakdown of costs contributing to this marketing margin. The categories of costs associated with ginning at a cooperative ginnery in Tanzania are shown in Table 5. As for Zambia, in Table 5 the revenue for sales of cotton seed are imputed from a U.S. farm price, since cottonseed prices in Tanzania were not available. Unfortunately comparable information from private ginneries was not obtained; however, some inferences about costs of private ginneries can be made from the information obtained about pricing by a private ginnery.

**Table 4 Producer Prices Compared to Export Prices**

|   | 1981/<br>1982 | 1982/<br>1983 | 1983/<br>1984 | 1984/<br>1985 | 1985/<br>1986 | 1986/<br>1987 | 1987/<br>1988 | 1988/<br>1989 | 1989/<br>1990 | 1990/<br>1991 | 1991/<br>1992 | 1992/<br>1993 | 1993/<br>1994 | 1994/<br>1995 | 1995/<br>1996 | 1996/<br>1997 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Producer Price (Sh/kg) (Int Equivalent)</b>              | 11 08         | 14 07         | 17 96         | 25 15         | 38 92         | 50 60         | 58 23         | 66 92         | 83 83         | 122 75        | 209 85        | 179 64        | 239 52        | 359 67        | 617 07        | 479 04        |
| <b>Export Price (Sh/kg) Int</b>                             | 13 32         | 15 14         | 21 04         | 30 54         | 23 51         | 45 41         | 112 05        | 173 03        | 287hy<br>81   | 342 57        | 364 00        | 427 00        | 569 79        | 922 74        | 1052 8        | 900 00        |
| <b>Producer Price as % Export Price</b>                     | 83%           | 93%           | 85%           | 82%           | 168%          | 111%          | 52%           | 39%           | 29%           | 36%           | 58%           | 42%           | 42%           | 39%           | 59%           | 53%           |
| <b>Export P<br/>Producer P<br/>in constant<br/>1990 fsh</b> | 22 513        | 8 392         | 18 279        | 23 797        | 51 196        | 13 156        | 104 404       | 160 651       | 235           | 192 234       | 107 986       | 140 068       | 144 286       | 187 471       | 116 912       | 95 792        |

Figure 5 Real Export to Producer Margins



Note export price - farmers price in constant Tsh

**Table 5 Transactions Costs for a Typically Large Zambian Ginnery**

| Cost/Revenue Category  | \$US per kg of seed cotton |
|--|----------------------------|
| Revenue from sales of cotton lint  | 0 54                       |
| 33 kgs x TS980/kg (\$ 74 per lb)   | 0 09                       |
| Revenue from sales of cotton seed<br>65 x \$0 143/kg (\$130 per short ton) | 0 63                       |
| <b>Total Revenue to the Ginnery</b>  |                            |
| Transport and handling costs   | 0 03                       |
| Ginning costs  | 0 11                       |
| Storage costs (0 04/kg/month x 2 months)                                   | 0 08                       |
| Extension costs  | 0 00                       |
| Taxes Duties   | 0 11                       |
| Cooperative fees   | 0 05                       |
| Total costs other than raw materials                                       | 0 38                       |
| Funds available to pay farmers   | 0 25                       |
| Price paid to farmers  | 0 25                       |
| Profit/Loss  | 0 00                       |

From the above Table 5 several points are worthy of notice

First the price paid to farmers in Tanzania is significantly lower than the price paid in Zambia. However this apparent difference is misleading. In Tanzania, ginneries typically give away cotton seed to farmers for planting, in Zambia, farmers must pay ginneries for the seed. Therefore, comparable figures would show a narrower difference but the Zambian price would remain higher. The prices paid by private ginneries in Tanzania are significantly higher than the prices paid by cooperative ginneries. One private ginnery interviewed reported a farm price that was \$0 05 higher than the cooperative price. In addition, this ginnery gave farmers not only the seed for planting, but also pesticides for spraying. Using the Zambia figure of about \$0 10 as the value of these inputs the price paid to Tanzanian cotton farmers by the private ginnery is about \$0 40 per kg--five cents higher than the Zambian price and 10-15 cents higher than the Tanzanian cooperative price.

Second, the transport costs in Tanzania are lower than those in Zambia. Tanzanian cooperative unions report transport costs of \$0.03. A private ginnery in Tanzania reported a \$0.04-0.05 difference in price for cotton delivered to the plant and cotton received at the farmgate, suggesting transport costs in this range (Zambian transport costs were \$0.07). There are two explanations for this. First, the quality of roads and the availability of trucks is higher in Tanzania than in Zambia. Second, there are many more ginneries in Tanzania, so the average distance from farm to ginnery is shorter.

Third, while the larger number of smaller ginneries in Tanzania saves transport costs, it raises ginning costs by reducing the average scale of operation. Ginning costs in Tanzania cooperative ginneries are higher than those in Zambia by a significant amount: \$0.11 per kg in Tanzania compared to \$0.07 in Zambia. The ginning costs are lower in the newer private ginneries than in the older cooperative ginneries. The difference (as reflected in ability to pay farmers) appears to be in the \$0.04 cent range, putting ginning costs at the private Tanzanian ginneries on par with the costs at Zambian ginneries.

Fourth, the largest factor explaining the ability of private ginneries to pay more than cooperative ginneries is the cooperative fees (amounting to about \$0.05 per kg) paid by cooperative ginneries for the overhead costs of the cooperative apparatus.

Fifth, in addition to these fees, taxes and other duties are a large item in the transactions costs. By far the largest of these is the federal tax of about \$0.10 per kg.

In short, the overall ginning costs in Tanzania appear high compared to Zambia. In particular, taxes and fees are higher in Tanzania than in Zambia.

The level of the producer price is a concern, since previous studies indicate that farmers in Tanzania are extremely responsive to changes in the real farmgate price of cotton: the estimates for the elasticity of cotton supply with respect to price are high. For example, the World Bank (1994) estimates that a 10 percent increase in the real producer price elicits an increase of 13 percent in production. Given that an increase in the producer price could have a beneficial effect on production, raises a question: is the margin between the producer and export price in Tanzania still too wide?

The wide margin between the producer and export price may be due to lack of effective competition in ginning, which would allow existing ginneries to enjoy large profits, or due to high cost of ginnery operation, or a combination of both. If the competition in ginning is not effective--for example, if private ginneries have colluded or if there are barriers to entry--ginneries can set producer prices at low levels and enjoy high profit margins. However, it is also possible that the ginnery operating costs in Tanzania are very high and, therefore, to remain competitive in the world market, producer prices need to be kept down. Unfortunately, there is only limited information available about the operations of private ginneries. No studies have been carried out

on this area and thus there is no data about the operating costs of private ginneries. Therefore, the issue cannot be resolved.

Several people interviewed, however, indicated that there may be a reason to believe that competition in ginning is not very effective and private ginneries are indeed enjoying large profits. Private ginneries were said to follow cooperative ginneries in their price setting. Cooperative unions, in turn, still follow a uniform price policy with respect to producer pricing throughout the country. The operating costs of cooperative unions and ginneries obviously influence the setting of the producer price. Because of internal management problems, former debts, and aged ginning machinery of cooperative unions, the operating costs of cooperative ginneries are on the high side. This translates into low producer prices offered by cooperative unions. After the cooperative producer price has been announced, private ginneries will set their producer prices slightly above them. Since the operating costs of private ginneries are likely to be lower than those of cooperatives, this pricing policy could result in large profit margins for private ginneries. The operating costs of private ginneries are likely to be lower than those of cooperatives because they in general use new cost-efficient ginning technology and are presumably not plagued by the same internal inefficiencies as cooperative unions.

The survey results also indicate that competition is imperfect also at the farm level. 34 percent of the farmers surveyed said that the person they sold their cotton was the only buyer they could find, while 40 percent of the farmers reported to have sold to a buyer who offered the best price. Most farmers in these two groups also reported that they had never traded with that buyer before. In spot market deals the price was always set by the buyer. The farmer could only either accept or reject it. The quality of the cotton was said to influence the price and it was determined either by the buyer or an independent grading process.

Even though the existence of excessive profits in ginning is debatable, there are a number of factors that limit competition in cotton markets and among cotton ginneries and that raise transactions costs of ginneries, operators, traders, and farmers. What are these factors? The next section will answer this question.

### **8.3 Factors Influencing Transactions Costs**

Factors that limit competition in cotton marketing and raise transactions costs in Tanzania include various entry barriers to cotton trading and lack of access to finance, infrastructural barriers, and continued government intervention.

#### **A Permits and Licenses**

There are a number of institutional barriers to entry--specifically, rules about permits and licenses required--to cotton marketing and processing which raise transactions costs and hinder

competition. In general, starting a business like a ginnery, in Tanzania can take a long time since a number of licenses and permits need to be obtained from various government agencies prior operations can commence. These bureaucratic procedures are estimated to delay the opening of a business in Tanzania on average 18 to 36 months (Rauth, Spence, and Morrill 1996). In addition to business registration, permits for land use and building, for example, need to be obtained. A lot of time is spent finding out about the proper procedures and taking care of the paper work. As Rauth, Spence, and Morrill (1996) report "investors commonly need to make three to four trips to get the information and forms that are required of each agency."

Buyers of cotton require also a separate seed cotton buying license from TCLSB. This license specifies in which region or regions the buyer is operating. In 1995, the annual license fee was TSh 20,000 (about \$40) per region. On top of that, there was an application fee of TSh 20,000. Also, the buyers were required to pay TSh 12 (about 2-3 cents) to the TCLSB for every kilogram of seed cotton purchased (Subsidiary Legislation 1995). Cotton buyers also have to report to TCLSB on a weekly basis their purchases of cotton by grade for each buying post and the producer price for each grade.

In addition to a seed cotton buying license, ginnery operators need to obtain a ginning license from TCLSB. The annual ginning license fee was \$1,000 in 1995 (Subsidiary Legislation 1995). Ginneries are also obligated to submit weekly reports of their cotton purchases and ginning to TCLSB.

Further, a cotton lint exporter needs a separate lint export license. The cost of this annual license was \$2,000 and the application fee was \$100 in 1995 (Subsidiary Legislation 1995). Exporters are also required to obtain a Lint Quality Certificate from TCLSB for every shipment. Exporters have to pay for the quality assessment as follows: the fee charged is about \$2.25 per cotton sample taken and inspected, and at minimum 19 samples should be taken and inspected from each export shipment. Further, an exporter must pay a levy of 1-3 percent of FOB value of each shipment to TCLSB.

A common complaint among all the interviewed private sector people involved in cotton marketing was corruption. To obtain the required licenses and services, bribing or "speed money" was viewed as necessary. These sidepayments further raise transactions costs incurred by traders and ginneries. Given the number of administrative barriers, prevalence of corruption is not surprising. The discretion civil servants have in the granting of these licenses provides a fertile ground for illicit behavior. This discretion coupled with lack of transparency and accountability within government agencies is a guaranteed formula for corruption.

## **B. Access to Credit**

High cost of credit and lack of access to credit is as well constraining the entry of new ginneries and traders in cotton marketing. The financial sector is simply not geared to channeling

credit to agricultural activities. The underlying causes for the high cost and shortage of credit was discussed in the section on maize marketing in Tanzania.

### **C Zonal Restrictions Movement Controls on Cotton**

The Cotton Industry Regulations of Tanzania, by traditionally assigning to each ginnery a demarcated cotton catchment zone, are also limiting competition among ginneries. These regulations are as well restricting the movement of cotton from one zone to another.

Prevention of diseases is the official reason for limiting the number of ginneries in any one area and the movement of cotton from one zone to another. Each zone has a specific cotton seed variety that is resistant to diseases prevailing in the zone. However, this seed variety is typically not resistant to diseases in other zones. Hence, mixing cotton seeds from different zones exposes them to other diseases and may lead to a destruction of a crop. Mixing disease-free with diseased cotton contaminates the cotton seed and thereby, transmits the disease to next year's crop. This has already happened to some extent since the enforcement of zonal restrictions has faltered since liberalization. First, new ginneries have been built closer to one another than regulations would allow. Second, traders and farmers have transported cotton between zones in search for higher prices. Also, the fact that new ginneries are located close to one another has forced them to cross zones to guarantee the availability of seed cotton for the ginnery. The enforcement of zonal rules has slipped because of problems with inter-governmental coordination of activities. More than one ministry has been involved in the provision of ginnery construction permits and actions of different agencies have not been properly coordinated.

However, while preventing the transmission of diseases these zonal restrictions also grant and preserve local monopoly power to ginneries. These rules obviously limit competition in cotton ginning and thereby, reduce efficiency.

### **D. Infrastructure**

#### **1 Phone Lines**

Poorly functioning phone system also raises transactions costs--in particular, search and monitoring costs--by necessitating frequent physical visits to trading partners or government agencies, and investment to other modes of communication such as cellular phones. Getting a phone connection in Tanzania can take up to two or three years (Rauth, Spence and Morrill 1996). Obtaining a phone connection does not, however, solve communication problems since phones are functioning erratically. As a result, businesses either rely on other communication methods or visit buyers, sellers, and civil servants in person.

The government monopoly in phones and weak management of this governmental agency, the Tanzanian Telecommunications Company (TTLC), are the primary reasons for the inefficient

functioning of the phone system. Lack of competition has made the inefficient operation of TTLC possible since there has not been any pressure on the TTLC management to improve the service. Shortage of government funds has exacerbated the problem.

## **2 Electricity**

Erratic supply of electricity is as well increasing the cost of ginnery operations. Due to frequent power failures, ginneries, in particular the private ones, resort to the use of generators. Obviously, this raises ginning costs. The causes for unreliable electricity supply were discussed in the section on maize marketing in Tanzania.

## **3. Transportation Road Network**

Inadequate or debilitated road network raises the cost of transportation and communication--that is search and transfer costs--and, thereby, limits competition. In 1990, only 10 percent of trunk roads and 9 percent of regional roads were judged to be in a good condition. Since then, 39 percent of trunk roads and 18 percent of regional roads have been rehabilitated (World Bank 1990).

Road network plays an important role in market integration. The further a household lies from the road, the less likely it is to participate in markets. The World Bank (1996) study on Tanzania shows that households closer to crop markets and served by better roads have on average higher incomes. The distance from a farm to the nearby market is often substantial in Tanzania. The farmers surveyed for this study were located between 0.5-22 km away from the closest market. The average distance from a farm to the crop market is according to the World Bank (1996) 6.39 km.

### **E. Spare Parts**

Availability of spare parts was also viewed as a major problem by private ginnery operators. The spare parts are typically not available domestically and, therefore, need to be imported.

However, corruption in customs was reported to hinder the access to purchased spare parts. Private ginnery operators complained about the major delays in the clearing of these important shipments. These delays obviously affect adversely the capacity utilization rates of ginneries.

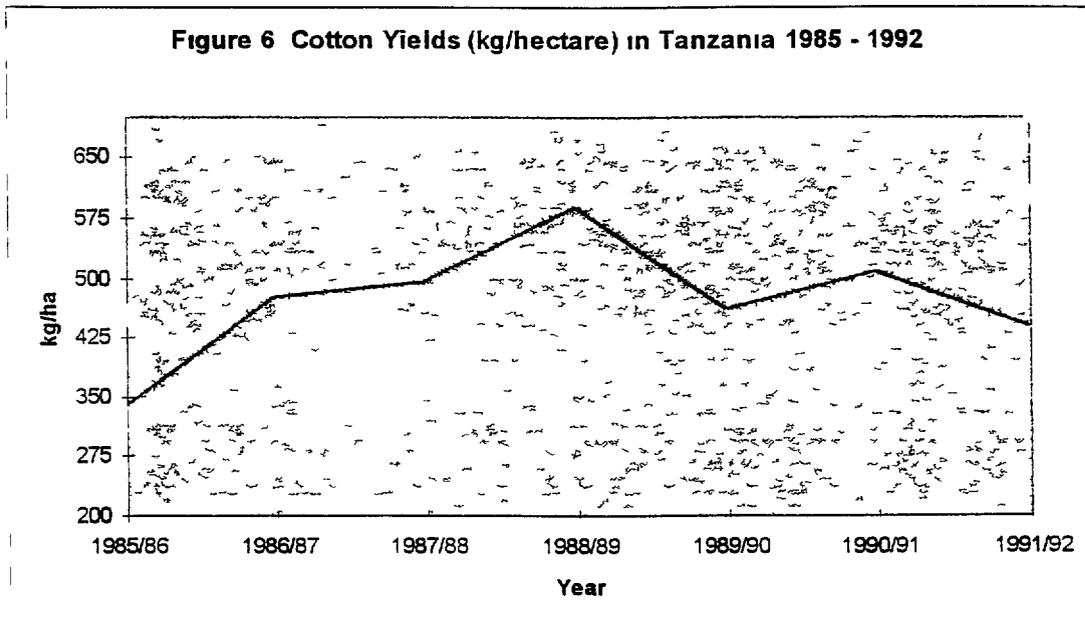
### **F TCLS Intervention in Cotton Markets**

Despite the liberalization of cotton marketing, TCLS still intervenes in cotton markets as a buyer and seller, not just as a regulator. As mentioned earlier, it buys cotton from farmers, has

it ginned, and then exports it. Getting involved in actual trading of cotton is not appropriate for an agency that is supposed to act as an impartial enforcer of rules and regulations in cotton markets.

### **G Input Provision and Extension Services**

Cotton yields in Tanzania have been notoriously low compared to other African countries such as Zimbabwe, Mali, Sudan, and Egypt. Figure 6 plots the cotton yields (kg/hectare) in 1985-1990 in Tanzania. As Figure 6 indicates, cotton yields in Tanzania have fluctuated between 300 and 590 kg/hectare, whereas the above mentioned countries obtain yields between 600 to over 2,000 kg/hectare. This is partly explained by the untimely delivery and application of pesticides and fertilizers as well as by mixing of cotton seeds.



The input markets in Tanzania are still developing. Currently, cooperatives as well as some traders and some private ginneries are providing inputs to farmers on credit. Many farmers however, complained about unreliability of input delivery--in particular, in the case of cooperative unions.

Many farmers voiced also their concern about the access to extension services. Most of the farmers surveyed obtained extension advice, if any, either from government extension officers or from their relatives and neighbors.

Finally, the fact that diseased and disease-free cotton has been mixed has adversely affected the yields. The relative importance of each of these factors is, however, unknown.

In sum, cotton marketing in Tanzania is in a period of transition: the private sector is taking over marketing activities and the cooperative movement is reorganizing itself. A number of factors are however impeding this transition in Tanzania including regulatory entry barriers to cotton markets, infrastructural constraints, access to credit, and continued government intervention. Action within these areas is vital to more efficient cotton marketing.

## Part III

### Conclusions

#### 9 1 The Structure of Marketing Arrangements: Response to Liberalization

The demise of the policy of widespread government intervention in agricultural commodities markets has caused enormous changes in the marketing of those commodities throughout Southern and Eastern Africa. In both Zambia and Tanzania, the years since privatization and liberalization of the cotton and maize markets have seen dramatic changes in.

- the kind of marketing channels used to move commodities from farm to consumer;
- the kind and size of firms undertaking certain market activities,
- the types of marketing services provided by the marketing sector

In many ways, the private sector has responded vigorously to fill the void left by the withdrawal of government from the marketing chain. Government owned facilities have been sold to private owners, government subsidies to farm lenders and cooperatives have been reduced or eliminated, private investment in marketing services has created thousands of new medium and small scale enterprises, and entrepreneurs continue to seek out and exploit profit making opportunities.

In Zambian maize markets this private market activity evinces itself in the growth in the number of hammermills in the active small scale trading of maize and meal-meal in public markets and in aggressive and profitable private millers. Furthermore a central market exchange (the Zambian Maize Exchange) has developed in recent years as a means of increasing the efficiency with which price information can be exchanged. The transactions costs between the into-mill point and the consumer appear to be declining over the last two years. Over-all farm to retail margins appear much lower than during the mid-1980's with farm value rising from 25% to 40-50% of retail value (including government subsidies).

In Zambian cotton markets, the private sector response to liberalization has included the emergence of independent outgrower managers and the planned entry of a new ginnery. The large existing ginneries, the independent outgrower managers, and certain non-governmental organizations (CARE and CLUSA) are experimenting with new ways to deliver extension and farm-credit services.

In Tanzanian maize markets privately owned milling companies are aggressively and profitably competing with the remaining government owned mills seeking out alternative sources of maize. Dalalis in the Tandale market in Dar-es-Salaam act as brokers between wholesale buyers and sellers of maize creating, in effect, a central maize exchange in the capital city. And, as in Zambia, hammermills now are a major part of the milling sector.

In Tanzanian cotton markets new privately owned ginneries provide the main impetus

to vigorous competition. These ginneries appear to have significant transactions cost advantages over the old cooperatively owned ginneries.

## **9.2 Factors Influencing Transactions Costs**

Despite this evidence of success of the private sector in responding to the liberalization, problems remain in each sector which cause transactions costs to be higher than necessary. Quality of roads, availability of transport, quality of communications, and availability of credit inflate transactions costs in all markets. In addition, there are factors that are specific to each market.

In the market for Zambian maize, the best opportunities for reducing transactions costs exist in that part of the marketing chain between the farmer and the mill. Competition among traders at the farm level appears to be quite limited, especially in more remote areas. Farmers are not well informed about prices in nearby markets and find it difficult or impossible to search out alternative markets.

In the market for Zambian cotton, the costs of extension stand out as a source of potential cost savings for ginneries. Alternative methods of delivering extension are being explored, and adoption of one or more of these methods may have a significant impact on marketing costs. Among these alternative methods is the delivery of extension through farm level groups. Additional research is needed to explore the factors that influence the relative cost-effectiveness of the various methods.

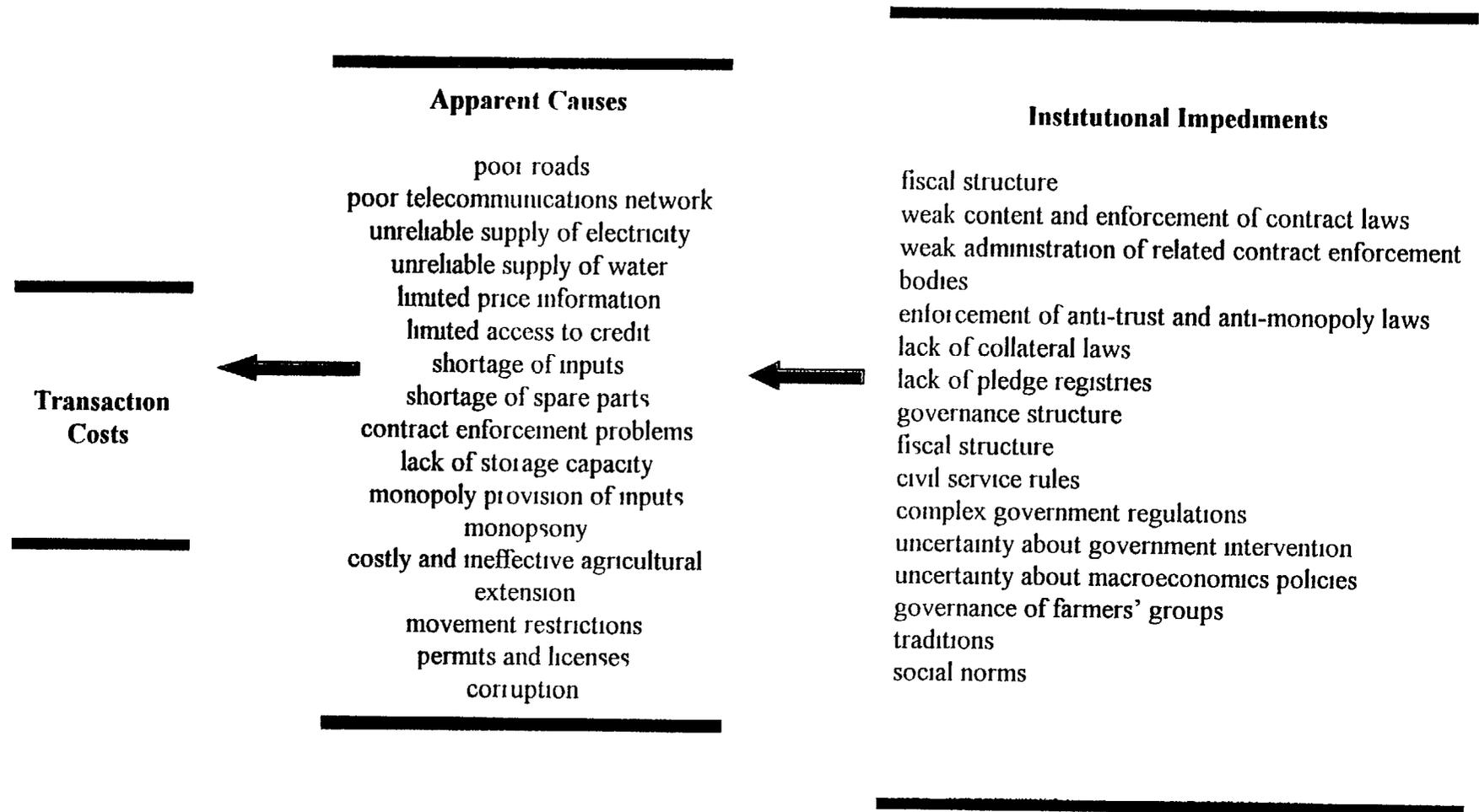
In the market for Tanzanian maize, there is a need for improved communication of price information and increased competition for maize at the farm level. The information and farm to market transportation problems in Tanzania appear to be less severe than in Zambia, however, but otherwise Tanzanian maize markets appear to be less efficient than in Zambia.

In the market for Tanzanian cotton, remaining cooperative ginneries appear to have higher costs than the newer privately owned ginneries. Therefore, improved management practices in these cooperative ginneries and/or replacement of out-moded ginnery equipment hold out the promise of reduced transactions costs. In addition, government restrictions on ginnery location, cotton exports and government extensive licensing requirements create unnecessary costs to the cotton marketing sector.

## **9.3 Institutional Impediments to Efficient Marketing**

Many analyses of markets would stop at this point -- marketing efficiency has been assessed and factors influencing that efficiency have been identified. The present study attempts to take the analysis one step farther. It asks: What causes the factors listed above? Why are roads of poor quality? Why is communication of price information poor? Why haven't cheaper (more efficient) methods of organizing markets emerged?

For this study, the ultimate answers lie in the underlying institutional arrangements -- the formal and informal rules that govern or influence economic behavior. The stages of causation are illustrated in the figure below, which recapitulates in more detail the figure in the first chapter. The "factors influencing transactions costs" summarized in the subheading immediately above are included in this diagram as "apparent causes" to differentiate them from "institutional causes" or impediments.



In a few cases, the apparent causes have a single immediate institutional basis. For example, the movement restrictions on commodities and the permit and licensing requirements are themselves rules governing economic behavior, and thus are themselves "institutional impediments". The existence and persistence of monopoly and monopsony depends in part on government anti-trust laws and rules governing the conduct of private firms. However, in most cases, the institutional basis for the apparent cause is a complex one. Below, we elucidate some of the most widespread or important of the apparent causes.

**Poor Roads** can result from insufficient funds allocated to road building, repair, and maintenance, of course, more importantly, they can result from ineffective or inefficient expenditure of the funds allocated. "Ineffective or inefficient expenditure" is not in itself an institutional cause, but the ineffectiveness or inefficiency is a result of formal and informal rules. If rules governing the actions of civil servants permit or encourage corruption, then road repair contracts might be given to incompetent firms or firms that charge high rates. If rules governing hiring, firing, and promotion of civil servants permit or encourage incompetent administrators in the civil service, then road repair funds might be misspent (allocated to inappropriate areas or projects) by those incompetent administrators. If administrative rules for requesting and approving allocated funds are complex, the funds may not be spent (Zambian newspaper reports indicated that road repair funds were not spent because of requirements that local governments solicit bids and submit the bids to the national government for compensation. In many cases, reportedly, the local government personnel were unable to meet all requirements of the program.) Inappropriate political pressure might cause allocated funds to be spent on road repair projects that favor certain groups, individuals, or geographical regions instead of being spent where the need is greatest. Alternatives to national government maintenance of roads may have their feasibility limited by other institutional rules. For example, private toll roads require well-defined property rights for land.

**Poor Public Utilities** (including telephone service, water, and electricity) can also result from bureaucratic corruption, incompetence, or inappropriate political pressures, in a manner analogous to that described above under "poor roads". In addition to problems with the direct administration of the public utilities, bureaucratic problems can cause poor public utility performance in an indirect way. For example, the Zambian telephone system suffered from vandalism in rural areas, with thieves stealing the copper wires for resale as scrap copper; this type of vandalism exists as a result of failure of policing and law enforcement. In addition, public utilities may have their inefficiency protected by laws that restrict competition from the private sector.

**Limited Access to Credit** is a cause of high transactions cost itself and is related to a number of other "apparent causes". The lack of entry in monopolized markets, the lack of transportation equipment and storage facilities, the shortages of spare parts and other inputs may all be attributable in large part to shortages of commercial credit. In addition, as we

discussed in the section on Zambian cotton markets, farm input credit and provision of extension services appear to be inextricably tied together. The institutional causes of credit problems are twofold. First, there appears to be a shortage of loanable funds in both countries leading to high real interest rates. The interesting institutional question in this context is why haven't high interest rates attracted foreign capital, thus alleviating the shortage in loanable funds? The answer seems to be that unpredictable macroeconomic policies and the threat of restrictions on foreign exchange movements have caused foreign investors to shy away from investment in commercial banks or other commercial projects in both Zambia and Tanzania. The second potential institutional cause of limited credit is cost and difficulty of monitoring and enforcing loan contracts. Contract enforcement problems in general will be discussed in the next paragraph. Group liability arrangements provide an alternative contractual response to traditional two-party contracts. These arrangements depend on the existence of social institutions that promote economic cooperation and collaboration. To some degree, the social and cultural habit of depending on central government for organizing and leading these groups may be an institutional impediment to their formation. Modifying these social and cultural habits through education and leadership development will promote group formation ("from the bottom up") and will thus facilitate alternative credit institutional arrangements.

**Contract Enforcement Problems** discourage lenders from making credit available and also constrain the feasibility of marketing arrangements that rely on contracts. For example, contract enforcement problems might discourage a mill operator from entering into a forward contract for maize. Contracts can be difficult to enforce if the legal system is subject to corruption, inefficiency, incompetence or unreliability. In addition, the failure to exist of a set of well-defined and legally enforceable property rights can add to contract enforcement problems. In this regard institutions such as credit bureaus, collateral or pledge registries, and collateral laws can contribute to reduction in contract enforcement costs.

#### 9.4 Priorities for Institutional Change

The above discussion of institutional impediments suggests the following list of types of institutional changes and reforms that are likely to be most effective in reducing transactions costs in markets for maize and cotton in Zambia and Tanzania.

- Improved governance by punishing administrative corruption will lead to better expenditures of available funds for roads and public works, will reduce costs associated with bribes for licenses and custom officials, will lower enforcement costs by improving the functioning of the judicial system, and the delivery of agricultural extension services.
- Improved governance by rewarding administrative competence will also improve the allocation of government funds and improve delivery of government services such as those provided by courts or by the government regulated telephone and electricity.

monopolies

- Improved governance by isolating policy decisions from excessive and inappropriate interest group pressure. For example, road repair in an area should not depend on whether the residents in that area voted for the party in power.
- Changing the legal environment can improve marketing efficiency in a variety of ways

**Vigorous enforcement of anti-trust and anti-monopoly laws will increase the level of competition and drive down marketing costs in sectors that are currently monopolized. Likewise, eliminating government protection of existing monopolies will create competition.**

Proper collateral laws, pledge registries, and credit check agencies that allow banks to take control of the collateral in case of a default will reduce the cost of credit and improve access to it by mitigating the banks' lending risk.

Limiting government regulations regarding movement restrictions and licensing requirements will encourage the entry by traders and producers by reducing the cost of doing business.

Improved content and enforcement of contract laws and administration of related contract enforcement bodies would promote trade and exchange by reducing the uncertainty inherent in exchange.

Further elimination of government participation in marketing, for example, in storage, input provision, and trading.

- Developing the social framework within which new forms of economic organization can emerge. For example, teaching people about the importance of establishing rules for governance and dispute resolution within groups will lead to improved performance of community groups which in turn could enhance formation of further community groups.

These recommendations are institutional changes; they are aimed at changing society's laws, rules, and habits. The recommendations are performance recommendations that largely pertain to government actions, since government passes laws, promulgates regulations, and enforces laws and other rules. But this should not be interpreted as meaning that the

recommended institutional changes emphasize government over the private sector. In fact many of the recommended changes are changes to facilitate private sector activities and to encourage vigorous competition.

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