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IMPEDIMENTS TO AGRICULTURAL GROWTH IN ZAMBIA

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MACRO
ECONOMIC
REFORMS AND
REGIONAL
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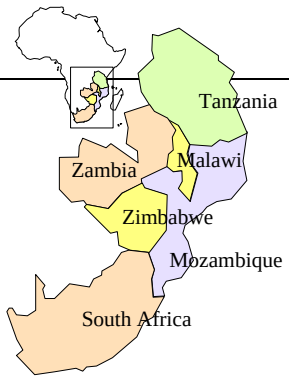
SOUTHERN
AFRICA



Contents

Abstract

This paper has been prepared as part of the Zambia country study of the Macroeconomic and Regional Integration in Southern Africa (MERRISA) project and serves as a background paper for modeling exercises. The paper focuses on analyzing institutional constraints on the development of the agricultural sector in Zambia. It argues that by changing some of the rules and neglecting to integrate these changes into the complete institutional setting, policymakers have been unable to achieve their goals. Other constraints on Zambia's agricultural development are of a more technical nature. There are problems with Zambia's infrastructure. This paper argues that these are problems of the provision of public and merit goods mainly occurring in rural areas. Farmers emphasize their limited access to resources like credit, fertilizer, and draft animals. Although these problems could indicate market failures, it is the view of the authors that they are mainly due to transition uncertainties.

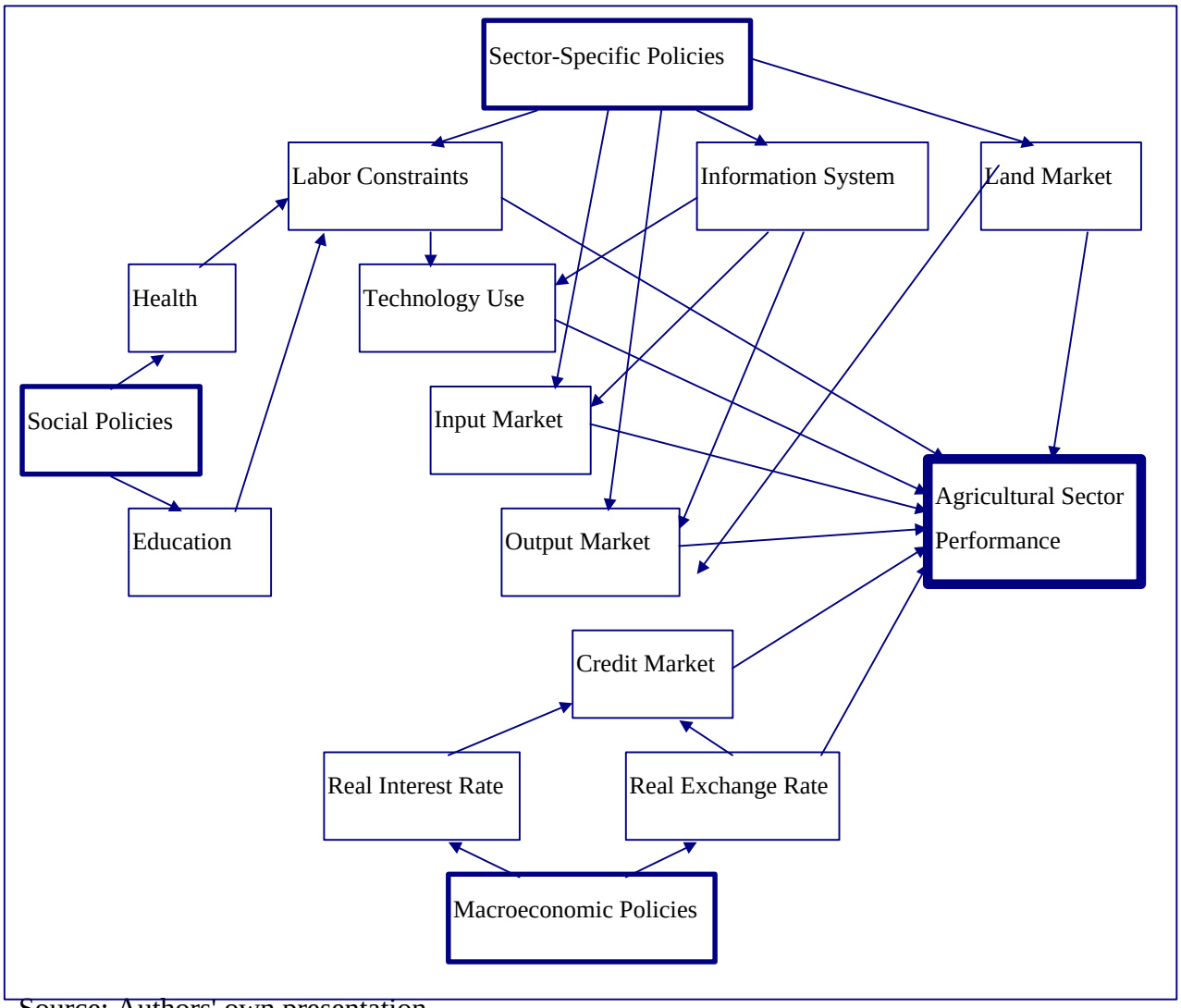
1 Introduction

A broad-based growth has been a major objective throughout Zambia's post-independence era. To achieve this, five policy goals were set out just after independence: i) economic diversification, ii) employment creation, iii) removal of regional and sectoral inequalities, iv) sustainable internal and external balance, and v) provision of social facilities. The financial base for achieving these goals was mineral revenues. Agricultural growth was to play an important role, especially with respect to the first two goals. However, three decades of experimenting with economic and agricultural policies have failed to stimulate the expected outcome, as many resources of the agricultural sector are not fully utilized. The reason for this idling of land is less a shortage in the amount of financial resources spent by the government in the agricultural sector,[1] but rather the allocation of this budget within the sector and the political as well as the institutional setting faced by its major players.

This paper has been prepared as part of the Zambia country study of the Macroeconomic and Regional Integration in Southern Africa (MERRISA) project. As such it mainly serves as a descriptive starting point for modeling exercises. Figure 1 gives an example of how policies in different areas have an impact on the performance of the agricultural sector. This paper focuses on analyzing constraints on the development of the agricultural sector in Zambia. It shows that certain agricultural goals could not be reached by just changing some rules while at the same time neglecting to integrate these changes into the complete institutional setting. There are constraints on Zambia's agricultural development that are more technical in nature. On the one hand, there are problems in the infrastructure (bad roads and telecommunications system) that are problems of the provision of public and merit goods mainly occurring in the rural areas. On the other hand, the limited access to resources like credit, fertilizer, and draft animals, emphasized by farmers (see Francis et al., 1997, p. 13), could indicate market failures. In our view it is more likely that these access problems are due to the uncertain environment of transition (see also Wichern, 1998).

[1] In 1991 for example 12 percent of total domestic expenditure of the central government was spent in the agricultural sector. There had been a downward trend in spending from 18 percent in 1980 to 5 percent in 1993, but a high proportion was offset by donor support in the past years (see World Bank, 1995a, pp. vii and 43).

Figure 1: Policies Affecting Agricultural Sector Performance



Source: Authors' own presentation.

Some of the factors influencing Zambia's agricultural development will not be discussed in depth here. Influences of macroeconomic policies on agricultural performance are discussed in a second paper for the MERRISA project.[2] Another important constraint is the increase in general and transition-specific uncertainties, e.g., political continuity and consistency, exchange rate and interest rate stability, that potentially restrain economic activity. These constraints will be highlighted in a third paper.[3]

[2] See Chiwele and Hausner (1998).

[3] See Wichern (1998).

Section 2 of this paper characterizes Zambia's agricultural sector and discusses major technical constraints. Section 3 outlines key issues of the political and economic developments over the past three decades. This evolution has had major impacts on the performance of the agricultural sector and will help to explain its status quo. Section 4 discusses the major impediments to agricultural growth. The final section of this paper gives a short summary and raises some issues for further investigation.

2 Structure of the Agricultural Sector and Constraints to Agricultural Production

2.1 Structure and Performance of Agriculture

Agriculture plays an important role in the Zambian economy. The country is endowed with abundant arable land resources (Table A1). Four hectares of arable land per capita in 1995 is high compared to other African countries. Only a quarter of the available land is used, however, and, a five percent calorie balance deficit in the country since the early 1980s indicates the need for higher agricultural production (Table A1). Although 60 percent of the population derives its livelihood from farming (IAS, 1996, p. 8), the share of agricultural production in GDP stayed around 20 to 30 percent in the past years. Half of the total food crop production (maize, millet, wheat, and rice) is used for subsistence purposes and seed stocks (IMF, 1997, p. 25). About 75 percent of the total labor force is employed in the agricultural sector, which is the second largest source of formal employment, after public administration. Agricultural GDP growth averaged only 1.5 percent annually between 1965 and 1997.

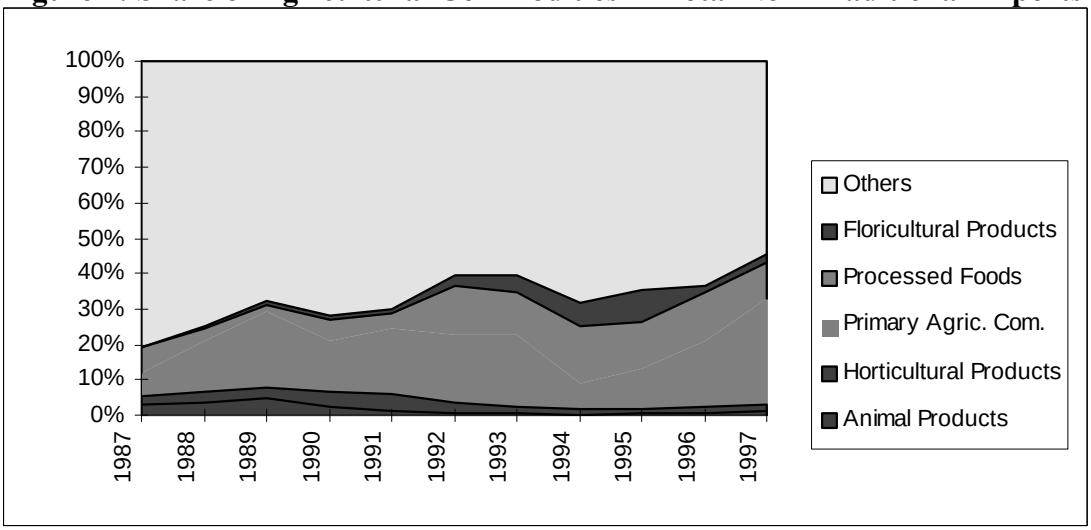
Exports for most years have been less than 3 percent of GDP, although a significant increase occurred in the last ten years, when agricultural exports[4] rose from US$ 9.7 million in 1988 (excluding processed food: 5.4 million US$) to US$ 107.3 million (US$ 30.8 million) in 1998. Figures 2 and 3 show the shares and the magnitude of agricultural exports.

There are three categories of farmers in Zambia. The majority, about 800,000 small-scale farmers, farm on average around 1.5 hectares; about half of them are subsistence farmers (Francis et al., 1997, pp. 1 and 11). They use simple technologies for cultivation and apply poor farming

[4] Including animal products, floricultural products, horticultural products, and primary agricultural commodities.

practices consisting largely of hand hoe cultivation that relies heavily on family labor (CSO, 1994). There is no significant use of oxen for cultivation and there is little reliance on intermediate goods. The only sparely used intermediates are hybrid seed and fertilizer for maize production. Small-scale farmers concentrate primarily on food production.

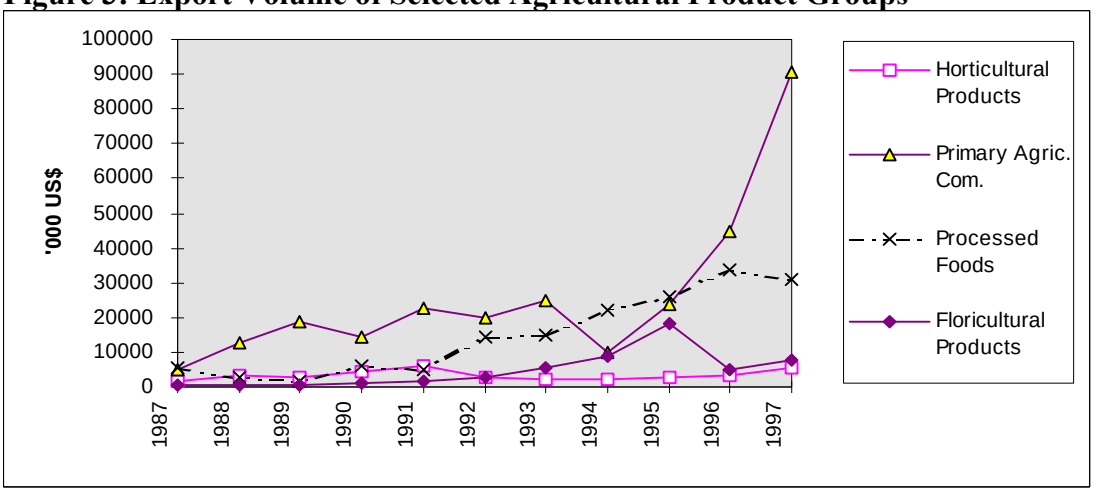
Figure 2: Share of Agricultural Commodities in Total Non-Traditional Exports*



*"Non-traditional" commodities are others than commodities from mining industries, which count for over 90 percent of exports.

Source: Ministry of Finance, 1998; own presentation.

Figure 3: Export Volume of Selected Agricultural Product Groups



Source: Ministry of Finance, 1998; own presentation.

A second major group consists of about 1,000 large-scale commercial farmers basically along the line-of-rail (Southern and Central Provinces) and some in Eastern Province. These farmers use modern technology and hired labor. They contribute mainly to the country's cash crop

production. In between is a medium-sized group, around 50,000 farmers, who farm 5-20 hectares, often using oxen as draught animals.

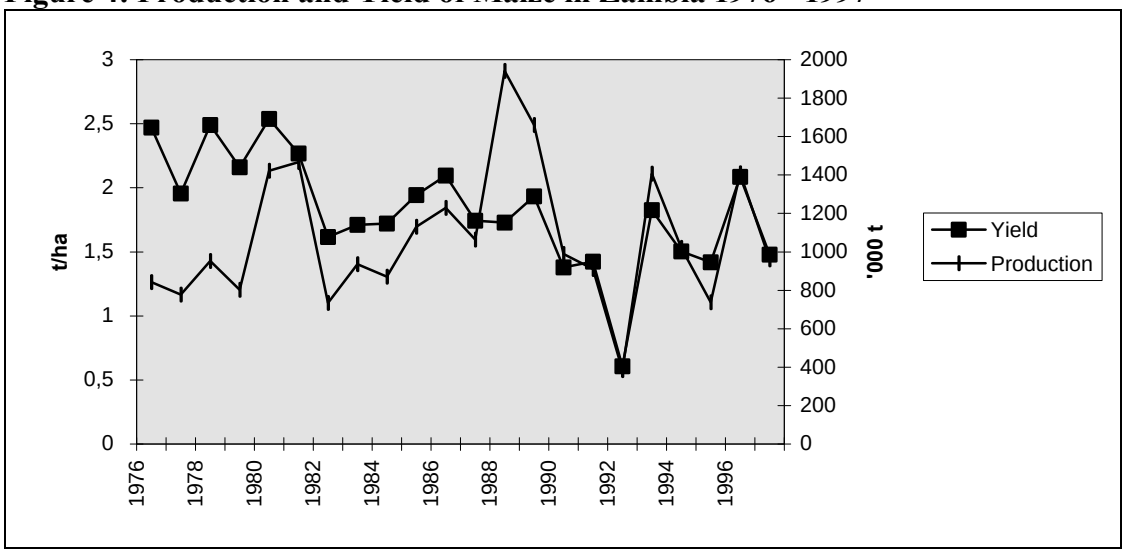
There is a pronounced difference between the traditional and commercial sub-sectors in the value of crop output per cultivated hectare. These differences are due to variances in crop yields and the mix of crops grown. The commercial sub-sector produces most of the wheat, 80-85 percent of the soybeans, up to 75 percent of the Virginia Tobacco, 30-35 percent of maize, all of the sugarcane and seed maize, and most of the coffee and horticultural crops for export.

The traditional sub-sector produces most of the sorghum, millet, cassava, groundnuts, and mixed beans. The major crop grown by the traditional sub-sector, however, is white maize, produced partly from improved hybrids and varieties, and partly from traditional seed. This sub-sector is characterized by low crop yields with an annual average of only 1.77t/ha for maize between 1982/83 and 1993/94 compared to 3.38t/ha for commercial farmers. Yield rates are partly determined by variances in rainfall within and between years and in the regional quality of land, such as the influence of highly acid soils in the North. Nevertheless, yields are also poor because of low usage of modern farm inputs, labor shortages that force farmers to plant late, lack of improved technology, and bad farming practices due to insufficient human capital. These constraints will be discussed in more detail below.

In terms of cropping patterns, there is an overwhelming dominance of maize production. In 1990 crop production contributed 55.4 percent to total agricultural output. The area cultivated with maize is more than 50 percent of that devoted to total crop output. The dominance of maize production is a response to the adoption of the pan-territorial and pan-temporal pricing systems and to maize-related production and marketing subsidies provided before 1992. In effect, the pan-territorial pricing system subsidized maize production of small-scale producers in remote areas. The share of small-scale farmers in maize production after the mid-1980s rose from 60 percent to 80 percent. The adoption rate of hybrid maize varieties rose from 30 percent in 1985 to nearly 57 percent in 1990, "one of the highest adoption rates in East and Southern Africa" (World Bank, 1995b, p. 32). At the same time, there was a relative shift of maize production away from the line-of-rail to distant rural areas. The share of Central Province in maize production, for example, declined from 38 percent in 1980 to 26 percent in 1990.

Figure 4 shows the development of production and yield of maize in Zambia. An increasing production and a decreasing yield in the 1980s implicitly shows that the area for maize production increased until 1988.

Figure 4: Production and Yield of Maize in Zambia 1976 - 1997



Source: MAFF, final crop forecast, several issues.

2.2 Constraints on Agricultural Production

The following section discusses several constraints on agricultural production in Zambia. Some are of a technical nature, while others are a result of market failures and the lack of public goods provision. Policy failures will be discussed in Section 3.

2.2.1 Credit Markets

Credit has traditionally been provided through three main agricultural lending institutions: Zambia Co-operatives Federation Finance Services (ZCF-FS), Credit Union and Savings Association (CUSA) and Lima Bank. These three organizations directed their activities at small-scale farmers, issuing credit mainly in the form of short-term (seasonal) loans (see Table 1). Commercial farmers, who are mostly interested in medium- to long-term loans, obtain their credit from commercial banks.

Although commercial farmers were never directly subsidized through cheap loans, negative real interest rates, which prevailed for most part of the period before 1994 as a result of

controlled (or fixed) interest rates, effectively meant indirect subsidies for their operations. Interest rates slowly moved up from 3.5 percent in 1964 to 4.5 percent in 1974. They were raised gradually to 7.3 percent by 1979. A temporary decontrol of interest rates occurred between 1983 and 1987 under IMF/World Bank reforms that saw the lending rate rise to as much as 35 percent. When reforms where abandoned in May 1987, the lending rate was fixed at 15 percent, while the inflation rate was hovering around 40 percent. Like most business firms in the country, commercial farmers, trying to take advantage of the cheap credit, overexposed themselves to borrowing. Consequently, they were caught unprepared for the financial market liberalization initiated in 1992. Nominal interest rates rose to as high as 135.1 percent in June of 1993. Most commercial farmers suddenly found themselves in financial difficulties as their debt service requirements shot up overnight. Real interest rates, however, were still negative, as inflation rates stayed between 150 and 200 percent. Figure A1 shows how the high profitability of obtaining a loan suddenly changed in 1994.

Small-scale farmers' capital investments for intermediate goods and farm improvements were constrained by limited access to credit and low farm profitability. Small-scale farmers' only sources of formal credit, ZCF-FS, CUSA, and Lima Bank, provided mainly short-term loans. For example, between 1987 and 1990, about 90 percent of Lima Bank loans went to finance crop production while only between 1 and 4 percent was lent for machinery and equipment (Kalinda, 1997). Most credit schemes did not require savings as a prerequisite for obtaining a loan. Thus most small-scale farmers did not build up personal capital for investments. Their agricultural assets (excluding crop inventories and cash/bank deposits) in the 1980s were estimated at US$1,000 per farm household. Cattle accounted for most of this amount, while farm machinery accounted for 5 percent. In the commercial sub-sector, farm machinery accounted for 29 percent of total assets (IAS, 1996). About 11 percent of the farmers received some type of formal credit (IAS, 1996), while about 20 percent had applied for it. The low rate of applicants can be interpreted in two ways. Either farmers did not see a chance of receiving a credit, that is, they faced problems of an unequal or unfair distribution (collateral was not required in the programs), or farmers did not recognize the value of a credit despite the (fixed) negative real interest rate.

Table 1: Distribution of Lima Bank Loans by Type of Loan, 1987-90

Type of Loan	1987/88	1988/89	19989/90	1990/91
Short Term	71.0	94.0	96.0	82.2
Medium	29.0	6.0	4.0	17.8
Term Total	100	100	100	100

Source: Kalinda (1997)

Government spent about 20 percent of its agricultural expenditure every year providing funds to the agricultural lending institutions. Although these funds were supposed to be paid back, the institutions failed to do so because of poor recovery rates. Poor recovery rates resulted from poor loan targeting, low levels of profitability among borrowers, and lack of security taken for the loans extended. ZCF-FS, CUSA, and Lima Bank, being parastatal organizations, particularly suffered from the borrowing attitudes of small-scale farmers. In general, a loan from the government was viewed as having the character of a grant. Furthermore, in drought years farmers considered the loan as insurance and refused to repay it. The government often tolerated this behavior. As part of the on-going reforms, the government announced a freeze on the provision of funds for agricultural credit. LIMA Bank was liquidated in February 1997, and ZCF-Finance Services and CUSA virtually stopped lending to small-scale and emergent farmers. This led to the collapse of credit to smallholders, with only 11 percent receiving credit in the 1990s.

There is evidence that the collapse of credit is having serious effects on the use of inputs such as fertilizer and hybrid seeds. However, two positive developments seem to have emerged with the demise of traditional credit. First, contract farming emerged from the credit squeeze. It has increased for crops such as cotton, tobacco and coffee, which were always covered under contract farming. It has also been broadened to include other crops such as maize, soybeans, castor oil, paprika, and groundnuts and, in a few cases, sorghum. Most typical contracts involve the contractor delivering inputs to the contracted farmer in anticipation of exchange for a specified amount of output at harvest. Big contractors such as Lonrho Ltd. also offer extension advice as part of the package. It is estimated that various forms of these interlocking transactions may cover as many as 30 to 40 percent of small-scale farmers, much higher than the small number

obtaining credit in the 1990s.[5] Unfortunately, the shortage in medium- to long-term credit for capital investment (e.g. in irrigation) has not been resolved through contract farming. The second benefit is that farmers are forced to make more effective use inputs that might have been over-used in the past due to cheap credit and subsidized fertilizer sales. Alternative sources of soil nutrients, such as animal manure, have seen an increase in use in the 1990s (esp. in the Southern Province, see Njobvu/Tembo, 1996). The question arises whether land as a collateral could have helped small-scale farmers in obtaining access to credit. It will be discussed in the following subsection.

2.2.2 Land Markets

In Zambia only 16 percent of the estimated 9 million hectares of cultivable land is regularly cropped and only 6 percent of the vast irrigation potential of 2.5 to 3 million hectares is used for irrigated agriculture. It thus seems that land as a resource cannot be considered a major constraint on further agricultural growth.

Zambia's land tenure system classifies land in three categories: State, Reserve, and Trust Land (Milimo, 1994). State Land mostly consists of a narrow strip of land along the line of rail, 50 kilometers on both sides, and a few pockets of land in outlying areas. State Land, named Crown Land in the colonial era, was earmarked for European settlers and mining activities. It amounts to 3 million hectares and is held on 99-year leasehold. Reserve Land was set aside for indigenous people. It was augmented by Trust Land after land degradation was noted on the former on account of overcrowding. Both were placed under customary law and are mainly referred to as traditional land. They amount to 24 million hectares.[6]

Three factors have constrained the development of land markets in Zambia. First, for fear of creating a poor, landless society, the Land (Conversion of Titles) Act was passed in 1975. It deemed all land to be without commercial value and non-tradable except for the improvements on

[5] However, this development is dependent on the government strengthening the enforcement of the Credit Act. There have been numerous cases of farmers reneging on their contracts by selling the produce to other traders and thus undermining the viability of the contractors. In our opinion, the interlocking transactions system is a system with high transaction costs. A functioning credit market and stable interest rates would certainly make interlocking transactions less advantageous.

the land. Trading in land improvements was an important loophole effectively used to trade land itself as these improvements were sold at values far in excess of their market value. Nevertheless, this provision prevented the establishment of a free land market. Landowners with vast amounts of land were prevented from subdividing and selling to others. Even the renting out of land was implicitly undermined with land not having any value. If a suitable administrator for surplus land belonging to a single owner could not be found, large pieces of land went underdeveloped as the owners then preferred to use it for less productive means, e.g. as game area. Hence, because of the "no value" constraint, landowners prevented an efficient resource allocation of land as potential users were forced to utilize less suitable land.

Second, as the community owned traditional land, traditional rulers were responsible for its allocation. No titles were given to individuals although they possessed free access to its use. The traditional ruler would allocate a piece (or pieces) of land for exclusive use to a household, e.g. for farming purposes, while leaving the rest for communal use, such as for grazing of animals (Milimo, 1994, p. 6). Hence, the individuals received the rights to use (usus) and the rights to keep the harvest (usus fructus), but they did not get the whole set of property rights, as they were not allowed to change or sell the land (usus abusus). This arrangement proved effective in ensuring access to land by almost everyone who settled on traditional land. As the chief received gifts from the community members the allocation of the individual land may have been efficient, assuming that the value of a gift increased with an increase in the marginal utility of this land to the acquiring household. It is possible, however, that this division of property rights made the transition from subsistence to commercial farming difficult. As land could not be offered as collateral, it was impossible to obtain more than seasonal loans on the basis of land ownership. This could explain the low levels of capital assets possessed by small-scale farmers. Some studies, however, found that land, as collateral, does not significantly improve agricultural productivity.[7] They conclude that the collateral constraint is not binding due to other more stringent constraints, such as poor rural health and education, lack of infrastructure, imperfect markets for inputs, outputs and risk, and overall low levels of technology. These other factors

[6] These figures refer to land potentially available for agricultural use and exclude protected forests and land not suitable for agriculture such as hills, escarpments, swamps or flooded areas (see MAFF, 1994a).

[7] E.g. Migot-Adholla/Hazell/Blarel/Place, 1993, p. 269ff. for Kenya, Ghana, and Rwanda.

may prevent farmers from higher capital investments. On the one hand land abundance can, in principle, facilitate agricultural growth. On the other hand the drawbacks of the low population density in Zambia are the high cost and scarcity of infrastructure and marketing facilities, which limit agricultural growth prospects. Boserup already made this point in 1969. To date there is no empirical study of these issues in Zambia. But it is likely that the predominance of the other factors holds for Zambia as well. If so, the allocation of complete property rights by itself will not lead to a significant increase in productivity. Due to infrastructure problems large amounts of land in Zambia will still be left idle.

The 1995 Land Act tried to abolish the "no-value" and "communal land" constraints cited above. The Act states under Section 4 Paragraph 1 that "from the commencement of this Act, land in Zambia shall have value". This declaration has freed landowners to sell their land even without any development. Early indications are that the liberalization of the land markets has initiated a lot of activity whereby a number of farms are being demarcated and sold. The Act also makes provision for people in traditional lands to get leasehold titles to the land they might have occupied before the Act was passed. This has to take place in agreement with the traditional leader in the area. Persons wishing to migrate to an area demarcated as traditional land could also be allocated leasehold titles through the chief. The involvement of traditional leaders is supposed to ensure that the reallocation of property rights to applicants will not lead to social unrest of any kind. Recent experience indicates that chiefs usually do not allocate more than 250 hectares to one single settler.

Despite the positive elements contained in the 1995 Land Act, any positive impact is unlikely unless cumbersome land administration procedures are removed. The land administration is centralized in Lusaka, but many government departments have to be consulted. Furthermore, a tax on land has to be paid by the owners. The magnitude of this tax is not fixed over time. Hence, landowners face an uncertain cost, which will surely make ownership less attractive. A Central Statistical Survey indicated that 42.1 percent of small farmers were willing to obtain leasehold titles, 68.1 percent of which cited security of tenure to the land as the chief motivation. Furthermore, the ground rent for state-owned land is not based on its marginal utility but fixed depending on the total amount of land rented and the distance from major cities (see Figure A2).

Thus, unless land administration is decentralized and well coordinated, liberalization of the land markets and freeing of traditional land for leasehold will proceed only slowly. In our view the shortcomings of Zambia's land tenure system have little to do with access to land for agricultural use. There was and is no constraint on small-scale farming. But the inability to provide collateral and motivate holders to invest in land improvements is crucial. The titling of land is a precondition for a rise in farm investments such as in irrigation and deep tanks. Such improvements would lead to increases in the cultivation of high value crops, in land and animal productivity as well as in the total area cultivated. However, the titling itself is not sufficient. Other conditions, e.g. infrastructure, education, and market imperfections, need to be improved as well. Only if these conditions are fulfilled will changes made to the Land Act have the desired implications for agricultural development in Zambia. For public and merit goods it would be the duty of the government to secure their provision.

2.2.3 Labor Constraints

With scarce intermediate goods provision, potential agricultural output growth becomes dependent on increases in agricultural labor supply. Seasonal and other labor bottlenecks are often cited as major impediments to agricultural growth in Zambia. With one of the highest urbanization figures in Africa (around 50 percent), this seems to be plausible. In our opinion, however, low labor productivity is the main problem. Between 1982 and 1994, on small-scale farms one farm worker covered on average 0.5 hectares (IAS, 1996, p. 61). This low value certainly cannot be attributed to the low level of mechanization (hand-hoe cultivation) only. In addition to the quantity constraint, the quality and the organization of labor both seem to determine the low percentage of land under cultivation. First, the division of labor between men and women is not equal and, most likely, does not reflect comparative advantages. Restrictions like "weeding is a female activity" and others are an impediment to increases in labor productivity. Second, poor education and the poor health status of the rural population influence the quality of labor. Diseases are most prevalent during the rainy season when demand for labor is highest (Njobvu, Tembo, and Kabongo, 1995). Furthermore, the prevalence of illness and disability is significantly higher in rural areas and the school attendance rate is much lower

(Living Conditions Monitoring Survey, LCMS, 1997)[8]. Third, techniques of reducing labor scarcity by improving cropping techniques, such as the use of minimum tillage and the shifting of activities to another time of the year, are rarely applied. While the latter requires a greater diversification of crop production, the former is relatively easy to adopt. In addition, minimum tillage not only reduces labor bottlenecks, but it reduces soil evaporation as well.

With respect to the labor constraint, studies by Keyser (1995) and the World Bank (1995b) need attention. Comparing the Domestic Resource Cost (DRC) coefficients for small-scale and commercial farmers, they point out that small-scale farmers in Zambia are at least as efficient. This holds especially for the production of maize, where according to their calculation small-scale farmers are even more efficient than their commercial counterparts. Assuming that economic prices in the derivation of the DRCs have been calculated correctly, it still needs to be pointed out that these prices represent current prices only. Hence, the conclusion that in the medium to long term small-scale farmers will stay more efficient seems to be a dangerous one. First of all, the measure depends very much on the opportunity costs of labor, which are assumed to be very small. If these costs increase, small-scale farms with only 0.5 hectares per worker under cultivation will soon become less efficient. Furthermore, recent policy has been aimed at increasing agricultural production through a more intensive use of intermediates. But an increase of these inputs in small-scale farming will significantly increase DRC coefficients.

At this point a remark on the statistical data seems to be relevant. The Post Harvest Surveys (PHS) show a large portion of farms that crop only one product (often maize) on a single plot. If these percentages are correct, farmers are unlikely to be efficient. By cropping a mix of products labor peaks could be leveled out, thus increasing efficiency.

2.2.4 Price and Market Information System

In early 1993 the Ministry of Agriculture, Food and Fisheries (MAFF) initiated the Agricultural Market Information System (AMIS). The objective was to improve market transparency in support of the arbitrage process and an increase in market integration (MAFF,

[8] According to the LCMS Report illness is about 30 percent higher in rural areas and the rate of disabled persons is about twice as high as in urban areas. School attendance (age group 14 to 18) is at 54 percent in rural areas compared to 65 percent for urban areas.

1995a, p. 7). The AMIS started with the weekly collection of wholesale prices of six major commodities and two prices for processed products. A year later a well-organized system of collecting and disseminating data covered nearly all district capitals.

This system, however, could not be sustained over time, with lack of funding cited as the reason for its unsustainability. For most locations and for most products the time series of prices are incomplete, with the best information available for maize prices at the provincial capitals. Besides problems with data collection, its dissemination was less than satisfactory. Radio broadcasting was interrupted frequently and dissemination at the local level was reported as unreliable. At many places district officers did not hang out the weekly market bulletins on their designated notice boards.

Hence, an agricultural information service has been initiated in Zambia, but it has to be improved with respect to the continuity (and institutionalization) of its data provision. Despite the initial problems, due to AMIS, the dissemination of market information can no longer be viewed as a major impediment to growth.

2.2.5 Post-Harvest Technologies

Many farmers sell most of their crop right after harvest. Therefore, it is sometimes argued that a lack of on-farm drying and storage capacity is an impediment to agricultural growth. Surely, the pan-seasonal pricing policies of the 1970s and 1980s are responsible for on-farm storage having no tradition in Zambia. However, as the construction of simple storage facilities is neither expensive nor difficult to perform (e.g. MAFF, 1994b; 1996a), there must be other reasons for the early selling of the produce, such as liquidity constraints or uncertainty of future market developments (see Wichern, 1998).

2.2.6 Summary

This section discussed major factors constraining agricultural production, that is, capital, labor, land tenure, information and post-harvest technologies. Up to the early 1990s access to credit was not a core problem for many producers. The real interest rate was negative and at least some small-scale farmers with difficulties obtaining formal credits, more than 10 percent, were

provided with credits through parastatal lending institutions. With a negative real interest rate prevailing over many years one can assume that the allocation of credit was sub-optimal and that commercial farmers' capital labor ratio was too high. Since 1994, after the liberalization of financial markets, real interest rates became positive and improved the incentives for an efficient use of credits. However, more recently small-scale farmers have problems obtaining credits as the parastatal banks ceased the disbursement of credit to small-scale farmers without collateral. This points towards the land market, which is underdeveloped in Zambia. Access to land is not a constraint. In most areas the local chief allocates user rights for land. However, farmers seldom have a leasehold title and hardly possess the whole set of property rights. This surely constitutes a constraint for investing in land improvements and for obtaining credits. In principle, this situation was improved by the 1995 Land Act, which allows land to have value and provides the whole set of property rights. However, the main constraint to a more intense use of land is the condition of the infrastructure in rural areas. An improvement in roads, electricity, water supply, education and others would best serve a more efficient usage of the resource land. Labor is often cited as another major restriction in crop production. As the area under crop on small-scale farms is 0.5 hectares only, we conclude that the more important constraints are rather the quality and the organization of labor than its quantity. Education and the health status of the farm workers influence the quality of labor. Management skills and social norms influence the organizational aspect. Social restrictions, like "weeding is a female activity", should be recognized and – as social transition is a rather slow process – eventually be reduced.

3 Development of Agricultural Policies

The first part of this section discusses agricultural policies prior to 1991. The main elements of government intervention were fixed producer prices, transportation and storage subsidies, consumer price subsidies, and subsidies on agricultural inputs and credit. A continuous overvaluation of the exchange rate effectively meant a tax on producers of tradable commodities. The second part discusses liberalization efforts of the early 1990s, which did lead to a major expansion of market forces in the agricultural sector. The government, however, continued its involvement in certain key areas with unfavorable, distorting effects on prices, trade, and the fiscal deficit. These market interventions, mainly export restrictions, were motivated by the severe

droughts in 1992, 1994, and 1995. Impacts of these policies are discussed in the last section of this paper.

3.1 Agricultural Policies Up to 1991

The beginning of public interventions in the agricultural sector dates back to colonial times. In 1936 the Maize Control Board (later called Grain Marketing Board) was founded. The aim of the board was to provide cheap food to the urban population and to keep the real wages in the mining industry low (Muyatwa-Sipula, 1993, p. 3). On the producer side, settler farmers along the line of rail benefited from having an assured demand for their maize.

The Rural Agricultural Marketing Board (RAMB) was founded some years later. The purpose of this board was the procurement of maize from remote areas in years when the grain marketing board could not meet the total demand for maize.

Both boards stayed in existence after independence in 1964. Holding a monopsony position they bought maize and increasingly other products from farmers. The boards set prices, but, nevertheless, these prices showed seasonal and regional variances. In 1969 both boards were united to form the National Agricultural Marketing Board (NAMBoard). NAMBoard, still holding a monopsony position, bought all agricultural products (except cotton, milk, beef, pork, and horticultural products) and sold them for the most part to state owned mills and public outlets.

Starting with the 1974/75 season producer prices for maize (fob at the district storage) and consumer prices for maize and maize products were fixed at the same level for the whole season and for the whole country (Chiwele/Muyatwa-Sipula/Kalinda, 1997, p. 5). In addition to the price and procurement guarantee the farmers received seed[9] and fertilizer at subsidized prices. Agricultural research and extension was strongly biased towards maize production.

On the one hand, policy aimed at guaranteeing a higher income to farmers in remote areas. On the other hand, the urban population was supposed to receive cheap staple food (60 percent of parity price between 1975 and 1985) (IMF 1997, p. 29). Therefore it was unavoidable for the government to support the system financially. Huge subsidies went into the marketing of maize

[9] The seed was produced by the state-owned firm ZAMSEED.

(e.g. the transport sector, storage by the NAMBoard, and the mills), the state fertilizer sale, the seed company (ZAMSEED), and food stamps for the poorest population. These payments rose from nominal 54.1 million Kwacha (current US$ 68.5 mill.) in 1976 to 1.4 billion Kwacha (102.3 mill. US$) in 1988. This not only amounted to an increase of 74 percent in real[10] terms, but transfers as a percentage of GDP rose from 2.9 percent to 4.7 percent.

In principle this pan-territorial pricing favored farmers in remote areas. This holds because with fixed prices for producers and consumers the market margin is fixed as well. In a liberal economy, however, producers in remote areas get a lower price compared to producers closer to market places, because transport and often transaction costs are higher. Hence, their prices would be below average if transaction costs were accounted for.[11]

The above holds with regard to the intra-sectoral distribution. But all producers were indirectly taxed due to border and exchange rate regulations, which kept producer prices below world market prices (see Jansen, 1988, pp. 78; Kalinda, 1997, pp. 26-31; Muyatwa-Sipula/Hichikumba, 1997, p. 4). [12] Jansen (1988, pp. 238) calculated the nominal protection rates of the basic crops for the years 1966-1984. Table 2 shows that the taxation of maize was strongest (besides groundnuts and soybeans). According to Jansen's calculation the effect of the overvaluation of the exchange rate was strongest in the early 1980s. It should be noted that part of the "taxation" shown by the negative signs of the NPRs is due to high transaction costs in trading and not purely due to high tariffs and overvaluation of the exchange rate. Jansen, in her derivation of the NPRs, accounted for transport costs. Domestic whole-sale prices are compared with world market prices after dividing the latter by the (equilibrium) exchange rate and adjusting for transportation costs to common market places. Nevertheless, transaction costs can be significantly higher due to administrative constraints, insufficiently organized public markets, corruption, inter-district trade restrictions, limited information systems and the like. Unfortunately, these aspects are hard to quantify.

[10] Deflated by the CPI.

[11] Conversely the prices for producers which are close to market places would receive a price above the average producer price. Consequently these producers are taxed in pan-territorial price setting.

[12] Kalinda showed that past 1984 the direct taxation through the price level was clearly stronger than through the overvaluation of the Kwacha. The total taxation rose from 0.49 in 1985 to 0.75 in 1992.

Table 2: Nominal Protection Rates Using Official and (Equilibrium-) Exchange Rates for the Years 1966 - 1985

Period	Maize	Ground-nuts	Sunflower Seeds	Soybeans	Rice	Wheat	Cotton	Virginia Tobacco
1966-84	-23.3% (-50.5%)	-31.3 (-53.4)					-20.9% (-49.9%)	9.1% (-30.1%)
1966-75	-25.7% (-32.1%)	-26.1% (-32.3%)	-27.1% (-37.9%)	-38.9% (-47.2%)		22.5% (-27.7%)	-24.3% (-31.3%)	8.6% (-2.3%)
1976-84	-20.7% (-70.9%)	-37.0% (-76.9%)	19.0% (-59.5%)	-10.3% (-69.4%)	36.4% (-52.9%)	8.5% (-60.4%)	-17.0% (-70.6%)	9.6% (-60.9%)
1980-85 (1980-84)	-21.3% (-77.4%)	-40.9% (-83.4%)	29.0% (-62.4%)	3.1% (-70.8%)	52.9% (-54.8%)	5.2% (-70.5%)	-15.5% (-75.0%)	(-67.0%)

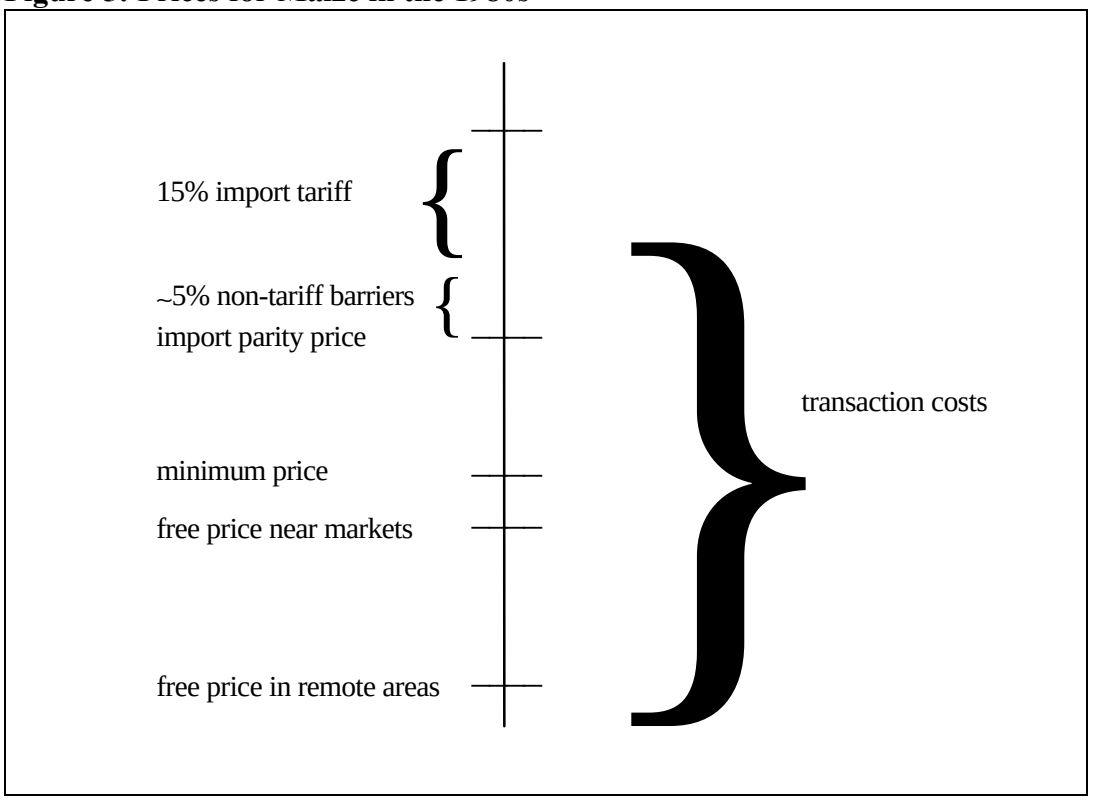
Source: Jansen (1988) pp. 238.

High financial costs were intensified by agricultural policy measures in the 1980s that tried to expand production by increasing producer prices while keeping consumer prices low. These price incentives seemed to be successful as yearly increases in production were about 4 percent between 1983 and 1990 (basically through increases in the area planted). They followed yearly increases of 2.1 percent from 1966 to 1974 and 0.3 percent from 1975 to1982. Hence, the period with the lowest increase in production coincided with the highest increase in political intervention, that is, the period following the introduction of the pan-territorial and pan-seasonal pricing system in 1975. In 1982 the government officially allowed economic pricing for agricultural output (except for maize, wheat and fertilizer). This meant that a minimum price replaced the fixed price. Nevertheless, the introduction of this price policy element did not have much of an impact, as the price formation without the minimum price restriction would have led to prices well below the minimum price level (Kalinda, 1997, p. 3).

Figure 5 shows the basic formation of the price for maize and similar for other agricultural products during the 1980s. First, as Zambia already was a net importing country for maize, the import tariff (15 percent for maize) and non-tariff barriers (e.g. licenses) raised the domestic producer prices. However, the relatively high transaction costs of trading kept the producer prices much lower. The magnitude of these costs differs from region to region. As discussed above, it

contains much more than the cost of transportation accounted for in the import parity price. Hence it is possible that a minimum price is well below the import parity price and still high enough to become a fixed price. It is clear that NAMBoard as the main procurer of maize had to cover the financial losses.

Figure 5: Prices for Maize in the 1980s



Source: Own presentation.

Since January 1985, after aid talks with the World Bank, the government has given up direct fixing of prices for wheat, soybeans, and sunflower. However, reality has not changed much. As a monopsonistic buyer the government still dominated the price determination from the demand side. In the mid 1980s a process of concentration took place within the food industry. It was initiated by the government, which took over large firms, pushing small firms out of the market or hindering their development (World Bank, 1995c, p. 2). These measures led to state monopolies and high costs of transaction.

After these frequent changes of the political and institutional framework, i.e. the "rules of the game" (North, 1992), and the frequent redefinition of NAMBoard's objectives, the first important steps of liberalization took place at the end of the 1980s. In 1989 NAMBoard was

closed. In passing the Agricultural Marketing Act the market was partly liberalized and the producer prices were actually set free, except for maize and fertilizer (see Chiwele/Muyatwa-Sipula/Kalinda, 1997, p. 6).

3.2 Agricultural Policy Since 1992

1991/92

As indicated above, the agricultural marketing policy up to the early 1990s was characterized by strong governmental control and subsidization, with a peak in the years following the 1975 macro-economic shocks. Soon after the change in government in November 1991, fundamental reforms were announced. The financing of the expensive system of subsidization (and taxation) of the agricultural sector had become more and more difficult. Furthermore, the product marketing and input distribution, largely performed by parastatals, was recognized as being inefficient. Shortages of production inputs and a malfunctioning credit market became obvious impediments to agricultural production. The new government was convinced that a system of fixed prices and subsidization provided wrong incentives and was unfavorable for the development of the agricultural sector (Shawa, 1993). This was in line with the "neoclassical counterrevolution" of the 1980s, demanding free markets and less government intervention (Todaro, 1997, p. 86). Consequently, major institutional reforms were planned (World Bank, 1995b, p. 40). They included the following:

- decontrolling of prices and major reductions of subsidies to provide proper market signals and, hence, stimulate a change in the mix of output produced,
- new monetary and fiscal policies to dampen inflation,
- market based exchange and interest rates to lower indirect taxation, and
- privatization of parastatals to improve the efficiency of markets.

The implementation of these goals, however, was a stepwise undertaking. Restrictions on maize marketing were loosened beginning in 1991/92. Maize imports, consumer prices for maize and prices for transportation, which were determined by the government until February 1992, were liberalized. Producer prices were still determined by a minimum price system. As the government gave up fixing the marketing margin, the influence on consumer prices remained

only indirectly. Now, regional and seasonal differences in transaction and transformation costs influenced the consumer prices. Especially in deficit regions consumer prices differed considerably from producer prices according to the distance and access to market outlets. Hence the regional variance increased. The same held true for the seasonal differences, as some regions shifted from a surplus to a deficit region within a year and the accessibility of markets varied over time (e.g. bad roads conditions in the rainy season). Market integration, in the early stage of price liberalization, suffered substantially from limitations in the infrastructure and the institutional setup. Bad roads, deficient information dispersion and uncertainties with respect to further political decisions, to name but a few, hindered initial liberalization steps from having a broader success.

Liberalization was especially hampered by a major drought in the 1991/92 season, which led to huge losses in yields and livestock numbers. Maize imports were highly subsidized by several donor countries and by the government. As a result, the consumer prices did not rise as the emerging private maize traders expected them to do. The government faced severe budgetary problems, which actually increased the pressure to implement reforms. Nevertheless, the drought was an exogenous factor that prevented a positive supply response at an early stage of the reform process.

1992/93

Policymakers argued that the minimum price for maize would increase the domestic supply through guaranteed "higher" prices. However, the rising minimum price, which actually fixed the producer prices, and the competition with food aid prevented private traders from engaging in the maize market. In principle the situation stated in Figure 4 still endured. The minimum price set by the government led to losses for the traders, as the market margin did not cover the costs of transactions. Since 1992 the government had not fixed consumer prices for maize. But potential traders surely considered the risk that the government might intervene again. A decrease in consumer prices through food aid reduced the profit margin even further. From a producer's point of view the minimum price was still below import parity and was not a real stimulus for increased production.

The import tax rates for agricultural products hardly changed in the early 1990s (see Table 3). A 15-percent tariff rate on wheat was introduced in 1990 and increased to 20 percent in 1993, while the rates for coffee and tobacco had been reduced in 1990 (from 100 percent to 50 percent and 30 percent, respectively). The rate for coffee was slightly reduced in 1993, but most tariff rates for agricultural products increased after 1993.

Table 3: Import Tariff Rates for Selected Goods (%)

Period / Product	1984 - 1987	1990 - 1993	1993 - 1996	1997 - 1998
Maize	15	15	0	0
Rice	15	15	20	5
Wheat	0	15	20	5
Coffee	100	50	40	25
Tobacco (+ 125% Ex. Duty)	100	30	30	25
Cotton	15	15	20	15
Soybeans	15	15	20	5
Pesticides	n.a.	15	20	15
Tractors / Ploughs	n.a.	15	20	15*
Irrigation Equipment	n.a.	15	20	15
Fertilizer / Seed	0	0	0	0

* for agricultural use 5 percent

Source: Kalinda (1997), p. 52, and Zambia Revenue Authority, Tariff Manuals from 1975, 1993, and 1998.

The increases in tariff rates up to 1996 were contradictory to the political goal of growth through liberalization in general and to the vision of a free trade zone for COMESA member countries by the year 2000 in particular (see Mwakijungu/Tembo, 1997). However, the distortions of relative prices improved over the years by reducing the taxes on coffee and tobacco and by increasing the rates of others. Import sales taxes were the single largest source of revenue for the Treasury (16.9 percent) in 1993 (World Bank, 1995a, p. 143). Any reduction had to be compensated by other sources of income.

It has to be considered, however, that the real exchange rates[13] of the Kwacha against the SA Rand, the US Dollar and the GB Pound have appreciated since 1991 (Ministry of Finance, 1998). Therefore, in spite of the increase in the tariff rates, imported products became more

[13] Real exchange rates were calculated from nominal exchange rates by use of consumer price indices. Against the US$, the British Pound and the South African Rand the Kwacha gained 13, 7 and 74 percent respectively from 1991 to 1997 (first three quarters).

competitive compared to domestic tradables. The increase in tariff rates was only a small relief for the producers and a cost to consumers. According to Kalinda (1997, p. 50) the estimated overvaluation increased from 18 percent in 1986 to 98 percent in 1993. Hence, in net terms, the imports were implicitly subsidized.

A 350-million-dollar agricultural program started in November 1992 with assistance of the World Bank and other donors. Five policy objectives were to be promoted (IAS, 1996, p. 2; MAFF, 1995b, p. 2):

- achievement of food security on the national and household level,
- enhancement of income and development,
- conservation and improvement of the current agricultural resource base,
- contribution to sustainable development, and
- intensification of agricultural exports and, hence, of the sectoral contribution to the national balance of payments.

The Agricultural Sector Investment Program (ASIP) was established in order to support the liberalization of the agricultural sector. Improvements in the domestic input supply and in the marketing of products (on domestic and international markets), economic pricing of goods, the reduction of subsidies, and the privatization of state-owned firms were targeted.

Further liberalization of agricultural markets was targeted in spring of 1993. As a first step of the transition a reduction of direct physical interventions into markets by the government was planned. It was argued that this should create incentives for producers and traders to increase their engagement. However, the liberalization of financial markets was initiated in parallel, leading to a huge increase in interest rates. Given their immense credit burden, the government did not believe that private traders had the capability to pre-finance their trade and announced public buying agents for the procurement of the maize harvest. These buying agents received a credit from the government and had to buy the maize at a predetermined price. Again market principles were abandoned, leaving no space for market forces to develop. This policy had several drawbacks. Apart from not reaching the goal of liberalization, a large portion of the credit was never recovered and not all of the credit was used for the procurement of maize. In addition some

farmers were given promissory notes of the government which only could be cashed with a 6 to 12 months delay (World Bank 1995c, p. 6), leaving producers in a liquidity squeeze. Furthermore, the real price for the producers decreased tremendously, as the high inflation was not accounted for in the promissory notes. As it had been the objective of the credit to avoid this liquidity squeeze, one could talk of an absolute policy failure[14].

Several lessons can be drawn from the 1992/93 season. First, when changing a certain policy it is not useful to start from a partial analytical perspective. The whole set of rules for the market participants has to be looked at, to explain the reaction of the market. Second, the path dependency of policy changes becomes clear. The liberalization of the financial market led to an increase in interest rates and consequently induced the government to stimulate private engagement through cheaper credits and fixed prices. Again, market forces were abandoned.

1993/94

For many producers the 1993/94 season began with unpaid debts, unsold products or not yet cachable promissory notes. Since achievements by many of the buying agents had been unsatisfactory the government restricted the buying agents to institutions which had been major players in the past (like LIMA Bank, CUSA and ZCF/FS, which had been major creditors to the agricultural sector). This was motivated by the desire to give these institutions the chance to recover and pay back their outstanding loans. The government announced the total liberalization of the maize market, but stuck to minimum producer prices and even introduced fixed into-mill prices. This determined the margin between producer prices and into-mill prices. It was the reason for private traders to withdraw from the market, because it determined the price of maize for the consumers as well. Finally, subsidized grain imports distorted the market at the end of the marketing year because of food shortages due to a shorter rainy season. Therefore, the restricted engagements of the private traders were rational from an economic point of view. The reform of the maize market had been halfhearted so far and did not show any substantial improvement.

[14] An absolute policy failure is considered as a failure to reach the objectives set by a policy, while a relative policy failure is indicated by reached objectives, but by inefficient means.

Table 4: Governmental Costs for Maize Production and Marketing (1992 - 1996)

	Mill. US$
Marketing Support (total); of which:	**84,5**
Outstanding Debts from Lending Institutions and Buying Agents	6
Promissory Notes	33
Reduced Interest Charges	15
Subsidy Relief Maize	3
Subsidy Reserve Stocks	6,5
Subsidy Reserve Swaps	2,5
Marketing Credit Revolving Fund (94/95)	4,5
Marketing Credit Revolving Fund (95/96)	5
Reserve Operations (95/96)	9
Production Support (total); of which:	**63,5**
Outstanding Debts from Lending Institutions and Buying Agents	40
Fertilizer Sale	3
Fertilizer Underpricing	2,5
Agricultural Credit Management (94/95)	10
Agricultural Credit Management (95/96)	8

Source: MAFF (1996b, p. 78ff). According to MAFF the whole support was claimed to be an indirect subsidy.

1994/95

As of 1993 there had not been any direct subsidization of maize marketing. However, there had been financial costs and forgone income for the government through the support of production and marketing of maize, which nearly reached 150 million US$ and amounted to 0.9 percent of GDP (see Table 4). The major part can be considered an indirect subsidy of the agricultural sector. Parts of it are lost in the administration of fertilizer sale and credit distribution.

In the 1994/95 season the minimum price for maize and the exclusive buying agents were finally abolished. In spite of a drought in the South, the government did not intervene in the market directly. However, a fund was created to provide the traders with credits.

The ongoing subsidization of agricultural production and marketing might give the false impression that the sector as a whole was subsidized. From the producers' point of view strong export restrictions (licensing or even bans), which were binding until 1996, substantially intervened in the market. The main impediment was an artificially long administrative delay in the issuing of license documents. These delays (or even bans) eliminated opportunities for the traders to receive higher prices in Malawi or the Shaba Province of the former Zaire. An enhanced export to these countries would have made further imports from the South (e.g. Zimbabwe or

South Africa) necessary and would likely have increased domestic prices. Although Zambia was, and still is, a net importing country, the export restriction had economic repercussions and added to the net taxing of the producers.

1995/96

The fertilizer market was still distorted by underpriced state sales from donations and own imports in the 1995/96 season. Although the maize market seemed to be on its way towards more liberalization, due to the bad harvest the government decided to intervene again. For several months in 1996 an export ban for maize and maize meal was implemented, and following its lifting the issuing of export licenses were strongly delayed (MAFF, 1996b, pp. 25-31). Although Zambia was a net importer of maize in these years, the exports to neighboring deficit countries (e.g. Zaire and Malawi) were still appropriate since any deficit could have been leveled out by imports from the South.

1996/97

Since the beginning of the 1996/97 season the government has held the view that the transformation process of the market system towards liberalization has been accomplished (Hantuba, 1997). With respect to direct market distortions this seems to be correct. Indirect interventions, that is, inflation, interest rates or exchange rates, however, are still disturbing the market (see Chiwele/Hausner, 1998, and Wichern, 1998). The strong taxation of agricultural producers, as indicated in Figure 9 below, gives further evidence of an incomplete liberalization of the market. However, the import parity prices used in the construction of Figure 10 might not reflect the high level of the transaction costs discussed above. Table 5 summarizes the domestic agricultural market reforms in the 1990s.

Table 5: Summary of Agricultural Market Reforms

Measure	Decision	Implementation	Remarks
Termination of inter-district trade ban		1985	government has monopoly for inter-district sales of maize
Permission for private trade in maize and fertilizer	end of the 1980s	1990	no notable activities until 1992
Decrease in import tariffs		1990	coffee and tobacco
Increase in import tariffs		1990	wheat
Subsidized maize imports		1991/92	due to a drought
Termination of fertilizer subsidies	1990	1992	indirect subsidies until 1996
Termination of maize meal subsidies and no further direct control of consumer prices	1990	1992	increase of small milling firms (hammer-mills)
Import license levy revoked		1992	
Free prices for transportation		1992	
Decrease in import tariffs		1993	maize, coffee, tobacco
Increase in import tariffs		1993	rice, wheat, cotton, soybeans, intermediates
Free floating of producer prices for maize	end of the 1980s	1993	BUT: credits for buying agents, if maize bought at predetermined prices
Termination of maize transport subsidies	end of the 1980s	1993	
Free floating of the price for sugar	1991	1993	decline in domestic consumption
Continuation of a minimum producer price for maize		1993/94	
Termination of a minimum producer price for maize		1994	
			(continued …)

(continued …) **Measure**	**Decision**	**Implementation**	**Remarks**
Privatization of the milling industry	1991	1994-96	some firms had been closed
Privatization of the oil mills	1991	1995	
Privatization of the cotton industry	1991	1995	
Privatization of the sugar industry	1991	1995	
Reintroduction of an export ban for maize and maize meal		1996	for several months
Privatization of the milk industry	1991	1996	
Privatization of ZAMSEED	1992	1998?	new competitors
Privatization of the fertilizer industry	1992	1998?	competitors are dominant

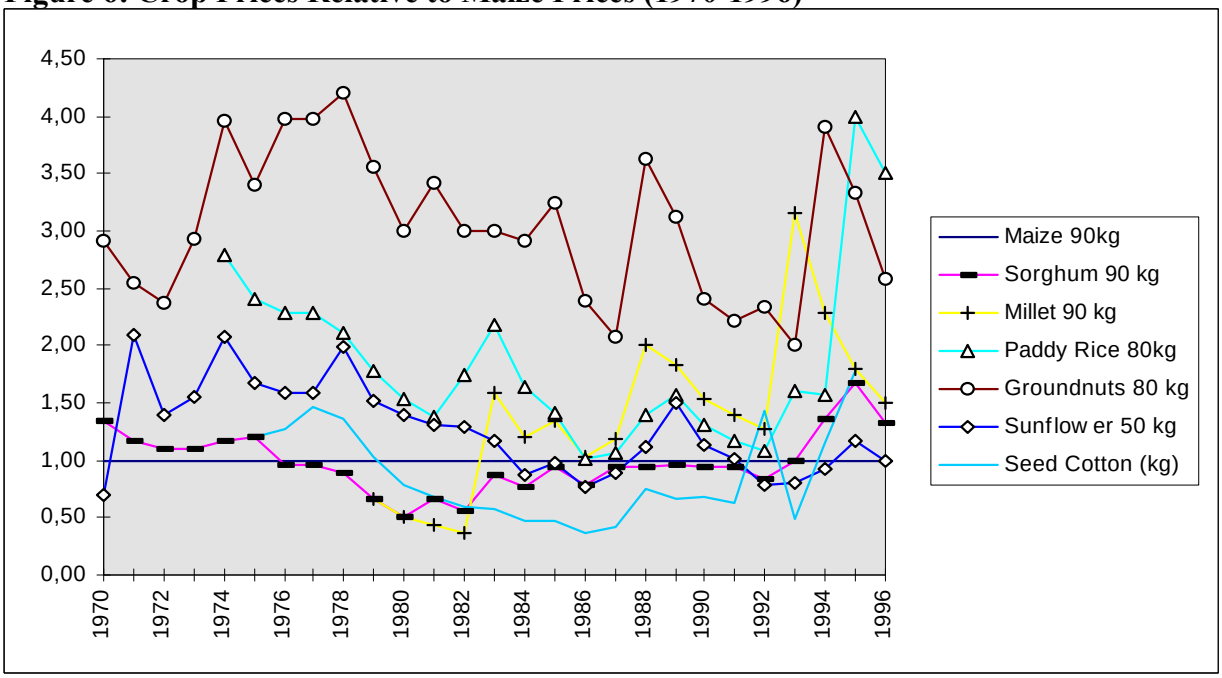
Source: World Bank, 1995b, p. 7; ZPA, 1997a, b, 1998.

4 Impacts of Public Interventions in the Agricultural Sector

The production of maize was relatively free of uncertainties up to the early 1990s due to the agricultural policies discussed above. Business and management capabilities played only a minor role in farm production. Small-scale farmers, in particular, profited from this situation. Their share in marketed production increased from 60 percent to more than 80 percent in the 1980s. They implicitly were contract farmers of the government, which provided them with seed, fertilizer and extension services, guaranteed the procurement, storage, marketing and prices of their products, and provided a quasi insurance against bad harvests. Following a drought, farmers often did not repay their loans, without having to face any consequences. During the 1970s and 1980s the fixed price for maize increased relative to other crops (except against millet), making maize relatively more favorable (see Figure 6).

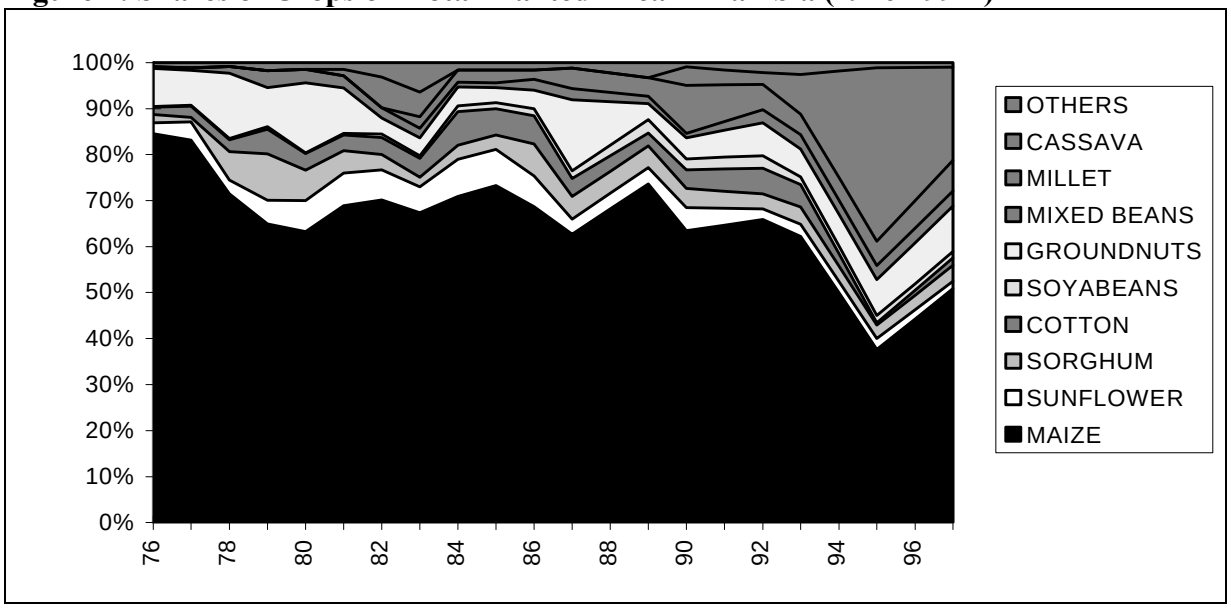
The net taxing of maize production was relatively smaller in less urbanized, remote areas. Hence, after 1991 the reduction in maize production was stronger in Southern, Northern, Northwestern and Luapula Province, and within these provinces more severe in remote districts. The following three graphs show the development of crop shares in Zambia as a whole (Figure 7), Northern (Figure 8) and Central Provinces (Figure 9).

Figure 6: Crop Prices Relative to Maize Prices (1970-1996)



Source: Data from MAFF, Policy and Planning Division.

Figure 7: Shares of Crops on Total Planted Area in Zambia (1976-1997*)



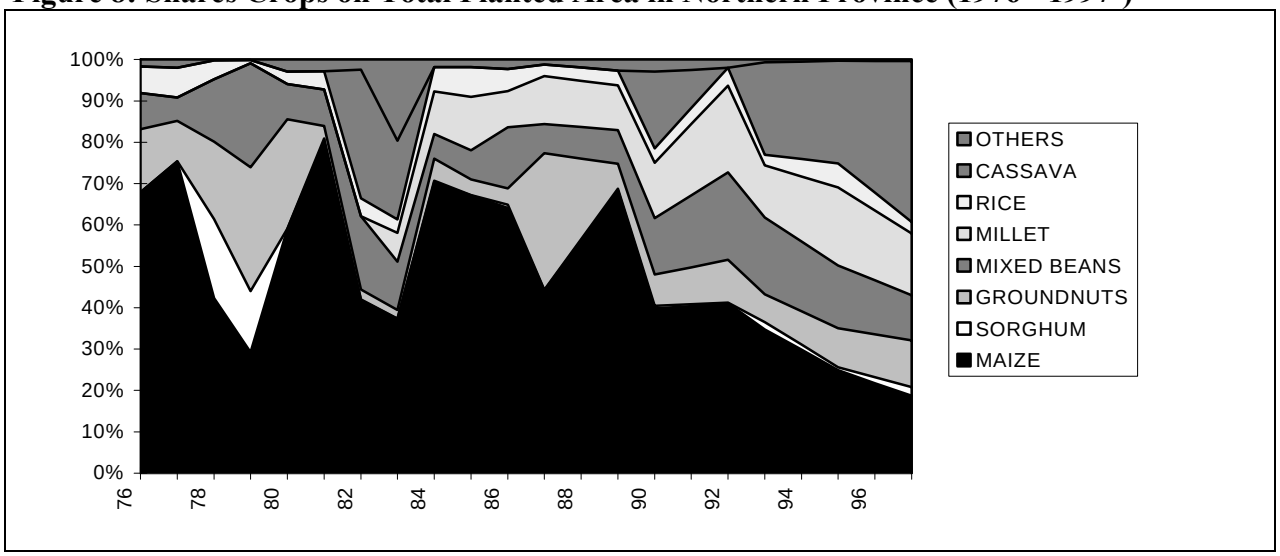
*For the years 1988, 1991, 1994, and 1996 data was not available; 2-year-averages were used instead.

Source: MAFF, production data for several years.

Most striking in recent development is the relative reduction of maize in favor of cassava plantings. This is a clear effort of the small-scale farmers to increase their food security, as the

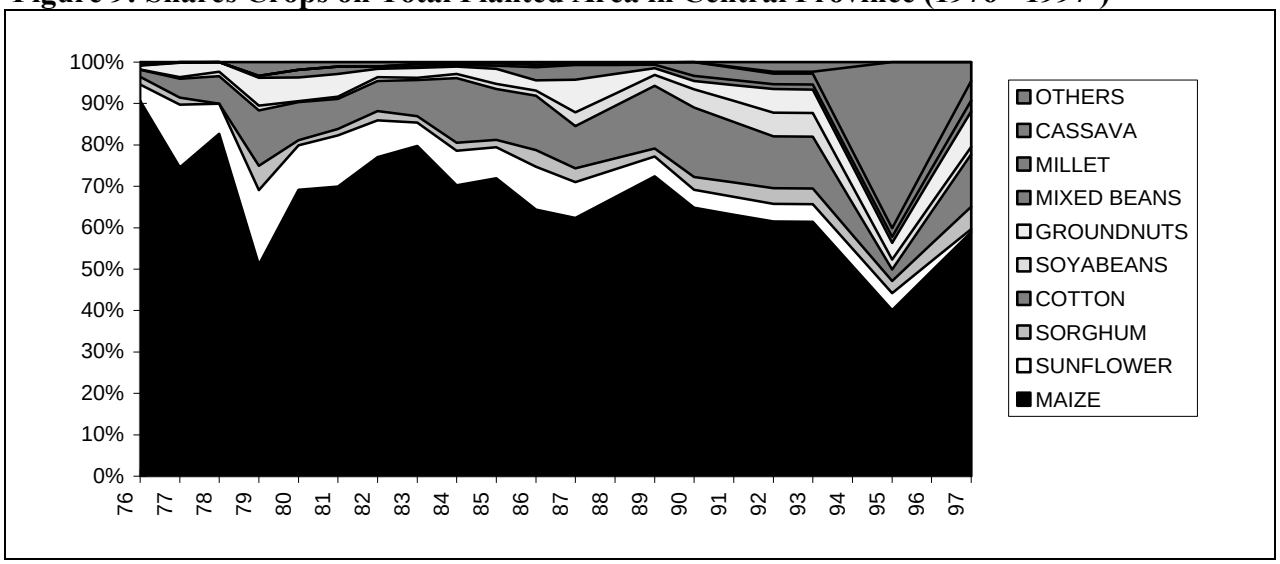
cassava root will be harvested 6 to 24 months after planting and is likely to be available at times of potential food shortages.

Figure 8: Shares Crops on Total Planted Area in Northern Province (1976 - 1997*)



*For the years 1988, 1991, 1994, and 1996 data was not available; 2-year-averages were used instead.
Source: MAFF, production data, several years.

Figure 9: Shares Crops on Total Planted Area in Central Province (1976 - 1997*)



*For the years 1988, 1991, 1994, and 1996 data was not available; 2-year-averages were used instead.
Source: MAFF, production data, several years.

In Northern Province (Figure 8) the decrease in maize shares in the 1990s was greatest. This was basically compensated by an increase in cassava, for which Northern province has a favorable climate, as well as in mixed beans, millet, and sorghum. The increase in the production

of the latter three crops contributes to a more drought-resistant production pattern and higher protein supply. In Central Province, however, the increase in these crops and the decrease of maize was less pronounced (Figure 8).

The dismissal of the pan-territorial pricing regime for maize depressed producer prices in remote areas relative to other regions as the higher transaction costs for the procurement now had to be accounted for. In total, the area under maize crop almost doubled from 540,000 hectares in 1980 to 1.02 million hectares in 1989. The share of more drought-tolerant crops like millet and sorghum declined. The yields of maize decreased from an average of 2.55 t/ha (1979 - 1981) to 1.61 t/ha (1988 - 1990). This is even more relevant considering the subsidies for fertilizer and for certified seeds. Zambia ranked fourth on a per hectare base usage of certified seeds in SSA and Eastern Africa (behind South Africa, Zimbabwe, and Kenya). The yields, however, were higher in many countries (see COMESA, Production and Trade Statistics, 1997). This reduction in productivity can be explained partly by the scarcer financial resources of the government, as the public supply of inputs was delayed and private traders were not yet involved in input markets. Other sectors, like the transportation sector and the processing industry, suffered as well, as necessary spare parts and other things were not provided in time by parastatals.

Facing today's desolate marketing infrastructure it is obvious that the costly policy of the past constrained financial resources, which could have been used for investments in infrastructure and services. Besides this clear misallocation of resources itself, the policies had a direct negative effect on the agricultural sector, as agents were prevented from utilizing comparative advantages. Private traders were almost fully ousted from maize marketing activities. As of the late 1990s the sector had not recovered.

Government expenditures on agriculture per se had only a limited impact on sectoral growth due to their inadequate intra-sectoral allocation. In the 1980s large sums were spent for marketing and trade in "bailing out or subsidizing parastatal losses in the marketing sector" (World Bank, 1995a, p. viii). Table A2 in the appendix shows that, between 1990 and 1994, in spite of the ongoing reforms more than one third of the expenditure was still used for marketing and trade and about 20 percent for agricultural finance. Accordingly, the government focused on curing the symptoms of markets that did not function. Instead, it should have focused on improving the institutional setting of the market and on providing public and merit goods. Within

the agricultural sector this means particularly the support of research, education, extension, and information. For the economy in general improvements in roads and the judiciary system would be warranted.

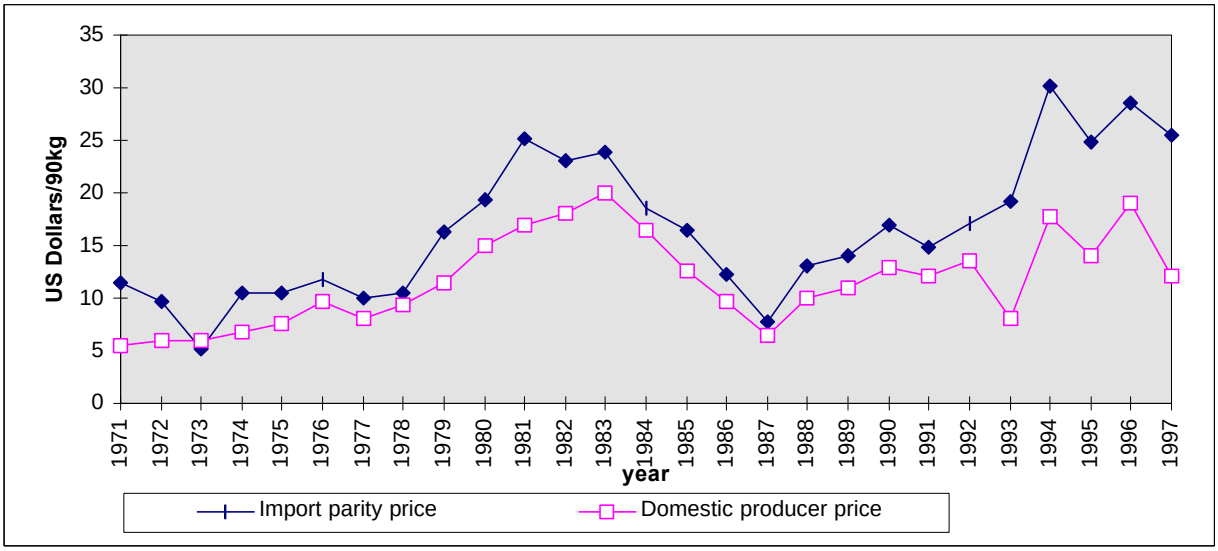
With these productivity losses the incomes of small-scale farmers fell significantly (Knoop/Lodge, 1997, p. 7). Commercial farmers reacted to the net taxing by lowering the share of maize on their total land under cultivation from 83 percent in the years 1975-1977 to about 61 percent a decade later.

Export restrictions, increased transaction costs (see Wichern, 1998) and monetary constraints kept the producer prices even more below the import parity prices than in previous years (for the major food crop maize see Figure 10). Several factors led to the drastic increase in disparity in 1993. Most obvious is the dismissal of a 15 percent import tax for maize in that year. As Zambia is a net importer the import price determines the domestic price. The lifting of the import tax makes imports 15 percent cheaper. Hence, the producer price drops relative to the import parity price. Furthermore, the liberalization of the financial markets in the same year caused a sudden increase in interest rates. This increased the transaction costs of the traders and depressed prices. In addition, higher interest rates caused a liquidity squeeze for many producers provoking a strong incentive to sell right after harvest. This depressed producer prices temporarily. Finally, transport subsidies were dismissed in the same year, leading to an increase in transport costs and, consequently, a decrease in producer prices.

The transaction costs increased through political[15] (frequent changes in trade policies, licensing, food aid) and market based uncertainties (volatile prices, uncertain demand), through bad roads, weak law enforcement, corruption and underdeveloped markets for information and risk. Monetary constraints necessitated by the liberalization of the financial markets, led to a strong rise in interest rates (Figure A1 in the Appendix). Hence, the pre-financing costs of trade increased, which depressed the prices for producers even further. It is possible that the transaction costs of trading are higher than reflected in the calculations of Figure 10, which would close the gap between parity price and producer price.

[15] In a survey of agricultural traders in 1997, the majority of large-scale traders accounted policy uncertainty as the major uncertainty in their business.

Figure 10: Domestic Producer Prices and Import Parity Prices for Maize, Zambia, 1971-1997*



* The import parity price is the c.i.f. price at the nearest port plus transportation and other costs, and a profit margin. Both the import parity price and the domestic producer price are computed for Lusaka.

Source: IMF, 1997, p. 28.

In the 1980s the narrow fixed market margin between producer and consumer prices prevented private traders from participating in agricultural markets. Kydd (1988) argues that the fixed margin was the binding constraint. The trade ban on inter-district trade, which was in effect up to 1985, was not crucial, as private traders would not have been active with the fixed margin in place. The government also influenced the production of cotton, tobacco, soybeans, sunflower, and wheat. Because of the numerous market controls, the private sector withdrew from input supply, marketing, and processing activities. Sectors with the least state control therefore had the highest private marketing activities (floriculture, horticulture, coffee, and chicken). Through competition the transaction costs of trading are likely to be smaller than in markets of protected goods.

5 Summary and Conclusions

In the first section we discussed the structure of the agricultural sector and constraints on agricultural production. Up to the early 1990s the access to credit was not a core problem for producers. The real interest rate was negative and small-scale farmers with difficulties of obtaining formal credits were provided with credits through parastatal lending institutions. With a

negative real interest rate prevailing over years one can assume that the allocation was not optimal and that commercial farmers' capital labor ratio was too high. Since 1994, after the liberalization of financial markets, real interest rates have become positive and have improved the incentives for an efficient credit use. Small-scale farmers, however, have problems obtaining credits as the parastatal banks have given up the disbursement of credit to farmers without collateral. This leads us to the market for land. In most areas the local chief decides the allocation of the user rights for land. Farmers seldom have a leasehold title and hardly ever obtain the whole set of property rights. This surely constitutes a constraint for investing in land improvements and for obtaining credits. In principle, this situation was improved by the 1995 Land Act, which allows land to have value and gives the basis for allocating property rights. However, as we pointed out above, the main constraint to a more intense use of land is the limited infrastructure. An improvement in roads, electricity, water supply, education and others would best serve a more efficient usage of the land resource. Labor is often cited as a major restriction in crop production. As the average area under crop on small-scale farms is 0.5 hectares only, we conclude that the actual constraint is with respect to the quality and the organization of labor. Education and improvements in the health status of farm workers would increase the quality of labor, while better management skills and social norms would improve its organizational aspects.

In the next section we discussed the agricultural policies prior to and post 1991. Up to the 1990s the main indicators of a strong state intervention were fixed producer and consumer prices, transportation and storage subsidies, consumer price subsidies, and subsidies on agricultural inputs and credit. The continuous overvaluation of the exchange rate had (and still has) major indirect effects, leading to a net taxing of producers of tradable goods. The government was the monopsonistic buyer of many agricultural products and private trade in all products was not allowed before 1990. Thereafter, due to a government fixed market margin, private traders were still kept out of agricultural markets. Major impacts of the ongoing interventions were

- a high dependency on the government,
- a bad attitude towards credit repayment,
- decreasing human capital with respect to i) understanding of economic principles, ii) collection and usage of information, iii) cultivation of other crops, and iv) storage,

- diminishing regional market structures and decreasing number of companies.

Significant liberalization efforts started in the early 1990s. Mainly for budgetary reasons the new government aimed at decontrolling prices, decreasing the inflation rate, introducing market based exchange and interest rates, and privatizing state owned enterprises. Although it was a stepwise undertaking, it initiated a major expansion of market forces in the agricultural sector. However, these improvements did not have the desired effects with respect to private activities in the market. The government continued its involvement in certain key areas, with unfavorable, distorting effects on prices, trade, and the budget. The severe droughts of 1992, 1994, and 1995 served as reasons for market interventions (mainly export restrictions). In addition, in the early stage of liberalization, trading activities and, hence, market integration suffered substantially from deficiencies in the infrastructure and the institutional setup. Bad roads, deficient information dispersion and uncertainties with respect to further political decisions, to name only a few, hindered the first steps towards a freer market regime. The liberalization of the financial markets led to an immense increase in interest rates in 1993, which assisted the widening of the gap between import parity and producer prices. The biases towards maize production favoring remote areas slowly reverted. Domestic prices of alternative crops increased relative to maize in the 1990s and the share of maize in total area cropped declined, especially in more remote regions.

We can conclude from the foregone discussion that, most likely, allocative efficiency improved in the 1990s. Interest rates are more market based and the adjustment of relative prices of agricultural commodities has led to a shift in production shares. These are the positive effects of liberalization so far. A significant increase in production and services (trade) has not yet occurred, owing to the lack of past and current investments in infrastructure and to the uncertain policy environment. These points should be tackled in the near future. A stable and clear policy and an improved infrastructure will reduce the transaction costs of trading and will lead to higher farm gate prices and a better access to cash crop markets. Only with improvements in these areas one can expect an increase in agricultural output in Zambia.

Appendix

Table A1: Land Use Pattern (1961 - 1994) and Food Availability (1971 - 1994) in Zambia

	1961 - 65	1966 - 70	1971 - 75	1976 - 80	1981 - 85	1986 - 90	1991 - 94
				(`000 hectares)			
Total land area	74,339	74,339	74,339	74,339	74,339	74,339	74,339
Agricultural land	34,820	34,918	34,985	35,048	35,164	35,234	35,272
land available for cultivation	4,820	4,918	4,985	5,048	5,164	5,234	5,272
land used as permanent pasture	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Forest and hills	30,740	30,390	30,040	29,690	30,000	30,470	32,000
Other	8,779	9,031	9,314	9,601	9,175	8,635	7,067
Agricultural land per capita (in ha)			7.66	6.57	5.46	4.75	4.22
				(Share in total land area; %)			
Agricultural land	46.8	47.0	47.1	47.2	47.3	47.4	47.5
land available for cultivation	13.8	14.1	14.3	14.4	14.7	14.9	15.0
land used as permanent pasture	86.2	85.9	85.8	85.6	85.3	85.2	85.1
Forest and hills	41.4	40.9	40.4	39.9	40.4	41.0	43.1
Other	11.8	12.2	12.5	12.9	12.3	11.6	9.5
Cultivated area as a percent of total land available for cultivation		26.8	29.3	23.3	16.1	23.5	22.8
				Food availability			
Total availability of calories (kcal per capita per day)*			2,268	2,249	2,086	2,087	2,083
of which (percent of total):							
cereals			64.8	67.6	68.5	67.4	65.1
maize			51.2	56.4	59.0	60.6	57.5
calorie balance (%)**			3.1	2.2	-5.2	-5.1	-5.3

*The total availability of calories is computed by adding up the calories from all foods available in the economy using the appropriate calorie conversion factor for each food item. The conversion factors are applied to the available quantity of each food item (i.e., the sum of production (less seed, cattle feed and waste), net imports and changes in stocks). **The calorie balance is the percentage deviation of the actual calorie availability from the recommended average daily intake for adults (2200 kcal.).

Sources: FAO (at: http://apps.fao.org/) and IMF, 1997, p. 31.

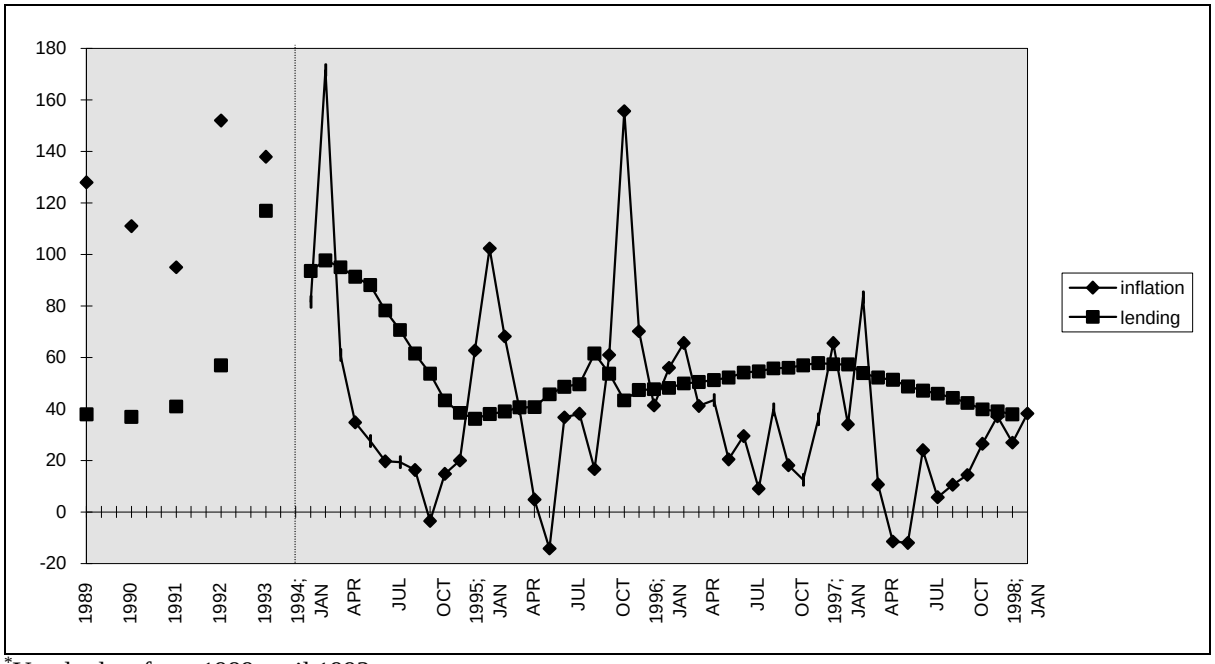
Table A2: Shares of Expenditures by Sub-Programs

	Allocation in 1990 - 1994 (avg. %)		Allocation in 1995 - 1998 (projected avg. %)*	
	GRZ	Donors	GRZ	Donors
Overall	8.2	3.9	11	8
Agricultural Training	2.8	1.4	5.7	0
Agricultural Finance	16.5	21.4	12	26
Food and Nutrition	0.4	0.1	0	0
Marketing and Trade	32.2	39.6	5	0
Standards	0.3	0.5	1.7	0
New Product Development	0	0	0.5	5
Food Security Agency	3.7	0	0	0
Research	5.9	8.2	8.8	9.1
Farm Power	0.2	0.3	1.7	0
Irrigation	0.2	0.2	2.1	0
Extension and Information	14.7	8.4	26.3	19.3
Lands	3.9	7.3	5.7	12.5
Animal Production and Health	6.2	4.3	9.7	10
Fisheries	2.8	2.2	7	2.8
Policy and Planning	2.1	2.2	2.8	5.9
Total	100	100	100	100

*The projected allocation is for the ASIP program.

Source: World Bank, 1995a, p. 45.

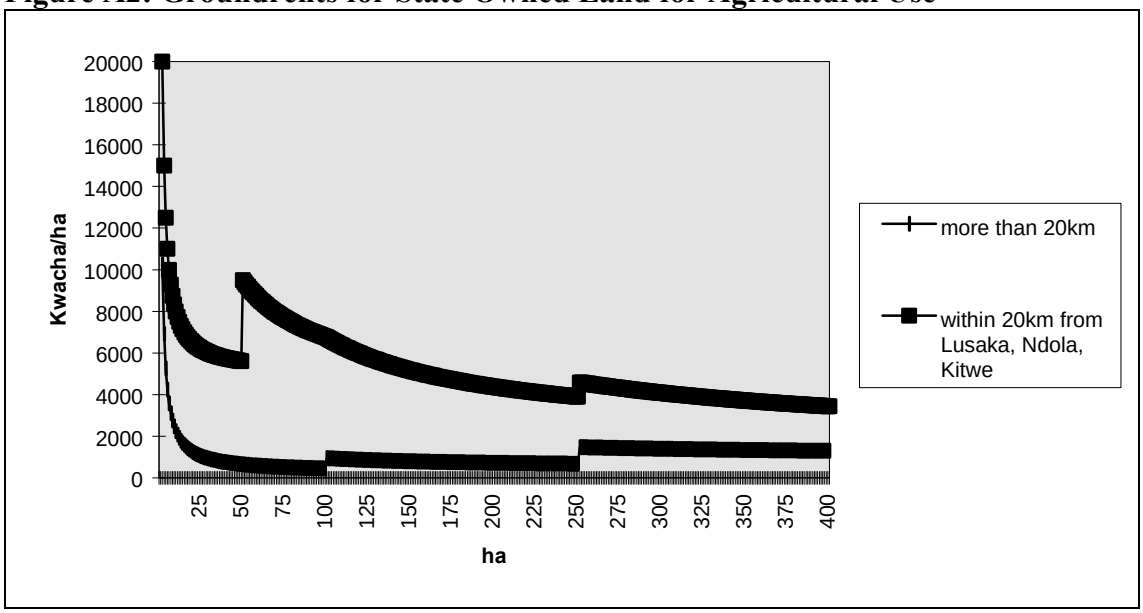
Figure A1: Monthly* Inflation and Lending Rates in Zambia 1989 - 1997



*Yearly data from 1989 until 1993.

Source: Ministry of Finance (1998) Macroeconomic Indicators, several issues.

Figure A2: Groundrents for State Owned Land for Agricultural Use



Source: Information from Ministry of Lands, 1998, and own presentation.

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