FOOD SECURITY RESEARCH PROJECT

Fostering Agricultural Market Development in Zambia

by

Gelson Tembo, Antony Chapoto, Thomas Jayne, and Michael Weber

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EXECUTIVE SUMMARY

The availability, access and affordability of food is a highly politicized issue throughout the world. In much of southern Africa, there is a widespread view that governments are responsible for ensuring that their populations have reliable access to food. Zambia, like most countries in Southern Africa, is vigorously pursuing continued direct public sector involvement and protectionist measures in the maize marketing sector. Since 1995, the Food Reserve Agency (FRA) and more recently, subsidies through the Fertilizer Support Program (FSP), have been the major instruments of government policy. While in some respects current operations undertaken by the government are similar to those adopted at independence, there are some noteworthy changes. Specifically, the private sector is no longer barred by statutory measures. In principle, the private sector is now encouraged to perform marketing functions alongside the public sector. However, in practice, the private sector is often prevented from doing so due to government use of discretionary trade policy instruments, such as variable export bans and restrictions, variable import tariff rates, and government import programs.

This (semi-) reversal from the principles of the reforms of the early 1990s, in which the government's role was seen as that of primarily facilitating the private sector, has been justified by the argument that the private sector has failed to perform critical marketing functions. The government perceives the existence of a moral mandate to ensure that producers and consumers alike are not solely at the mercy of unpredictable market forces. Thus, in effect, a dual agricultural marketing system has been created, in which the private sector competes with the government in performing different marketing functions. While this dual system has been able to address some of the problems arising from earlier market reforms (e.g., providing support prices to farmers in remote areas at times when the marketing boards are in the market, and increasing smallholder access to cheaper inputs through the FSP etc.), it has also presented significant challenges due to the ad-hoc and discretionary nature of government food marketing and trade polices.

Recent assessments of the effects of marketing reforms have been mixed. Some scholars, arguing that the conventional view that the private sector had failed under the free market system, fail to appreciate the fact that there are two sides to the success of such a policy framework – an effective private sector, and an effective, incentive-enhancing government. Even the most ardent advocates of liberalization agree that governments need to perform certain tasks in order for agricultural markets to function effectively. These tasks include providing a stable and transparent policy environment, investing in public goods to reduce the costs and risks of trade and production, providing appropriate institutions for contract enforcement, risk-mitigation, and incentives for investment.

Evidence suggests that the observed trends arise for several reasons. The Government of Zambia (GRZ) has been heavily involved in direct participation in maize and input markets over the past decade, through the FRA, the FSP, and through tight controls on private trade, via the selective issuing of import and export licenses. Moreover, the country's mixed performance reflects a number of other factors, such as failure to appreciate smallholder production and the marketing sector's unique structural characteristics, under-investment in broad-based, cost-reducing infrastructure and institutions, and unpredictable and *ad hoc* trade policy actions. An empirical assessment of the country's performance since the 1990s thus reflects a mixed policy environment of legalized private trade and continued strong government operations in maize markets, rather than the impact of unfettered market forces.

This paper seeks to (1) assess some of the key features of the Zambian agricultural market that have led to the underdevelopment of the staple food marketing system; (2) review existing empirical evidence in order to explain the dismal performance of the maize sub-sector; and (3) to suggest possible corrective measures. As smallholder farmers in agricultural markets are considered to be vitally important to the attainment of food security, special attention is placed on how the current system impacts these farmers, and on how to foster improved participation. The role and potential of new generation cooperatives is also considered.

We identify seven major areas in need of serious and coordinated attention if the state of the agricultural sector and marketing functions is to improve:

i) Serious efforts to encourage market development and to ameliorate market failure are likely to require an increased commitment to investment in public goods (e.g., road, rail and port infrastructure, research and development, agricultural extension systems, market information systems) and institutional change in order to promote the functioning of market-oriented trading systems. The government needs to prioritize investments in market infrastructure and institutions over private goods and services, as public investment has greater potential to sustain broad-based agricultural growth. This policy would thus require a shift of focus from the fertilizer subsidies and price support systems currently in place to the development of cost-reducing infrastructure. However, care should be taken to focus on infrastructure with a high social payoff, which can be identified through carefully designed cost-benefit analysis.
ii) Policy discussions and subsequent decisions need to account for the fact that actual budgetary allocations often differ in significant ways from planned disbursements. Monitoring systems designed to increase budgeting transparency and accountability might provide a method to reduce or eliminate such differences.
iii) In the mixed policy environment, the government co-exists with the private sector as an unfairly large competitor, and this hinders the development of the agricultural sector. While total government withdrawal from the market may not be a realistic or even helpful option, the government should avoid crowding out private sector participation, and should instead seek to facilitate market growth. If, however, the government insists on participating directly in agricultural markets, it should be clear about its intentions to ensure predictability.
iv) There is evidence that restricting trade by using discretionary policies such as export bans, import tariffs, and grain levies tends to hurt the market's ability to deliver food security for all. More empirical evidence on potential alternatives that can avoid these negative effects is required. Recent evidence has, for example, demonstrated that non-tariff impediments to trade exist between Zambia and SADC regional counterparts. An understanding of these impediments and how to avoid them might greatly enhance the government's capacity to implement effective policy.
v) Farmer organizations are generally recognized as valuable instruments for attaining smallholder agricultural development. Because of the inherent diversity in the conditions and needs of these groups, however, no single size organizational mode can be prescribed. Fostering collective action therefore requires an understanding of the varied needs of the clientele and their available social capital, and the coordination of mutually re-enforcing investments by the private sector, the public sector and the civil society. Because of the public good nature of some important investments such as in contracts, technology, and process, the government can actually play a leading role in the desired institutional change. This is contrary to traditional thinking regarding such organizations, which seems to advocate disengagement and a *laissez-faire* approach. Property rights

assurance is also generally recognized as an important ingredient to sustainable collective action. Again, the need for public leadership in spearheading and coordinating investments in the relevant support institutions cannot be over-emphasized. Can Zambia, and other developing countries, learn from the successes achieved by American agricultural producers with the new generations approach to collective action? Although it is not immediately possible to adopt new generation cooperatives, it is worth thinking about such options for the long run.

vi) Farmer organizations also have potential to make marketing cheaper. While the Tembo and Jayne (2007) study looked at the maize market, there is need to establish the effectiveness of the cooperative movement in other value chains. The cotton sector, for example, has established its own version of collective action and collective responsibility, established with very limited public facilitation or involvement.

vii) In discussing agricultural marketing policy and how it might impact the sector, it is also important to understand the participants and their abilities to respond. A clear understanding of the composition and structure of the small and medium-scale farming community needs to be fully integrated into any efforts to enhance market participation. This will better enable the government to anticipate potential effects of alternative policy actions. There is need for more research to continually monitor the likely impacts of alternative public actions and policies on the target groups, paying particular attention to their varied characteristics, opportunities and constraints. One-size-fits-all policies have, in the past, been shown to be ineffective.

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ACRONYMS

ACF	Agricultural Consultative Forum
AMIC	Zambia Agricultural Market Information Centre Ministry of Agriculture and Cooperatives
ARPT	Adaptive Research Planning Teams
CAADP	Comprehensive Africa Agriculture Development Programme
CFS	Crop Forecast Survey
CIF	Cost, Insurance, Freight
CMA	Crop Marketing Authority
CSO	Zambia Central Statistical Office
CLUSA	Cooperative League of the U.S.A.
DACs	District Agricultural Coordinating Committees
DRC	Democratic Republic of Congo
EEOA	Economic Expansion in Outlying Areas
FAO	Food and Agricultural Organization
FEGs	Farmer Extension Groups
FFSs	Farmer Field Schools
FRA	Food Reserve Agency
FRGs	Farmer Research Groups
FSP	Fertilizer Support Program
FSRP	Food Security Research Project, Zambia
GMO	Genetically modified organism
GRZ	Government of the Republic of Zambia
GTAZ	Grain Traders Association of Zambia
ICA	International Cooperative Alliance
MACO	Ministry of Agriculture and Cooperatives, Zambia
MAFF	Ministry of Agriculture, Food and Fisheries
MAZ	Millers Association of Zambia
MFNP	Ministry of Finance and National Planning
MoU	Memorandum of Understanding
MSU	Michigan State University
mt	metric tons
NAMBOARD	National Agricultural Marketing Board
NCZ	Nitrogen Chemicals of Zambia
NGC	new generation cooperatives
NGOs	Non-governmental Organizations
PHS	Post Harvest Survey
PRPs	poverty-reduction programs
SADC	Southern African Development Community
SADC-TP	Southern Africa Development Community – Trade Protocol
USAID	United States Agency for International Development
ZCF	Zambia Cooperative Federation
ZNFU	Zambia National Farmers' Union

1. INTRODUCTION

The availability, access and affordability of food is a highly politicized issue throughout the world. In much of southern Africa, there is a widespread view that governments are responsible for ensuring that their populations have reliable access to food (Bratton and Mattes 2003). It is generally agreed upon that well-functioning agricultural markets are crucial for sustained rural income growth and food security. It is also clear that the food markets in the region require improvements in basic infrastructure and operating rules, and that even with some of these improvements being made, markets are still burdened by high costs and risks. Additionally, the presence of efficiently functioning markets is not in itself sufficient, as food prices can and often do fluctuate widely between the bands of import and export parity. The size of this price band in Zambia, for instance, is typically high, and this is due to high transport costs, storage costs, and transaction costs of trade. These problems have been an important rationale for the protectionist approach that Zambia and many Sub-Saharan African countries continue to adopt today.[1]

However, this protectionist approach to public sector involvement in agriculture has several shortcomings. In Zambia, for example, marketing boards that have attempted to provide a guaranteed output market and a source of inputs for farmers have often proved to be costly and unsustainable. Farmers also complain of late payments and corruption. Moreover, the marketing boards have also been largely unable to maintain food prices within tolerable price bands. In the most recent 2008/09 season, maize prices soared to over US$400 per ton even though FRA was tasked with undertaking marketing and stockholding operations to ensure adequate supplies and tolerable prices. For most countries, the pressure to find a less costly alternative to marketing boards has been mounting since the late 1980s, particularly due to declining revenue bases and waning efficiency in government marketing institutions. While widely embraced in principle, the extent to which liberal market policies have been implemented has varied from country to country. Zambia is among those still pursuing a more direct public sector involvement and a protectionist approach.

Since 1995, FRA has been largely responsible for conducting the government's agricultural policy. More recently, FSP, which offers significant fertilizer subsidies for smallholder farmers, has also been a key component of GRZ's operations. While the current environment, in theory, encourages the private sector to perform market functions alongside the public sector, it is often prevented from doing so through discretionary trade policy instruments such as export bans and restrictions, import tariffs, and government import programs.

This (semi-) reversal from the principles of the reforms of the early 1990s, in which the government's role was seen as that of primarily facilitating the private sector, has been justified by the argument that the private sector has failed to perform the marketing functions. The government sees as its moral mandate to ensure that the producers and consumers alike are not solely at the mercy of the unpredictable market forces. Thus, in effect, we have a dual agricultural marketing system in which the private sector, at least in part, competes with the government in certain marketing functions. While addressing some of the problems arising from market reforms (e.g., providing support prices to farmers in remote areas at least at times when the marketing boards are in the market) and increased access by smallholder farmers to cheaper inputs through the fertilizer support program, etc.), this dual system has presented its own challenges.

[1] In that system, the government performed most of the major marketing functions – input distribution, output purchasing, storage, and transportation – an undertaking that enabled pan-territorial pricing.

Recent assessments of the performance of the marketing reforms have been, at best, mixed. Some scholars have argued that the conventional view that the private sector had failed under the free market system fail to appreciate the fact that there are two sides to the success of such a policy framework – an effective private sector, and an effective, incentive-enhancing government. Even the most ardent advocates of liberalization realized that governments would need to fulfill certain tasks in order for markets to function effectively; provide a stable and transparent policy environment, invest in public goods to reduce the costs and risks of trade and production, provide the institutions for contract enforcement, risk-mitigation and incentives to invest, etc. Whether markets, states, or both are responsible for the weak growth of African agriculture over the past several decades is difficult to address empirically. Whatever the case may be, most scholars and policy makers are in agreement that the status quo is once again not working as a means to sustain broad-based agricultural development. Use of existing empirical evidence to inform these concerns and identify options for alternative courses of action has been very limited. Moreover, while some empirical evidence already exists, there are still information gaps that if filled, could help to further improve the management of the agricultural sector in general and the agricultural market in particular.

It is against this backdrop that this paper is written with two key objectives:

1. To highlight some of the key features of the Zambian agricultural market which have led to the underdevelopment of the staple food marketing system in the country; and
2. To use existing empirical evidence to explain the dismal performance of the maize sub-sector and to suggest possible alternative corrective measures.

As participation of smallholder farmers in the agricultural markets is considered key to the attainment of food security, special attention is deliberately placed on how the current system impacts this category of farmers and some of the key features that may foster their improved participation. The role and potential of the new generation cooperatives are also considered.

The remainder of this paper is organized into six sections: Section 2 briefly looks at the historical evolution of Zambia's agricultural policies; Section 3 describes the structure of the agricultural sector in Zambia; Section 4 analyzes the current levels of public sector support and impacts on the development of Zambian agriculture; Section 5 discusses the need to match stated priorities with implementation practices; Section 6 deals with marketing farmer organizations and their potential to lower marketing costs; and Section 7 presents conclusions and potential policy options.

2. HISTORICAL EVOLUTION OF AGRICULTURAL POLICIES

Current food policy issues in Zambia, as is the case for much of eastern and southern Africa, are rooted in a historical context. Understanding the political and economic pressures driving food policy decisions in the region requires an understanding of the role of maize as a strategic political crop in this region of Africa. For many African nations, maize became the cornerstone of an implicit and sometimes explicit social contract that post-independence governments made with their people to redress the neglect of smallholder agriculture during the colonial period (Jayne and Jones 1997). Maize now accounts for 25-30% of the gross national value of smallholder crop output and roughly 40% of Zambia's caloric intake (Zulu, Jayne, and Beaver 2006).

Since Zambia achieved its independence in 1964, a prominent goal of government policy has been to promote smallholder welfare, primarily through the use of maize production incentives. The state initially invested heavily in crop-buying depots, first through the National Agricultural Marketing Board (NAMBOARD) and later through the Zambia Cooperative Federation (ZCF). The government's policy initially achieved great success in the 1970s and early 1980s (Howard and Mungoma 1996). Up until the late 1980's, the overall maize production and yields per hectare were trending upwards despite significant fluctuations. Government funded extension services, seed research, and fertilizer subsidizes (used mainly on maize) resulted in a continued rise in output and yield per hectare. Unfortunately, this policy resulted in increasingly unmanageable costs, and diverted resources from other complementary infrastructure developments that were necessary for sustainable agricultural growth.

However, by the late 1980s, treasury costs of state fertilizer and maize marketing operations were so large that they also contributed to macroeconomic instability and hyperinflation (Jansen and Muir 1994). Increased donor leverage over policy then helped propel the input and crop marketing systems toward reform. The government began to take steps to liberalize maize input and product markets, and discontinued consumer subsidies on maize meal.

With the continuing desire for market stabilization, the Zambian government established the Food Reserve Agency (FRA) in 1996, which was tasked with holding strategic grain reserves. Unlike its predecessor, NAMBOARD, which was the sole buyer and seller of grain in Zambia, the FRA was originally created to hold buffer stocks in order to dampen price variability. The Agency was also to provide liquidity in the maize market during the initial years of market liberalization, as the private sector was in the process of establishing itself. Although FRA's original mandate did not include a price support function, the agency was soon instructed to purchase maize in remote areas where production was unlikely to be profitable under commercial conditions. In addition, fertilizer distribution was added to FRA's activities, and the agency accepted maize as in-kind payment for the fertilizer, further entrenching its maize purchase activities (Govereh et al. 2002).

Up until the 2000/2001 marketing season, FRA involvement in the buying and selling of grain was very limited, and all purchases and sales were done using a tender process. With an increase in budgetary support from the government and the looming drought of 2001/2002, the FRA found itself becoming one of the major actors in the maize market. The FRA started announcing maize floor prices and became the so called buyer of last resort. In 2006, a year before national elections, the FRA's mandate in the maize sector was further expanded. Starting in May 2005, the FRA began ramping up its buying activities and has continued to

buy a large portion of local production, now approximately 34% of the country's domestically marketed maize (Table 1). Thus, the government has arguably become the dominant player in the maize market.

A key issue facing the Zambian government is the need to import maize during production shock years. Marketed supplies from local production are generally exhausted eight to ten months after harvest. Political and economic stability are importantly tied to ensuring adequate supplies of maize meal at tolerable prices in urban and mining areas. Accordingly, the government has remained involved in arranging maize imports, subsidizing the price at which it offers maize imports or local purchases to large millers. For example imports were sought in the range of US$165 per ton in 2002, when the market price of maize from South Africa was at least US$230 per ton, US$274 per ton in 2009 whilst local maize prices was at least US$400 (Nijhoff et al. 2002; Jayne et al. 2009). Table A1 in appendix presents the salient features and changes in maize marketing and trade policy between 1990 and 2009.

Table 1. Small/medium Scale Smallholder Maize Output, FRA Purchases and Purchases as % of Production

Production Season	Maize production	Marketed output from production	FRA purchases	FRA purchases as % of smallholder marketed surplus
	----------'000 metric tons----------			
1995/96	1178	350	16	5
1996/97	805	185	75	41
1997/98	724	157	200	127
1998/99	929	217	23	11
1999/2000	1123	270	35	13
2000/01	939	197	155	79
2001/02	948	190	25	13
2002/03	1,126	284	55	19
2003/04	1217	352	105	30
2004/05	820	193	79	41
2005/06	1107	358	389	109
2006/07	1104	398	396	99.5
2007/08	988	357	74	21

Source: Post Harvest surveys (PHS), Crop Forecast surveys (CFS) for maize production and marketed surplus for the years 2006/07, 2007/08, and 2008/09, and FRA purchases from FRA data files.

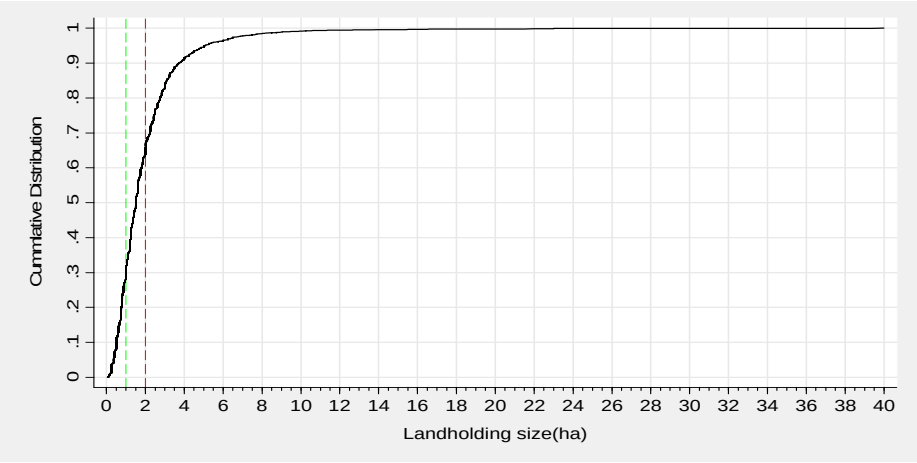
3. THE STRUCTURE OF ZAMBIA'S AGRICULTURAL SECTOR

Zambia's agricultural sector is characterized by over 1.4 million smallholder farm households that account for a significant proportion of total agricultural output (MACO 2009).[2] Perhaps unsurprisingly, the majority of government agricultural support is directed toward this category of farmers. Still, approximately 2000 large scale farmers contribute significantly to total crops production and sale, especially for sugar and wheat.

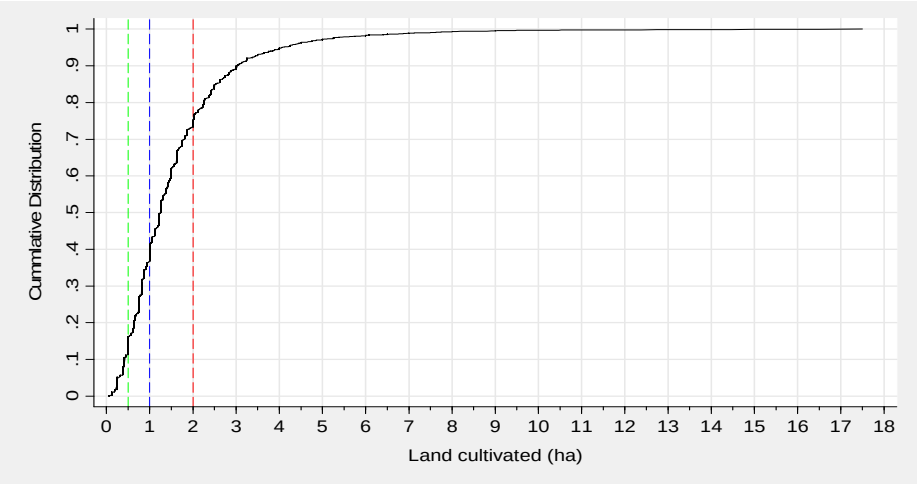
3.1. Most Smallholder Farms Have Small Landholdings

The majority of smallholder farmers have very small landholding sizes, even when fallow fields are taken into account. About 40% of the smallholder farms cultivate a hectare or less, and 20% cultivate less than half a hectare (Figure 1).

Figure 1. Distribution of Smallholder Landholding Size and Land Cultivated, 2004



A. Cumulative Distribution of Landholding Size (cultivated + fallow)



B. Cumulative Distribution of Cultivated Land Area

[2] Defined by the Central Statistical Office (CSO) as farmers that cultivate no more than 20 hectares each year.

With such land sizes, it is not possible for these farmers to earn sustainable incomes from cropping unless substantial investments in productivity enhancements are made and high-value crops are promoted. In Section 4, we demonstrate that effort in these areas on the part of the public sector is very low.

Jayne et al. (2008) report that paradoxically, a quarter of Zambia's rural population faces land shortages and perceptions of no additional land being available to them despite the existence of underutilized arable land. The study also shows that within a given district or village, there are very wide intra-village differences in farm sizes. For example, within a given district, the top 25% of households tend to have ten times more land than the bottom 25% of households (8.85 hectares versus 0.61 hectares). While average farm size (including rented land) was found to be approximately 3.05 hectares, about one-third of all households have access to one hectare or less. Factors found to be positively correlated with increased access to land include level of productive assets, kinship relations to local headman and the distance from roads and district towns. Female headedness, proximity to towns and markets, and the duration of settlement of the family in the area were found to be negatively correlated with land access.

The main implication of these findings is that most smallholder farmers tend to have insufficient access to land despite its availability, and that improving such access for the most land-constrained smallholder households might be an effective way to reduce poverty. For small farms, incremental additions to land access are associated with a large relative rise in income. Yet improving land access for smallholders is fraught with difficulties: even in the presences of abundant land, reform is politically difficult, expensive, and subject to rent-seeking. Market-assisted or community-based approaches have also faced difficulties. Given the opportunity to allocate unused land, Zambia may have more latitude to work with local authorities to give preferential treatment to some of the most land-constrained smallholders. Organizations such as the Zambia Land Alliance have proposed such programs, but it remains to be seen if the needed reforms can occur (Zambia Land Alliance 2009).

3.2. Only a Few Smallholder Farmers Sell Maize

In addition to being a major staple food, maize is also a cash crop in Zambia, and we would thus expect smallholder farmers to more readily commercialize it. However, the evidence shows that a combination of inequitable land access, inadequate access to other assets, and large variations in crop productivity across households and regions contribute to considerable heterogeneity with respect to smallholders' position in maize markets. Rural household surveys in Zambia indicate that small-scale farm households generally fall into one of the following four categories: (i) net sellers, (ii) net buyers with production, (iii) buyers without production, and (iv) households that are neither buyers nor sellers (Figure 2).

i) Net sellers of maize: in the 2007/08 marketing season, roughly 26% of all smallholder farms produced and sold maize, with the majority relying solely on this staple crop as a source of income. The specific figure is understandably higher in good harvest years and lower during drought/excessive rain years. A very small percentage of farmers account for the vast majority of maize sales, indicating a need for two sub-groups within this category:

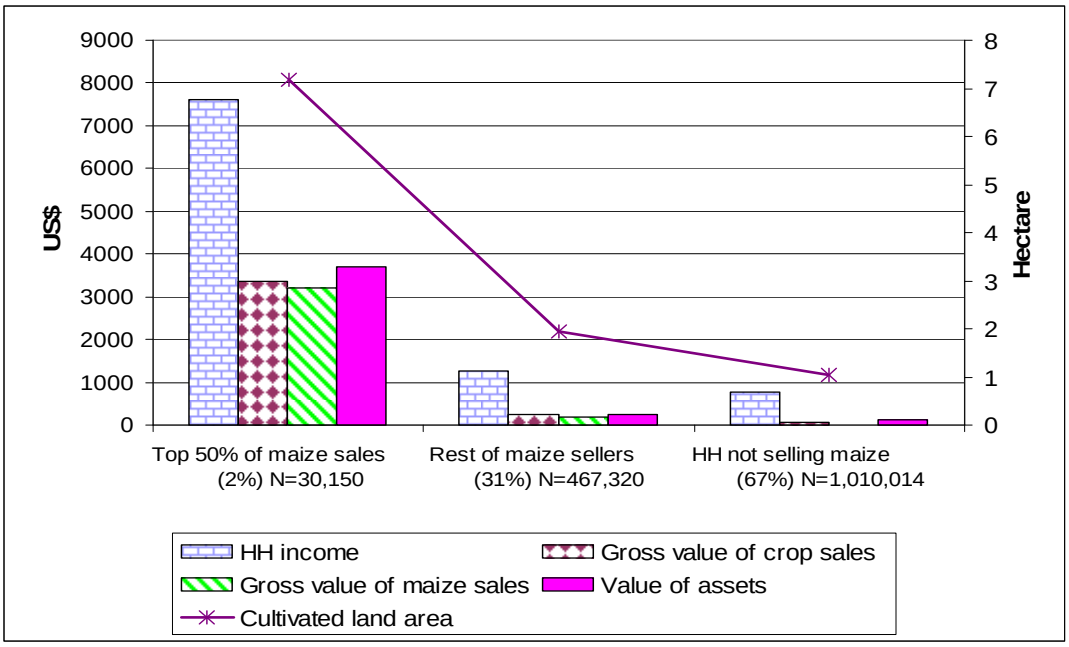
a) A small group of well-equipped farmers with 4 to 20 hectares of land, (about 1-4% of the total rural farm population), that account for 50% of marketed output from the smallholder sector. These farms tend to sell between 5 and 50 tons of maize per farm in a given year.
b) A much larger group of smallholder farmers (about 20 to 25% of the total rural farm population) that sell much smaller quantities of grain; between 0.1 and 5 tons per farm. These households tend to be slightly better off than households that buy grain, but the differences are relatively small.

Households selling maize have, for obvious reasons, tended to advocate the continuation of government procurement of their grain, supporting the FRA and looking for fixed, high prices. Unfortunately, empirical evidence has shown that overall benefits from such government programs are minimal (Myers 2005; Govereh, Jayne, and Chapoto 2008).

ii) Net buyers of maize: these rural households constitute approximately 35% of the rural population, with the exact number being higher in drought/excessive rain years and lower in good production years. These households are generally poorer and have smaller farm sizes and asset holdings than the median rural household. They are directly hurt by higher grain prices.

iii) Non-maize producing households that are buyers of maize: this sub-group is typically comprised of 10-16% of the rural farm population. These households have assets levels similar to those in category (ii). They do not produce maize, but through other cropping and labor activities earn cash income.

Figure 2. Characteristics of Rural Smallholder Farmers Disaggregated by their Position in Maize and Maize Meal Markets, 2007/08



Source: 2008 CSO/FSRP Supplemental Survey

iv) Households that neither buy nor sell maize*:* these households make up 23-35% of the rural population in areas where maize is the dominant staple crop. In parts of northern Zambia where cassava is the main staple, a sizable fraction of the rural population is autarkic with respect to maize. Both positive and negative shocks to maize production in a given year can shift households in and out of this market position, such that they have purchasing requirements or a surplus to sell. However, this group of households tends to have the lowest average asset levels, suggesting that their effective demand may be easily constrained.

Unfortunately, government marketing activities and policy decisions have thus far largely unresponsive to such statistics. For example, the FRA and the private sector usually attempt to purchase the entire marketed maize surplus from the rural areas, leaving virtually nothing for purchase in many communities during the lean season, which occurs from December through March. The grain is instead bought and hauled to urban centers, where it is sold to millers. This greatly disadvantages the majority of the rural households, who are net buyers of grain. The fact that FRA grain is supplied to large commercial millers, which sell relatively expensive maize meal, further disadvantages the poor in urban areas who would prefer to purchase grain from the market and send it to small, cheaper grinding mills. Evidence indicates that many of the urban and rural poor rely on these less expensive ways of procuring their maize meal as long as grain is available in local markets for purchase (Mwiinga et al. 2002; Mason et al. forthcoming). However, when the supply of grain in local markets tends to dry up, consumers are forced to switch to more expensive packaged maize meal, or to consume less altogether. Mwiinga et al. (2002) estimate that low-income urban households could save roughly 7-20% of their monthly income if they were able to purchase grain and mill it into mugaiwa at a local grinding mill, rather than relying on more expensive commercial alternatives .

Given the importance of maize purchases throughout rural areas, public policy and program efforts should pursue practical ways to strengthen traditional on-farm storage practices and techniques. Likewise, marketing extension training and orientation materials can help smallholders with possible surplus supplies to consider more profitable options, such as on-farm storage and later sales to rural market consumers.

3.3. Formal-informal Market Dichotomy

Zambia's agricultural sector is characterized by an inherent dichotomy in agricultural marketing, with smallholder traders facing an underdeveloped *informal* marketing system, and the more advanced large-scale traders and processers being part of a *formal* marketing system. While the formal system provides a broader set of risk management and mitigation mechanisms (such as commodity exchanges, forward contracting, and advanced storage technology), the informal sector, with which much of the smallholder farming community is associated, does not have such linkages. Improved access to these hedging facilities and linkages with local and international commodity exchanges can bolster agricultural marketing in Zambia. Some analysts contend that the future of smallholder farming depends upon integrating the informal sector with the formal sector (Jayne, Tembo, and Nijhoff 2005).

There is thus an urgent need to develop a more formalized approach for smallholder farmers, focusing on credible rural financial markets to improve trader capacity to absorb surplus production. Despite the negative connotations sometimes associated with private traders operating in Zambia, the majority are playing an important and growing role in fostering rural

market development. While the importance of access to credit in promoting improved farm technology is well recognized, the role of trader finance is also crucial. A major source of inelastic demand in traditional food markets is the constrained supply of trader finance (Coulter and Shepherd 1995 in Jayne et al. 2008). Market institutions such as warehouse receipt schemes can inject liquidity into grain marketing systems, thus allowing them to better absorb surplus production in good years. A warehouse receipt system can also help reduce inter-temporal price risks while maintaining crop quality. The development of these market institutions, however, depends on the existence of supportive government policies. So far, attempts to develop warehouse receipt systems and other innovative sources of trader finance in Zambia have floundered due to direct government operations in crop markets that have been incompatible with the development of these institutions. Decision-makers and analysts alike need to seriously consider alternative methods designed to facilitate the establishment of and smallholder participation in such systems.

3.4. Regional Trade and Comparative Advantage

When combined with broad-based public investments, both local and international trade can potentially increase market size and absorb excess production during very good production years. Trade can also provide a source for additional supplies during deficit periods. Trade can thus benefit the sector by increasing the elasticity of demand faced by smallholder farmers. Elastic demand leads to price stability, even in the presence of fluctuations in production.

In 1996, Southern African Development Community (SADC) member states adopted a trade protocol to provide a framework for reform measures that sought to liberalize intra-SADC trade and implement a mechanism for phased removals of tariff and non-tariff barriers. The Southern Africa Development Community – Trade Protocol (SADC-TP) aimed to secure expanded regional markets by (1) exploiting economies of scale, (2) providing attractive opportunities for foreign and domestic investments, (3) improving value-adding processes, (4) stimulating efficient operation of commodity and service markets, and (5) expanding exports and incomes. Zambia ratified the SADC-TP, which stipulates that member states are required to offer duty-free access to imports from the region. However, implementation of the protocol has remained erratic, particularly in the area of agricultural trade. Intra-SADC agricultural exports and imports have been characterized by disputes and safeguard measures. Commodity import bans have, for instance, sometimes been enacted when local producers have felt threatened. In Zambia, the government applies export bans and import quotas haphazardly, making it difficult for the private sector to develop informed and reliable expectations about the future. Within the country, trade is further constrained by restrictions limiting the movement of grain between districts.

Another challenge facing SADC-TP signatory states stems from varying production and marketing costs, which tend to disadvantage the less developed member states. Zambia has one of the most expensive production and marketing systems in the region. In 2001, the Zambia National Farmers Union estimated the cost of producing one ton of maize at about US$140 in Zambia, compared to US$110 and US$80 in Zimbabwe and South Africa respectively (ZNFU 2001). The average cost of transporting produce from farmers to markets was estimated at US$15.25/ton in Zambia, compared to US$6.50/ton in Zimbabwe and US$4/ton in South Africa. Countries such as Zambia often point to statistics like these when making arguments against further liberalization, arguing that locally produced products would suffer unfairly.

A recent study of SADC members covering several years (1996-2006) reveals that Zambia, on average, exports below potential to most trading partners. (Tembo and Jayne 2009). Improvements in Zambia's export flows due to the SADC-TP improved in trading with Malawi and South Africa, but actually worsened in trading with Angola and Botswana. The fact that Zambia has been underperforming suggests that either Zambia's agricultural production sector was not able to respond to the export opportunities created by the SADC-TP, or there existed impediments, policy or otherwise, to frictionless trade. In general, although some success has been achieved through regional integration efforts, many countries continue to practice protectionist policies. The success of free trade relies upon responsive infrastructure and institutions in and between the trading partner states.

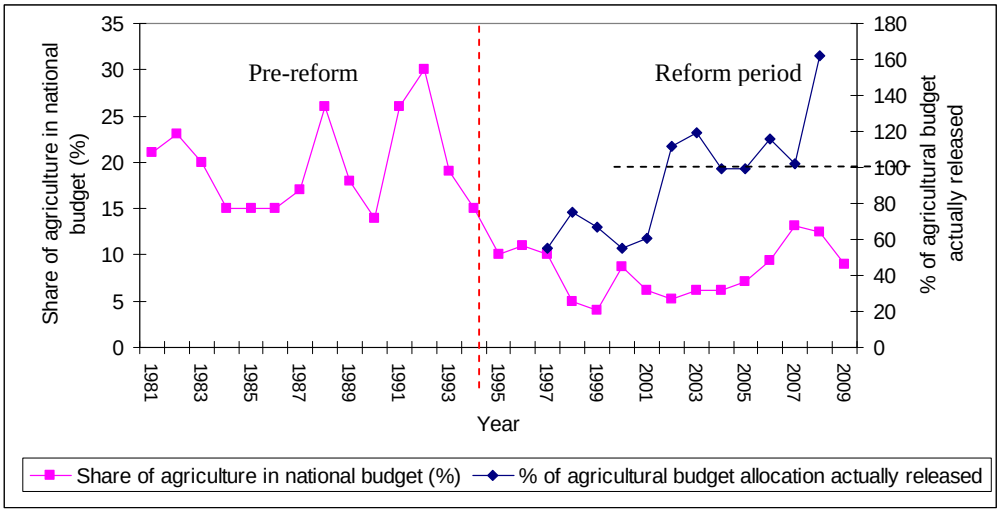
While variations in factor costs are often used to justify multilateral trade, several poor countries in the region have comparative disadvantages in most commodities, which in theory promote one-way trade. In the case of Zambia, one-way trading has been further fueled by trade policies that promote imports (through reduced tariffs), export restrictions and, in some cases, bans. There are two measures that can and should be adopted to correct the situation: deliberate public investment to improve production and marketing efficiency, and predictable, trade-enhancing policies. While it is important for Zambia to attain these, achievement of the full breadth of benefits from trade can only be achieved if trading partners also adopt trade-enhancing investment strategies and policies.

4. PUBLIC SECTOR SUPPORT AND ITS IMPACTS

Zambia, like many other countries in the region, is characterized by extended periods of under-investment in the agricultural sector. Many agricultural market failure problems in Africa reflect an under-provision of the public goods necessary to drive down the costs of marketing and contracting. Figure 3 shows trends in government commitment to agriculture (on the left axis) and the proportion of approved budget actually spent on the agricultural sector (right axis). The graph shows that although the government has allocated as much as 30% of total budget to agriculture in the past (1992), the proportion allocated has been both declining and variable. In recent years, agriculture's share has risen from 7.4% in 2000 to 12.5% in 2008. At the time of signing the Maputo Declaration in 2003, Zambia committed 6.1% of its national resources towards agriculture. This declaration committed Zambia agriculture's share of total expenditure to 10% by 2008. Following this declaration, Zambia's share of national resources going to agriculture has risen significantly and has surpassed the 10% target. Zambia is therefore in the company of a few African countries whose share of spending to agriculture is Comprehensive Africa Agriculture Development Programme (CAADP) compliant.[3]

Until 2002, the proportion of budgeted funds actually released has been highly variable, constituting a substantial source of unpredictability. Since 2003, however the government of Zambia has been more predictable and has taken measures to ensure the full allocation of budgeted funds. One can only hope that Zambia will neither slow down nor renege on future commitments. Despite high volumes of spending, however, the returns on these investments have been low; agriculture's contribution to the economy is not growing and rural poverty levels remain high. An investment analysis on Zambia by Thurlow et al. (2008) revealed that

Figure 3. Trends in the Share of Agriculture in the National Budget (1981-2009) and Proportion of Approved Funds Actually Released (1991-2008), Zambia



Source: Govereh et al. (2006) complemented by 2007- 2009 Estimates of Revenue and Expenditure, Ministry of Finance and National Planning (MFNP), GRZ

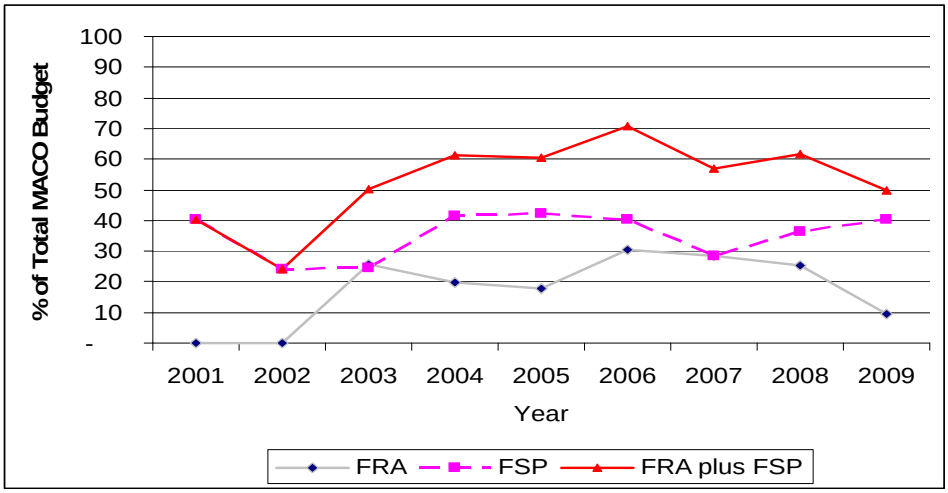
[3] The CAADP recommendation is that each government attains at least 10% budget allocation to agriculture by 2008.

the government will need to allocate 16% of its national spending to agriculture in order to achieve and sustain growth of 6% per year (Govereh et al. 2009), given current practices. Additionally, there remain problems with identifying highest priority and high payoff investments that will truly stimulate growth in the sector.

The distribution of the agricultural budget in the recent past has not placed enough emphasis on broad-based public investments. Most of the funds allocated to the sector over the years have been spent on the so called poverty-reduction programs (PRPs), with fertilizer subsidies (through the Fertilizer Support Program) and maize price stabilization (through the actions of the Food Reserve Agency) accounting for between 50-70% of the total budget over the last seven years (see Figure 4).

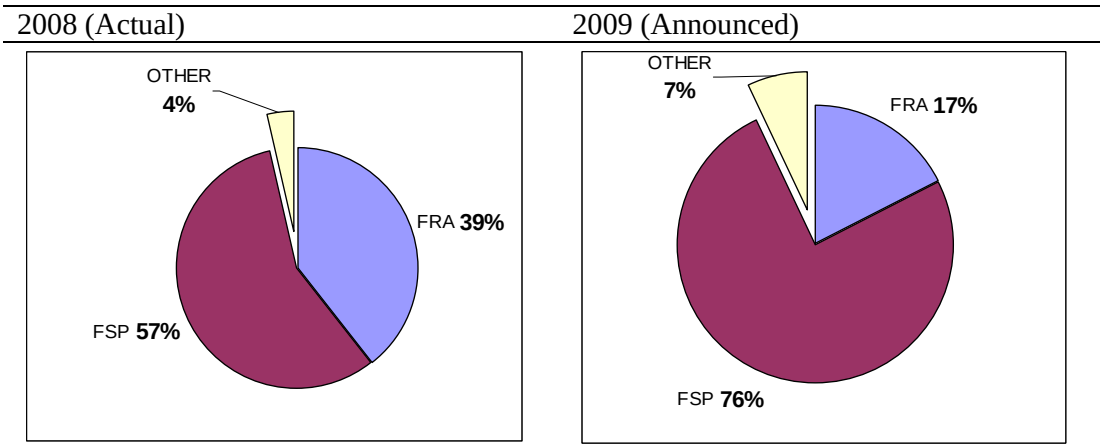
Figure 5 shows a trend of allocating significant percentages of the agricultural budget to the FSP and to the FRA. From 2008 to 2009, allocation to the FSP increased from 57% to 76%. This trend has prevented real agricultural growth drivers from obtaining severely needed resources. The agricultural sector has thus stagnated and poverty levels have been on the rise. Irrigation development as a means to mitigate drought and improve productivity, for example, has been high on the government's agenda for several years. However, very little actual spending has gone towards funding this objective. Similarly, research and development endeavors have almost ground to a halt due to lack of funds, adversely affecting and eroding the genetic advances and refinements in the adaptation of improved practices and technologies. Existing evidence based on empirical work by several scholars shows that sustained investment in crop science, extension programs, physical infrastructure, and supportive policy present the greatest payoffs (Govereh et al. 2006; Mellor 1976; Byerler and Eicher 1997; Alston et al. 2000; and Evenson 2001).

Figure 4. Proportion of Ministry of Agriculture and Cooperatives, Zambia (MACO) Budget Devoted to FRA and FSP (2001-2009), Zambia



Source: Chapoto and Weber 2009

Figure 5. Composition of Poverty Reduction Programs, 2008 and 2009



Source: Chapoto and Weber, 2009

The neglect of broad-based agricultural investments has increased the cost of doing business for the private sector. For example, while efforts have been made by the government to maintain major roads, most feeder roads have become increasingly impassable over the years. Similarly, storage facilities are either in a bad state or altogether unavailable to some of the market participants. Research and extension activities that used to support development and the diffusion of improved on-farm storage technologies have virtually disappeared in recent years. The exchange function of marketing is also not fully facilitated by existing institutions. Property rights and contract enforcement, for example, are almost non-existent, and are often delayed or denied by a very slow and expensive conflict resolution process.

Another consequence of poor marketing infrastructure and institutions is increased transaction costs. In the 2005/06 agricultural marketing season, it cost US$135 to transport a metric ton of maize grain from Johannesburg, South Africa, to Lusaka, accounting for as much as 35% of the landed cost. Similarly, high transaction costs are associated with intra-country trading.

4.1. Output Market

As has been discussed, food and agricultural policy in Zambia has, in recent years, involved the re-emergence of direct parastatal operations in the maize market, state restrictions on the private export of maize, and unpredictable changes in trade tariff rates, quantities traded, and prices offered and paid by the Food Reserve Agency. In 2006, for instance, the FRA nearly doubled the quantity of maize that it purchased from 200,000 metric tons (mt) the previous year to 386,000 mt (Table 1 in section 2). Ostensibly, these state activities have been in response to perceived failings of private trade to provide reliable markets and stable prices for smallholder farmers' surplus maize production (Jayne et al. 2009). In 2008's budget allocation, however, GRZ again moved to reduce the role of the FRA by lowering total intended purchases to 80,000 mt. For the 2009/10 marketing season, the Zambian press has already noted potential plans to again increase significantly the role of the FRA in smallholder maize procurement. Unfortunately, this oscillation is costly and often distorts the market.

In recent years, the government has also endeavored to stabilize prices by holding larger stocks of maize in reserves. In 2007, the FRA had 250,000 mt in carryover stock, the largest in its history. While issues of capacity are yet to be fully understood, managing large grain reserves is a costly venture involving rotation decisions and other stock management activities (Hannusch and Tembo 2004). If price stabilization is deemed to be a necessary government activity, the added complication of timing market entry and exit requires an in-depth understanding of the market. This entails frequent market studies, which Zambia, like many other poor countries, has yet to undertake. Enhancing the capacity of the Agricultural Market Information Centre (AMIC) and early warning systems (e.g., improved timeliness of crop forecast surveys, activities of the meteorological department) could help improve availability of timely market information.

4.2. Agricultural Growth

Even when growth strategies are agreed upon, implementation problems persist, indicating the presence of additional challenges that need to be addressed. The almost non-existent monitoring and evaluation mechanisms do little to discourage corruption and leakages. Additionally, fertilizer subsidies through the FSP, which have over the years become the mainstay of government policy, have restricted the government's energy and ability to undertake broad-based investments. Government involvement is thus subject to rent-seeking while also substituting for or crowding out private spending. Investments in public goods can result in returns up to six times higher than are currently being realized by the government (Haggblade 2007).

The lack of appropriate government efforts has led to growth that has been modest at best. Table 2 shows the relatively unimpressive performance of Zambia's smallholder agriculture. Between 1990 and 2005, crop output growth was negligible, growing at around one percent, and fell significantly short of the CAADP target of 6% per year. Smallholder maize output grew sluggishly, at rates that were similarly much lower than the CAADP maize target of 4.8% per annum. In fact, the only sub-sector that has grown close to expectations is cassava. Cotton and more recently groundnuts have seen improved performance but are still growing at rates below the desired targets.

Table 2. Growth Rates in Key Agricultural Indicators in Zambia, 1990 – 2006

Measure	1990 – 1994	1995 – 1999	2000-2005	1990 – 2005	CAADP 2015 Target
	(1)	(2)	(3)	(4)	(5)
	----------	----------	---------- %	----------	----------
Total crop value	-3.25	1.91	1.31	1.09	6.09
Maize	-0.50	0.66	1.62	0.49	4.84
Cassava	3.30	11.86	3.60	4.33	5.54
Groundnuts	-5.70	1.77	-0.53	2.96	5.35
Cotton	-8.17	-3.88	3.65	3.40	9.37
Crop productivity					
output per ha	-2.95	-0.75	1.42	-0.06	-
Output per HH	-4.76	0.27	0.77	-0.42	-
Area planted per HH	-1.81	1.02	-0.65	-0.36	-

Source: Reproduced from Govereh et al. (2009)

4.3. Agricultural Productivity

Zambia has spent over 1.4 trillion Kwacha over a period of seven years, providing subsidized fertilizer under the FSP. However, average maize yields have remained constant at 1.2 mt per hectare since the inception of the program (Chapoto and Weber 2009; Lungu and Weber 2009). Government resources are thus being used inefficiently, and a reevaluation of the FSP and other government activities may yield improved results. It is generally accepted that agricultural productivity growth is a pre-condition for sustainable poverty reduction and improved living standards in most of Sub-Saharan Africa. But the evidence suggests that Zambia is failing to achieve productivity increases in the agricultural sector. The challenge of improving farm productivity appears to have a straightforward solution: use the power of crop science to generate improved farm technologies, put them into the hands of small farmers, and provide them with the knowledge to get the most out of these technologies. Over the past several decades, however, several highly committed and well-funded efforts to kick-start such green revolutions in Zambia have been thwarted by their inability to anticipate and address downstream issues of marketing and governance (Jayne et al. 2009).

Stakeholders have frequently complained about the way the FSP is run and have been calling for changes to the program for a long time. However, such changes alone may not remedy the problem, unless the shortcomings in production and marketing programs are simultaneously addressed. For example, training farmers using extension workers and agro-dealers to raise farm productivity may be important. Relevant issues such as proper farm management, correct use of inputs, conservation farming, and post harvest concerns must also be addressed. The MACO/ACF/FSRP coalition sponsored an FSP Reform Study Tour in January of 2009. The results from this study suggest that major reforms to the FSP towards focusing on farmer training as well as improved input access through an upgraded agro-dealer network (ACF 2009).

As the Sasakawa/Global-2000 programs have demonstrated, it is possible for farmers to use improved seed and fertilizer which, with management advice, can lead to impressive yet temporary yield gains by small farmers. But once such programs are withdrawn, several questions remain: how will farmers continue to acquire the improved seed and fertilizer? Who will supply these critical inputs to them, and how will farmers acquire the financing and credit needed to afford these inputs? Who will be responsible for the system-wide coordination of food value chains, so as to ensure that important public and private investments are made to effectively link farmers to the wholesalers, processors, retailers and

Table 3. Trends in Maize Yields, 1999/00 – 2007/08

Quintiles of maize yield	Maize yield	
	1999/00[a]	2007/08[b]
	(1)	(2)
	---------- kg/ha ----------	
1- Low	422	62.79
2	858	416
3-Mid	1373	898
4-	2060	1630
5-High	3605	3388
National	1373	1265

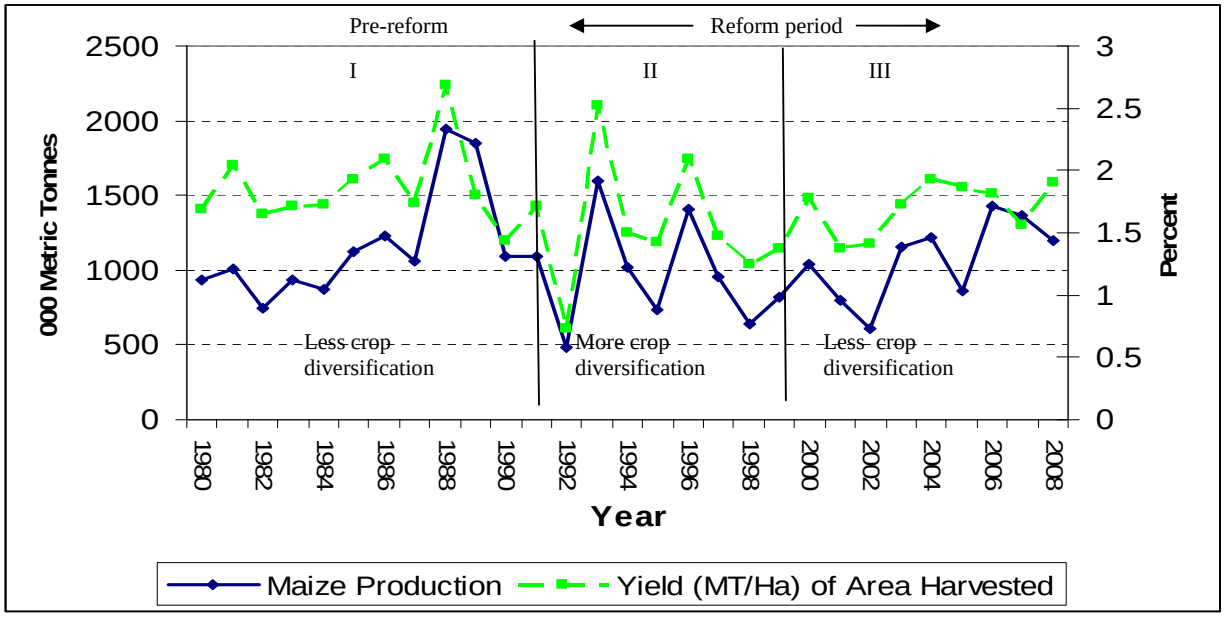
[a]Based on 1999/00 PHS and 2001 supplemental survey to the 1999/00 PHS
[b]Based on data from the 2007/08 CFS

ultimately the consumer? These questions need to be answered as Zambia endeavors to formulate a successful and sustainable approach to stimulating additional fertilizer use among small and medium-scale farmers. Resources are limited and the FSP, even in a reformed format, cannot exist indefinitely.

Figure 6 shows historical trends in agricultural productivity, which demonstrate that, as mentioned earlier, government policies were relatively successful up until the 1980s. However, since the market reforms of 1991 a decline in absolute maize production in Zambia has been witnessed. The implementation of food market reforms meant the removal of fertilizer subsidies, the abolishment of pan-territorial pricing, and the closure of maize collection depots in remote areas. Smallholder farmers responsible for the bulk of the maize production were too poor to afford non-subsidized fertilizers and, hence, diversified into other crops, thereby decreasing total maize output. However, the overall reduction in subsidies to support maize production and consumption appear to have caused important shifts in cropping patterns. Over the 12-year period between the 1990/91 and 2002/03 seasons, the share of maize in total smallholder crop output declined from 76% to 55%. Supported by non-governmental organizations (NGOs) and public investments in research during the 1980s through the 1990s, cassava production rose from 10% to 26%, largely replacing maize in parts of northern Zambia, where it had been grown prior to the introduction of maize marketing and fertilizer subsidies (Govereh, Jayne, and Chapoto 2008). Additionally, seed cotton's share has risen from 3% to 6% during the same time period (Zulu, Jayne, and Beaver 2006; Jayne, Myers, and Nyoro 2006). Unfortunately, this trend and gains from crop diversification are now being stifled because the government is again moving towards heavy subsidization of maize production and marketing.

Another issue affecting productivity levels is the discrepancy between maize planted and total harvests. Table 4 shows that only 55% - 80% of the total maize area planted by smallholder farmers is actually harvested in Zambia (Table 4, column C). This ranged from a low of

Figure 6. Maize Production and Yield Trend, 1961 to 2008



Source: Food and Agricultural Organization (FAO) stats up to 2006, complemented by Zambia CFS surveys 2007 and 2008

Table 4. Comparison of Area Planted and Harvested

	Maize growing smallholder farmers		% Area planted that was harvested among maize growing households		
	Maize area planted (ha)	Maize area harvested	All smallholder households	Using fertilizer	Not using fertilizer
	(A)	(B)	(C)	(A)	(B)
2000/01	533,279	417,892	78.4	84.1	76.1
2001/02	514,502	357,657	69.5	77.3	66.0
2002/03	627,529	476,493	75.9	80.4	72.6
2003/04	589,036	490,939	83.3	86.9	80.6
2004/05	750,351	379,959	50.6	53.1	49.1
2005/06	731,900	567,097	77.5	86.2	71.2
2006/07	824,247	541,362	65.7	76.0	57.7
2007/08	877,300	504,568	57.5	63.7	52.2

Source: Zambia CFS surveys, various years

50.6% in 2004/05 (a drought year) to 83% in 2003/04. Smaller farms (0-5 hectares) tend to have a slightly better harvesting record when compared to medium-scale farm holders (5-20 hectares), but both categories of smallholders face considerable unharvested areas.

A comparison between maize growers who use fertilizer and those who do not shows that the percentage of planted maize that was harvested is higher among fertilizer users (ranging from 65% - 90% versus 50% - 80%) Overall, the amount of cultivated land area not harvested by smallholders in Zambia is highly variable, but even in the best years, the loss of resources and smallholder labor is quite significant. More analysis is needed to understand this problem and identify practical ways to increase significantly the effective use of area planted.

5. NEED TO MATCH STATED PRIORITIES WITH IMPLEMENTATION

The ability of an agricultural sector to sustain broad-based, pro-poor development and food security is intricately linked to the stated priorities and actions of the public sector. In Zambia, stated policy priorities do tend to exhibit a desire for sustained agricultural development. The goal of the current policy thrust, for example, revolves around diversification, improved productivity, and income growth. The private sector is at the core of government policy which states as its key objectives: (i) the reduction of production and marketing distortions on maize, (ii) the expansion of domestic utilization of local products, and (iii) the improvement of product competitiveness in regional markets.

However, due to frequent policy reversals and changing government mandates, the policy environment is often uncertain. Survey evidence suggests that traders perceive the agricultural input policy environment as especially unpredictable and subject to change.[4] As long as government involvement in input distribution and output purchasing remains unpredictable, the private sector will not fully apply itself. The perceived threat of government re-entry into the market ranks among the major sources of risk for future investment (Wanzala et al. 2002; Govereh et al. 2002). Politicians' statements about private sector behavior and the need for government re-entry into markets have been a relatively neglected variable in the analyses of private sector responses to reforms (Mwanaumo 1999).

Government behavior can adversely affect private sector decisions, and this is particularly evident in marketing functions that require big initial investments, such as long-distance transport, wholesaling, inter-seasonal storage, and fertilizer importation (Barrett 1997; Stepanek 1999). Much of the limited investment of this type has been by larger, foreign-based firms with diversified portfolios that can afford to take risks (Govereh et al. 2002). For marketing functions requiring smaller capital outlays, such as retailing, assembly, and grain milling, private sector investment response has been less affected by longer-term policy uncertainty (Barrett 1997).

There is widespread agreement that the food marketing policy environment in the region has not effectively supported agricultural productivity growth for millions of small farmers for several years. Many governments remain important players in their maize markets, both through direct procurement and sale operations, and through the use of discretionary trade policy. Though the quantities they trade are smaller than during the controlled market era, marketing boards are still a major presence in maize markets, handling between 20-50% of total marketed volumes. Many countries in the region also continue to implement various food price stabilization programs. Government actions in the maize market have become increasingly reactive and short-term in nature, subject to unannounced policy changes that create major risks for private investment (Nijhoff et al. 2002; Rubey 2004).

Such uncertainty will translate into wide swings in both supply and price. In 2003, for example, Zambia experienced unwarranted price spikes due to the fact that the government announced that it would import 200,000 mt of grain and channel it to a few large scale millers. When this could not be attained within the stated timeframe, prices of maize and mealie meal rose way above their usual norm. This happened because the private sector sat back for fear of suffering losses if they invested in procuring maize. Similarly in 2005, Zambia also experienced an unbearable maize and maize meal price hike because of

[4] Sachs and Warner (1995) conclude that Africa is the only region of the world in which the degree of openness has not significantly increased during the past two decades.

government's failure to implement it's intentions to import maize. In addition, the government announced very restrictive sanitary and phytosanitary requirements discouraging private sector imports. The private sector did little and, instead, waited for the government to deliver the promised imports. Due to the year-long wait coupled with seasonality aspects and increases in transportation costs, the landed cost of the imported maize went up by 66% to US$320 from what it could have been without the government-created uncertainties (US$210).

The 2008/09 marketing season provides another telling example, and it began with official government estimates that the 2008 maize harvest would be slightly below that of recent years, but would still provide a small surplus over national consumption requirements. The FRA announced a buying price of 45,000 kwacha/ton (roughly US$260/ton) and continued the ban on private exportation.[5] Because of nervousness in the markets related to high world food prices, private millers and traders started aggressively buying maize at prices higher than the FRA floor price. The FRA responded by raising its buying price to 55,000 kwacha (US$304) per ton in an attempt to procure its target supplies. Repeated aggressive buying attempts by both private traders and the government pushed prices up quickly after the 2008 harvest. Upward pressure on market prices has been compounded by perceptions that food balance sheet estimates are likely to have underestimated the demand for maize. Several key informants interviewed in September 2008, for example, indicate that official food balance sheets underestimated the demand for maize from the animal feed industry, the likely substitution in consumption from wheat to maize, and the demand for maize in the Democratic Republic of Congo (DRC) and Malawi through informal trade channels.

In June 2008, the Grain Traders Association of Zambia (GTAZ) informed the Ministry of Agriculture that roughly 200,000 tons of maize was needed to fill residual consumption requirements in early 2009. Private traders were free to import on their own volition, but feared that the government may import as well and then subsidize the sale price to millers, effectively undermining the market for their own imported grain. In an attempt to ameliorate the situation, the GTAZ sought to sign a memorandum of understanding with the government that would have allowed them to import a given quantity without threat of simultaneous government importation. The government refused such an agreement, claiming that even if the private sector imports sufficient quantities to meet domestic demand, the price levels obtained may be intolerably high and wanted to retain the right to influence maize prices in the country.

As of November 2008, neither the government nor the private sector had arranged to import maize. The maize price surface in Zambia quickly rose toward import parity from South Africa. By December, retail maize prices were in the range of US$350 to US$400 per ton compared to US$176 per ton on the SAFEX exchange.

In December 2008, the government concluded that imports were necessary and arranged for over 100,000 tons of maize to be imported from South Africa. However, after a stock audit exercise by Ministry of Agriculture and Cooperatives (MACO) and the promise by government to subsidize mealie meal, the import requirements were revised downwards to 35, 000 mt, as millers, traders and other market participants had under declared their stocks. Unfortunately, the market prices at the time did not suggest that there was enough grain to

[5] More technically, the government effectively bans exports by not issuing export permits, which are required for legal trade of maize across borders. This stops the larger grain traders from exporting. Small-volume informal trade tends to take place without export permits, but this raises opportunities for border police to extract rents from traders, raising the costs of trade.

take the country through the hunger period. Those with maize stocks were holding expensive grain given what had transpired earlier in the season where both private buyers and FRA bid up the price. The high domestic food prices could have been avoided were it not for the difficulties between the public and private sector in agreeing on modalities for importation.

With limited success, the government tried to control maize meal prices by subsidizing the price of maize paid by selected millers below market levels and then requiring millers to pass along lower maize meal prices to consumers. Despite this, grain and mealie meal prices remained high, and the government ended the maize grain subsidy by March 2009. In hindsight, there were at least five problems with how the government tried to react to the problem of rising grain prices especially in the Copperbelt. First, the overall quantities provided to millers were not sufficient to satisfy consumer demand, causing prices to remain high. Not all millers were able to access the cheaper maize provided by the FRA and thus could not reduce their price. Secondly, that only a small proportion of the registered millers in the country managed to receive subsidized grain from the FRA led to questions about how recipient millers were selected, as well as competition concerns from non-recipient millers. The government subsidy program encouraged non-competitive tendencies in the maize marketing sector, and it is likely that the government will remain a cash cow for selected millers as long as the Treasury is willing to pay. Other market players might also try to lobby to have a piece of the pie, increasing further the burden on tax payers. The subsidy also encouraged smuggling of both grain and mealie meal to neighboring countries, especially Congo and Zimbabwe. High policing costs and increases in corruption levels call for law enforcement agencies and border communities to be cautious. Given all these problems, one can conclude that treasury payments intended to subsidize maize meal prices are frequently not transmitted to consumers and that government intentions to help lower the prices for poor consumers have largely gone to waste.

6. DO FARMER ORGANIZATIONS HAVE A ROLE?

Farmer organizations have become increasingly important in recent years as a means to achieve farmer empowerment and agricultural development (United Nations 1993).[6] A workshop in Nairobi, organized by the FAO and the International Cooperative Alliance (ICA) have identified the need to develop synergies among the public sector, the private sector and civil society as a means to strengthen local level collective action (Bingen and Rouse 2002).

6.1. Experience with Farmer Groups

Many African countries make use of farmer organizations as a vehicle for empowering smallholder farmers towards the acquisition of productive services and goods. The latest wave of collective action came with the 1990s push towards liberalization and the devolution of social, political and economic power to the grassroots level. Institutions and legal frameworks have been reoriented to formalize and support the formation of primary societies. In Zambia, farmer organizations are supported by three Acts: the 1998 Cooperative Societies Act (primary cooperatives), the Societies Act (all society types, including unions, clubs, and churches), and the Registration of Business Names Act (businesses and companies).[7]

The government has continued to be active in service provision, alongside private and non-governmental initiatives. Thus, in practice, three types of farmer organizations have emerged: i) those supported by NGOs; ii) those supported by private firms; and iii) those formed to gain access to subsidized inputs through government programs. There is a need to further understand the effects of these public and private sector initiatives on smallholder access to agricultural services and their ability to exploit economic opportunities. The characteristics of these different types of farmer groups seem to suggest that they are typically formed to attain differing objectives (Table 5). NGOs, for example, facilitate formation of farmer organizations to help the most disadvantaged members of rural communities. Members of NGO-supported groups have less than half the income of those in the other two types of farmer organizations. Also, only one percent of NGO farmer organizations have access to credit, compared to 5% and 8% for private and government farmer organizations.

Table 5. Types and Attributes of Farmer Organizations in Zambia

	Type of farmer organizations		
Attribute	NGO-supported	Outgrower/Private supported	Government initiated
	(1)	(2)	(3)
Legal status	NR	NR	R
Income levels of members (US$ per capita)	25	55	51
Access to credit (%)	1	5	8
Education of household head (years)	6	5	5
Female-headed households (%)	14	16	10

NR=Most not registered; R = Registration is a requirement
Source: Bingen et al. (2002)

[6] A farmer organization is a local grouping of farmers established to attain a common set of objectives.
[7] See Chapters 397, 119 and 389 of the Laws of Zambia for details.

In the 1999/00 agricultural season, 20% of all farmers had access to fertilizer. Within this group, 65% was attained and handled by the private sector. Post-harvest survey data showed that most of the recipients of these inputs were better-off farmers with higher farm and non-farm incomes, larger pieces of land, and more educated household heads. Such households tended to have at least one member in the civil service. Only NGOs seemed to cater to the needs of the less well-off farmers.

Since the creation of the Agricultural Sector Investment Program (ASIP), the government has been encouraging private companies and governmental and non-governmental organizations to establish and assist smallholder groups. It is a requirement, for example, for all recipients of fertilizer subsidies through the FSP to be members of registered farmer cooperatives. In most cases, district agricultural offices have shown considerable support for the operations of farmer groups, including incorporating smallholder representation on the District Agricultural Coordinating Committees (DACs). The recent change in the name of the agriculture ministry to the Ministry of Agriculture and Cooperatives[8] seems to indicate the government's desire to see farmer organizations play a greater role as agents for agricultural services improvements.

Since the onset of these reforms, most NGOs and other donor-supported projects have facilitated the formation of groups through which they render their services to communities.[9] Private companies, on the other hand, tend to use contract farmers and established distributor systems. However, unlike government-supported cooperatives and their NGO counterparts, these private players have been less critical about the legal standing of their groupings. In fact, almost all private sector initiated farmer groups are not legally registered.

Although in some cases government agents have facilitated community empowerment efforts, such action is not adequately institutionalized. Often, farmers have had to rely on donor-support through NGOs, which provide capacity-building support either directly to the farmer organizations (e.g., Cooperative League of the U.S.A. (CLUSA)) or indirectly by training local agricultural staff (e.g., Economic Expansion in Outlying Areas (EEOA) in Mpika).

6.2. Opportunities for Group Empowerment

In Zambia, most of the successful farmer groups have a strong local leader (Bingen et al. 2002). Thus, there is need to identify, nurture and make use of the leadership capabilities and skills present in local communities. Such efforts need to be complemented by the strengthening and empowering of local planning bodies - farmer groups, local agricultural staff, etc. While NGOs may be effective at facilitating group formation, they often cannot ensure sustainability. Most NGO initiatives collapse as soon as the external supporting agency decides to withdraw support.

A key ingredient to effective collective action is a recognition of the existing social capital and investing in further strengthening such capital. Grootaert, Oh, and Swamy (2002) define social capital as "…the institutions, relationships, attitudes and values that govern interactions between people and contribute to social and economic development." It is *structural* (networks, associations, institutions, rules and procedures) as well as *cognitive*

[8] Formerly Ministry of Agriculture, Food and Fisheries (MAFF)
[9] Examples include Farmer Research Groups (FRGs) by the provincial Adaptive Research Planning Teams (ARPT), Farmer Extension Groups (FEGs) by Cooperative League of the U.S.A. (CLUSA), Farmer Field Schools (FFSs) by the Zambia National Farmers' Union (ZNFU), etc.

(attitudes, norms, shared values, reciprocity and trust, and governance) in nature (Uphoff 2000). Farmer organizations are diverse in nature and emerge for a variety of reasons, such as production (access to factors of production), marketing (bulking up, market discovery, etc.), and consumption (Heemskerk and Wennink 2004). This inherent diversity demonstrates the need for strong synergies among the public sector, private sector, and civil society. Thus, contrary to the currently existing populist reform rhetoric, the government must become fully engaged in the process of institutional change (Bingen and Rouse 2002).

Even where group action exists, there are significant incentive problems and issues of ownership benefits (free-rider problems, etc.). The new generation cooperatives (NGC) are a recent innovation to try and correct the imbalances in incentive structures. Specifically, NGCs seek to guarantee property rights through clearly defined membership policies, ensuring a secondary market for members' residual claims, imposing patronage and residual claimant status restrictions, and providing enforceable member pre-commitment mechanisms (Cook and Iliopoulos 1999; Menard 2000; Kotov 2001; Waner 2001). While these innovations to collective action seem to be working well in developed countries, their direct applicability to developing countries is not immediately guaranteed. A lot of investment in support infrastructure and institutions, for example, is a must and is unlikely to be achieved in the short term. However, it is important to start thinking about these natural experiments and how they can be adapted to Zambia's specific circumstances. The need for public leadership in establishing effective institutional innovations cannot be over-emphasized; nor can the need to adapt to different socio-economic conditions.

6.3. Collective Action and Transaction Costs

Cooperatives and other forms of farmer organizations have the potential to reduce transaction costs by facilitating the bulking up of both agricultural inputs and output. Most agricultural production originates from smallholder farms, which are geographically scattered and tend to produce very small surpluses. Under such circumstances, and due to inherently high fixed costs, market participants have to incur high costs in the absence of such cooperatives. Increasing returns to marketing are not always guaranteed, however, and their existence is a function of the level of market development, as well as other market-specific characteristics.

Emran and Shilpi (2002) identify three stages of market development that can affect the success of cooperatives in reducing transaction costs. In the first stage, surpluses are virtually non-existent, the local market has no link with the outside world, and market clearing occurs at the local level. Under such circumstances, bulking up will lead to lower producer prices due to standard local-level supply and demand relationships. Increased supply when demand is fixed or inelastic has to be matched with a reduction in the market price if the market is to clear. In the second and third stages, the market is developed somewhat and is linked to long-distance trade with urban markets through traders. In this case, the price in urban markets will play a role in the determination of local price. The exact price received by farmers in the local market will depend on the magnitude of marketing costs between the farmer and the urban market. Thus, reducing transaction costs through bulking can lead to pecuniary gains to farmers while motivating them to produce more.

In the second stage, the surpluses of the single commodity of interest (e.g., maize) are not enough by themselves to guarantee such efficiency gains, to the extent that the trader has to bulk up the surpluses of the commodity of interest with surpluses of all other commodities that s/he can get in the community. In this case, the cooperative movement has to be designed

to handle multiple commodities (e.g., maize with sorghum, millet, cotton, etc.). In the third and most developed stage, the community produces enough of the commodity of interest to warrant commodity-wise specialization. In this case, there will be no gain in trying to set up cooperatives that can handle multiple commodities. A recent study showed that there are potential gains from bulking up in the Zambian maize market and that no such gains could be realized from combining maize with other agricultural commodities (Tembo and Jayne 2007).

7. CONCLUSIONS AND POLICY IMPLICATIONS

This paper uses existing empirical evidence to explain the dismal performance of the maize sub-sector and to help inform options for possible corrective measures. Contrary to conventional wisdom, the evidence suggests that the observed trends are not due entirely to failed reforms. In fact, the GRZ has been heavily involved in direct participation in maize and input markets over the past decade, both through the operations of the FRA, through the FSP, and through tight controls on private trade through selective issuing of import and export licenses. Hence an empirical assessment of the country's performance since the 1990s reflects not the impacts of unfettered and sharply encouraged market forces but rather the mixed policy environment of legalized private trade within the context of continued strong government operations in maize markets. Moreover, the country's mixed performance reflects a number of other factors, ranging from failure to appreciate the smallholder production and marketing sector's unique structural characteristics to historical under-investment in broad-based, cost-reducing, infrastructure and institutions, and unpredictable and *ad hoc* trade policy actions.

We identify seven major areas that need serious attention to help the agricultural sector and agricultural marketing function better:

First, serious efforts to encourage market development and to ameliorate market failure are likely to require an increased commitment to investment in public goods (e.g., road, rail and port infrastructure, research and development, agricultural extension systems, market information systems) and institutional change in order to promote the functioning of market-oriented trading systems. The government needs to prioritize investments in market infrastructure and institutions over private goods and services, as public investment has greater potential to sustain broad-based agricultural growth. This policy would thus require a shift of focus from the fertilizer subsidies and price support systems currently in place to the development of cost-reducing infrastructure. However, care should be taken to focus on infrastructure with a high social payoff, which can be identified through carefully designed cost-benefit analysis.

Second, policy discussions and subsequent decisions need to account for the fact that actual budgetary allocations often differ in significant ways from planned disbursements. Monitoring systems designed to increase budgeting transparency and accountability might provide a method to reduce or eliminate such differences.

Third, in the mixed policy environment, the government co-exists with the private sector as an unfairly large competitor, and this hinders the development of the agricultural sector. While total government withdrawal from the market may not be a realistic or even helpful option, the government should avoid crowding out private sector participation, and should instead seek to facilitate market growth. If, however, the government insists on participating directly in agricultural markets, it should be clear about its intentions to ensure predictability.

Fourth, there is evidence that restricting trade by using discretionary policies such as export bans, import tariffs, and grain levies tends to hurt the market's ability to deliver food security for all. More empirical evidence on potential alternatives that can avoid these negative effects is required. Recent evidence has, for example, demonstrated that non-tariff impediments to trade exist between Zambia and SADC regional counterparts. An understanding of these

impediments and how to avoid them might greatly enhance the government's capacity to implement effective policy.

Fifth, farmer organizations are generally recognized as valuable instruments for attaining smallholder agricultural development. Because of the inherent diversity in the conditions and needs of these groups, however, no single size organizational mode can be prescribed. Fostering collective action therefore requires an understanding of the varied needs of the clientele and their available social capital, and the coordination of mutually re-enforcing investments by the private sector, the public sector and the civil society. Because of the public good nature of some important investments such as in contracts, technology, and process, the government can actually play a leading role in the desired institutional change. This is contrary to traditional thinking regarding such organizations, which seems to advocate disengagement and a *laissez-faire* approach. Property rights assurance is also generally recognized as an important ingredient to sustainable collective action. Again, the need for public leadership in spearheading and coordinating investments in the relevant support institutions cannot be over-emphasized. Can Zambia, and other developing countries, learn from the successes achieved by American agricultural producers with the new generations approach to collective action? Although it is not immediately possible to adopt new generation cooperatives, it is worth thinking about such options for the long run.

Sixth, farmer organizations also have potential to make marketing cheaper. While the Tembo and Jayne (2007) study looked at the maize market, there is need to establish the effectiveness of the cooperative movement in other value chains. The cotton sector, for example, has established its own version of collective action and collective responsibility, established with very limited public facilitation or involvement.

Last but not least, in discussing agricultural marketing policy and how it might impact the sector, it is also important to understand the participants and their abilities to respond. A clear understanding of the composition and structure of the small and medium-scale farming community needs to be fully integrated into any efforts to enhance market participation. This will better enable the government to anticipate potential effects of alternative policy actions. There is need for more research to continually monitor the likely impacts of alternative public actions and policies on the target groups, paying particular attention to their varied characteristics, opportunities and constraints. One-size-fits-all policies have, in the past, been shown to be ineffective

APPENDIX TABLE

Table A1. Chronology of Maize Marketing and Trade Policy Changes, 1990-2007

prior to 1990	• Importation, distribution, and pricing of maize handled by government marketing agency, NAMBOARD. Pan-territorial and pan-seasonal maize producer prices encourage production, especially in remote areas. Government regulations prohibited private maize trade across districts. NAMBOARD maize operations and allied credit for maize inputs accounted for 15% of government budget in the late 1980s, contributing to macro-economic crisis.
1991/92	• Economic Structural Adjustment Program initiated 1991. Donors provide balance of payments support for fertilizer importation. Private trade legalized. • NAMBOARD abolished in 1990, but fertilizer and credit marketing functions transferred to other state agencies (Nitrogen Chemicals of Zambia (NCZ), CLUSA, LIMA Bank and ZCF using a network of state-affiliated cooperatives).
1992/93	• Government removes import and export restrictions and liberalizes foreign exchange market. • Maize meal subsidies reduced in late 1991. However, severe drought delays maize market reform. • Government sets floor price, into-mill, and consumer price of maize
1993/94	• Government appoints rural banks and coops as buying agents for maize. • Government unable to maintain maize floor price. • Late arrival of food aid from prior year disrupts maize market. • Sharply appreciating Kwacha discourages maize exports. • Escalating interest rates dampen private sector interest in buying and storing maize.
1994/95	• Government announces total decontrol of maize producer prices and elimination of transport subsidies. But they also refer to pending floor prices. • Value added Tax (VAT) introduced and maize and maize meal classified as “exempt”. • Politicians announce into-mill prices to allay consumer fears. • Government states its intention to end buying agent system. But they continue to provide credit to cooperatives and rural financial institutions to help collect loans from farmers. • Privatization of state-owned milling companies.
1995/96	• First season where government refrains from announcing any prices and private sector plays dominant role in input and commodity marketing. • Real maize prices begin to rise. Government imposes an export ban on maize grain and maize meal. • Maize and maize meal VAT changed from “exempt rating” to “zero-rated”. • Government begins leasing many storage warehouses to private traders and transporters. • Formulation of the Agricultural Sector investment Program (ASIP), a tool for implementing the government policy of maize market liberalization and market reform, 1994. • Food Reserve Agency (FRA) established to manage the national food reserve.
1997/98	• Food Reserve Agency takes over maize input distribution on credit to smallholders. • Donors cease financing of fertilizer imports. • Pan-territorial pricing re-introduced for FRA-distributed fertilizer; makes private sector fertilizer uncompetitive in outlying areas. • Maize imported by government and sold to selected millers at US$160 per ton, 30% below prevailing market prices.
2001/02	• July 2001 food balance sheet estimates 200,000 tons import requirement for maize. Import requirements are revised upward by some government statements to 400,000 mt. • August 2001 GRZ announces intention to arrange import of 200,000 mt maize at subsidized prices. GRZ tenders to select importers, maize to be delivered October 2001 through April 2002. • Private traders do not import, despite high domestic prices, because of fear of being undercut by subsidized government imports. • Maize and maize meal VAT is zero rated, but export permits are not issued, effectively banning legal private export of maize. • Government financing of imports is delayed. Starting November 2001, food shortages emerge and prices rise well above Cost, Insurance and Freight (CIF) price level. • Most government maize imports didn’t arrive until December 2001 and January 2002 because of financing difficulties. CIF price reach US$220 to US$260, far above import parity. • By May 2002, only 130,000 had been imported under government program. • Sales at subsidized price of US$160 per ton into mills. Selected millers receive subsidy of US$70 to US$100 per ton of maize purchased. • Government proposes the Crop Marketing Authority (CMA) as a semi-autonomous body corporate, a buyer of last resort whose main preoccupation is to stabilize prices and create markets in remote areas while procuring and selling at market prices and remaining self-sustaining.

Table A2 con't.

2002/03	• Millers' purchases of maize from the 2002 maize harvest are depressed by the availability of subsidized imported maize from the preceding drought year. • Government pressure on the millers to keep the maize meal price low constrains demand for locally produced maize, which is available at relatively high prices due to poor harvest season. • The food balance sheet estimated that the 2002 harvest would lead to a food deficit of 600,000 tons. Consequently, an abnormally early price increase was observed in June 2002. Traders began to buy up maize in anticipation of further price increases based on the experiences of the 2001/2002 marketing season. • Government entered into a *Memorandum of Understanding* with the millers to import 300,000 mt, government to import 180,000 mt as food relief and 120,000 mt as reserves. • The flow of imports was, however, slow because of a ban on genetically modified organism (GMO) maize. Relief operators had to revisit their pipeline in order to supply non-GMO maize.
2003/04	• Relatively good maize harvest. Maize and maize meal zero rated for VAT purposes. • Government imports in response to the 2002 harvest were late in arriving, some only arriving as the 2003 harvest was being offered for sale. Several thousand tons of maize imports costing as much as US$270/ton were arriving in Zambia as farmers were offering their new crop at prices below US$ 180/ton. This scenario fueled *mutual mistrust between government and private sector in the maize market.* • Export permits not issued, effectively banning maize exports. • Government legislation gives powers to local authorities to introduce local taxes. Inter-district grain levies put in place. In some districts, taxes on maize amount to roughly 10% of the price received by farmers for maize. These taxes indirectly impede the profitability of commercialized production.
2004	• Maize and maize meal VAT status changes to "exempt" • Government raises maize import duty to 15%. • MACO sets up task force to provide planning guidelines for the establishment of the proposed Crop Marketing Authority (CMA). • Millers lobbied for a lifting on the export ban on maize, in order to maintain demand and remunerative producer prices for maize farmers. • Government issues export permits to selected trading/milling firms. • Ministry of Agriculture and the Zambian National Farmers' Union requests for an Agricultural Marketing Development Plan to be drawn, to structure MACO's agricultural marketing policies and programs.
2005	• National Food Balance Sheet presented to government showing an import requirement of 85,000 mt, but private sector estimates are 150,000 tons. • Millers request import permits from MACO and duty waiver from MFNP • In September, MACO announces a temporary waiver of import duty and issues import permits for 150,000 tons to millers and 50,000 tons to FRA. FRA purchases 120,000 mt from domestic market at above market prices in deficit year. • MFNP refuses to waive the import duty • After heavy lobbying by all the stakeholders, MFNP agrees in late October to waive duty; MACO issues import permits • Millers begin to contract for imports. • FRA releases 50,000 tons of maize at US$210/ton in December, undercutting importers (CIF import price stands at US$266-287); • MACO advised private sector to stop importing because they are failing to comply with new phytosanitary regulations. • President Mwanawasa declares a national disaster at the request of Parliament. • Mt. Makulu issues phytosanitary clearance; permits imports to resume after a four-week delay. • President Mwanawasa announces that millers should lower maize prices significantly due to the abrupt strengthening of the Kwacha (up 26% in two weeks). Stakeholders meet with MACO to discuss the maize situation • Import duty waiver extended to 31st March
2006	• Good harvest. FRA instructed to purchase 386,000 tons of maize at US$190 per ton to support maize prices. • FRA price attract maize from Mozambique and Tanzania supplied by traders • FRA allocated ZK150 billion and borrowed ZK150 billion but prospects of selling at a loss puts doubt on ability to repay the loan independent of subventions from the Treasury • Government restricts export permits to traders and provides FRA with de facto monopoly on the export of maize; some traders and farmers allowed to use FRA export permit later in the season.

	Table A2 con't. • FRA has difficulty selling the maize in local markets due to good harvest and because of the above-market prices at which they purchased. • Maize stock monitoring committee put in place to report on stocks monthly. MACO's rationale is to guarantee national reserves before issuing export permit and to supply maize meal at affordable prices.
2007	• 250,000 tons FRA carryover stock largest in FRA history • FRA sought government approval to dispose of its old stock below the breakeven price by exporting to Zimbabwe at a loss. • FRA targets to purchase record crop of 400,000 tons by increased depots to 620 in 62 districts – 10 satellite depots per district and 62 holding depots. • Target for strategic reserves revised from 80,000 tons to 200,000tons • FRA to pay ZK39000 per 50kg bag and continues to attract maize from Tanzania and Mozambique • Minister of Agriculture and Cooperative issues statement to begin allocation of export quotas to associations Millers Association of Zambia (MAZ), ZNFU and GTAZ only • FRA issued with export permit for 226,000, MAZ issued with 50,000, GTAZ got permit for 50,000 and ZNFU had permit for 50,000 tons and there is a balance of 50,000 not issued • ZNFU not ready to use 2006/07 allocation, keep extending the permit. Millers and traders quick to utilize their allocation.

2008	• May 2008 food balance sheet showed a small surplus over national consumption requirements.
	• Stakeholders doubted the food balance sheet estimates arguing that demand side was underestimated.
	• FRA announced a buying price of 45,000 kwacha/ton (roughly US$ 260/ton). No export permits issued essentially banning private exportation.
	• Because of nervousness in the markets related to high world food prices, private millers and traders started the 2008 season by aggressively buying maize at prices higher than the FRA floor price.
	• The FRA countered by raising its buying price to 55,000 kwacha (US$304) per ton in an attempt to procure its target supplies.
	• Aggressive attempts by both private traders and the government pushed prices up quickly after the 2008 harvest.
	• In June of 2008, the Grain Traders Association of Zambia informed the Ministry of Agriculture that roughly 200,000 tons of maize would be required to fill residual consumption requirements in early 2009.
	• In July/August, government refused to sign Memorandum of Understanding (MoU) with GTAZ assuring them that the government would not import and sell gain to millers at subsidized prices.
	• In September, FSRP policy synthesis advising government how to respond was essentially ignored.
	• By November neither the government nor the private sector had arranged to import maize. Food shortages emerge and the maize price surface quickly rose beyond import parity from South Africa.
	• As of December 2008,
	  o retail maize prices were in the range of US$350 to US$400 per ton compared to US$176 per ton on the SAFEX exchange.
	  o The government concluded that indeed imports would be necessary and contracted for over 100,000 tons of maize to be imported from South Africa revised downwards to 35,000 mt after stock audit.
	  o GRZ started subsidizing the price of maize paid by selected millers below market levels and then requiring millers to pass along lower maize meal prices to consumers.
	  o Maize grain and maize meal prices remained high.
	• In January, the maize imported by a private contractor was discovered to be GMO maize and rejected by FRA.
	• In February 2009, traders were able to sell 40 000 of the 55 000 mt to FRA at US$409.05 after protracted negotiations.
	• In March,
	  o government announced the intent to discontinue subsidies to millers at the end of March 2009 as they were not effective enough in reducing consumer mealie meal prices.
	  o As a result, millers announced that breakfast meal prices were to increase by 10,000 Kwacha if subsidies were ended.
	  o FRA announces the sale of subsidized 2500 mt to feed stock industry to cushion rising feed prices.

Sources: Howard 1994; Pletcher 2000; Jayne et al. 1999; Mwanaumo 1999; Govereh et al. 2008; Jayne et al. 2009

REFERENCES

ACF (Agricultural Consultative Forum). 2009. *Policy Advisory Note: 2009 Fertilizer Support Program - Proposed Reforms.* http://www.acf.org.zm/pdf/PANs/ACF%20Policy%20Advisory%20Note%20FSP.pdf

Alston, J.M., C. Chan-Kang, M.C. Mara, P.G. Pardey, and T.J. Wyatt. 2000. *A Meta-Analysis of Rates of Return to Agricultural R&D*. IFPRI Research Report No. 113. Washington, D.C.: International Food Policy Research Institute.

Barrett, C. 1997. Food Marketing Liberalization and Trader Entry: Evidence from Madagascar. *World Development* 25.5: 763–77.

Bingen, J. and J. Rouse. 2002. *Workshop Report.* FAO-ICA workshop Agricultural Development and Empowerment of African Farmers: Perspectives and Policy Recommendations, 13-15 March 2002. Nairobi, Kenya. http://www.hubrural.org/pdf/fao_ica_workshop_report.pdf.

Bingen, J., E. Kasuta, K. Verstralen, and G. Tembo. 2002. *Availability and Use of Agricultural Services by Small-Scale Farmers in Zambia.* Policy Discussion Paper. Lusaka: FAO/MSU.

Bratton, M. and R. Mattes. 2003. Support for Economic Reform? Popular Attitudes in Southern Africa. *World Development* 31.2: 303-23.

Byerlee, D. and C.K. Eicher. (ed) 1997. *Africa's Emerging Maize Revolution.* Boulder, Colorado: Lynne Rienner.

Chapoto, A. and M. Weber. 2009. Discussing the 2009 National Budget for Zambian Agriculture. Presented by the ACF/FSRP research staff at the Agricultural Consultative Forum Annual Stakeholders Breakfast Budget Workshop, 04 February. Lusaka, Zambia. http://www.aec.msu.edu/fs2/zambia/Ag_Budget_ppt_2009.pdf

Chapoto, A. and M. Weber. 2009. Background Information on the Rural Smallholder Farm Sector: What Does Empirical Information Tell Us about Maize Sector Productivity and Related Agricultural Input Use? Presented at an ACF/FSRP workshop on Sharing Evidence-Based Research Results with the Parliamentary Committee on Agriculture and Lands, 20-21 Feburary. Ibis Garden, Chisamba Area, Zambia. http://www.aec.msu.edu/fs2/zambia/FSP_Review_Background_Ibis_Garden_feb20_2009_final.pdf

Cook, M.L. and C. Iliopoulos. Beginning to Inform the Theory of the Cooperative Firm: Emergence of the New Generation Cooperative. *The Finnish Journal of Business Economics* 4.1999: 525-35.

Coulter, J. and A. Shepherd. 1995. *Inventory Credit: An Approach to Developing Agricultural Markets.* FAO Agricultural Services Bulletin No. 120. Rome: Food and Agriculture Organization of the United Nations.

Emran, M.S. and F. Shilpi. 2002. *Marketing Externalities and Market Development*. Policy Research Working Paper No. 2839. Washington D.C.: World Bank.

Evenson, R.E. 2001. Economic Impacts of Agricultural Research and Extension. In *Handbook of Agricultural Economics*, ed. B.L. Gardner and G.C. Rausser. Amsterdam: North Holland/Elsevier.

Govereh, J., T.S. Jayne, J. Nijhoff, H. Haantuba, E. Ngulube, A. Belemu, J. Shawa, A. Banda, C. Donovan, and B. Zulu. 2002. *Fertilizer Market Reform Strategies in Zambia*. FSRP Working Paper No. 4. Lusaka: Zambia Food Security Research Project.

Govereh, J., J. Shawa, E. Malawo, and T.S. Jayne. 2006. *Raising the Productivity of Public Investments in Zambia's Agricultural Sector*. FSRP Working Paper No. 20. Lusaka, Zambia: FSRP. Online at: http://www.aec.msu.edu/fs2/zambia/wp_20.pdf

Govereh, J., T.S. Jayne, and A. Chapoto. 2008. *Assessment of Alternative Maize Trade and Market Policy Interventions in Zambia*. FSRP Working Paper No. 33. Lusaka, Zambia: FSRP. http://www.aec.msu.edu/fs2/zambia/wp_33.pdf

Govereh, J., E. Malawo, T. Lungu, T.S. Jayne, K. Chinyama, and P. Chilonda. 2009. *Trends and Spatial Distribution of Public Agricultural Spending in Zambia: Implication for Agricultural Productivity Growth*. FSRP Working Paper No. 36. Lusaka, Zambia: FSRP. http://aec.msu.edu/fs2/zambia/wp_36.pdf

Grootaert, C., G. Oh, and A. Swamy. 2002. Social Capital, Household Welfare and Poverty in Burkina Faso. *Journal of African Economies* 2.1: 4-38.

Haggblade, S. 2007. *Returns to Investment in Agriculture*. FSRP Policy Synthesis No. 19. Lusaka, Zambia: FSRP. Available online at http://www.aec.msu.edu/fs2/zambia/index.htm.

Hannusch, D. and G. Tembo. 2004. *Towards Food Security and Price Stability in Southern and Eastern Africa: Strategic Food Reserves versus Alternative Solutions*. Consultancy Report. Johannesburg, RSA: NEPAD/WFP Regional Office.

Heemskerk, W. and B. Wennink. 2004. *Building Social Capital for Agricultural Innovation: Experiences with Farmer Groups in Sub-Saharan Africa*. The Royal Tropical Institute (KIT) Development Policy and Practice Bulletin No. 368. Amsterdam, The Netherlands: KIT.

Howard, J. and C. Mungoma. 1997. Zambia's Stop-and-Go Maize Revolution. In *Africa's Emerging Maize Revolution*, ed. D. Byerlee and C. Eicher. Colorado: Lynn Rienner.

Jansen, D. and K. Muir. 1994. Trade, Exchange Rate Policy, and Agriculture in the 1980s. In *Zimbabwe's Agricultural Revolution*, ed. M. Rukuni and C. Eicher. Harare: University of Zimbabwe Press.

Jayne, T.S. and S. Jones. 1997. Food Marketing and Pricing Policy in Eastern and Southern Africa: A Survey. *World Development* 25.9: 1505-27.

Jayne, T.S., G. Tembo, and J. Nijhoff. 2005. Food Marketing and Price Stabilization Policies in Eastern and Southern Africa: A Review of Experience and Emerging Policy Options. Paper Presented at the Workshop on Managing Food Price Instability and Risk in Low Income Countries, 28 February – 1 March. Washington, D.C.: The World Bank.

Jayne, T.S., R. Myers, and J. Nyoro. 2006. The Effects of Government Maize Marketing Policies on Maize Market Prices in Kenya. Contributed paper, International Association of

Agricultural Economics Tri-Annual Meetings, 12-18 August. Gold Coast, Australia: IAAE.

Jayne, T.S., B. Zulu, G. Kajoba, and M.T. Weber. 2008. *Access to Land, and Poverty Reduction in Rural Zambia: Connecting the Policy Issues*. FSRP Working Paper No. 34. Lusaka: Food Security Research Project.

Jayne, T.S., A. Chapoto, I. Minde, and C. Donovan. 2009. *The 2008/09 Food Price and Food Security Situation in Eastern and Southern Africa: Implications for Immediate and Longer Run Responses*. MSU International Development Working Paper No. 96. East Lansing: Michigan State University.

Kotov, I. 2001. New Generation Cooperatives: A Short History of the Idea and the Enterprise. In *New Generation Cooperatives: Case Studies Expanded 2001*, ed. M. Holmes, N. Walzer, and C.D. Merrett. Macomb, IL: Illinois Institute for Rural Affairs.

Lungu, T. and M. Weber. 2009. Beyond Fire Fighting to Using Information for Strategic Planning and Decision Making: Opportunities and Challenges in MACO to Use Information for Longer-Term Policy and Programme Formulation and Impact Improvement. Presented at MACO Participatory Self Assessment Workshop, 18-19 March. Ibis Garden, Chisamba Area, Zambia. http://www.aec.msu.edu/fs2/zambia/MACO_Self_Assessment_Workshop.pdf

MACO. 2009. CFS Results. Lusaka, Zambia: MACO.

Mason, N., T. Jayne, A. Chapoto, and M. Weber. Forthcoming. *Staple Food Consumption Patterns in Urban Zambia: Results from the 2007/2008 Urban Consumption Survey*. FSRP Working Paper. Lusaka, Zambia: FSRP.

Mellor, J. 1976. *The New Economics of Growth: A Strategy for India and the Developing World.* Ithaca, N.Y.: Cornell University Press.

Menard, C. (ed.). 2000. *Institutions, Contracts and Organizations: Perspectives from New Institutional Economics.* Cheltenham, UK: Edward Elgar Publishing Limited.

Mwanaumo, A. 1999. Agricultural Marketing Policy Reforms in Zambia. Paper presented at the Fourth Agricultural Transformation Workshop, Tegemeo Institute, Egerton University and Eastern and Central Africa Policy for Agricultural Policy Analysis, 27–30 June. Nairobi, Kenya.

Mwiinga, B., J. Nijhoff, T. Jayne, G. Tembo, and J. Shaffer. 2002. *The Role of Mugaiwa in Promoting Household Food Security: Why It Matters Who Gets Access to Government Maize Imports*. FSRP Policy Synthesis No. 5. Lusaka, Zambia: FSRP.

Myers, R. 2005. Costs of Food Price Instability in Low-Income Countries. Paper presented at the workshop Managing Food Price Instability in Low-Income Countries, 28 February - 1 March. Washington, D.C.

Nijhoff, J.J., T.S. Jayne, B. Mwiinga, and J. Shaffer. 2002. *Markets Need Predictable Government Actions to Function Effectively:The Case of Importing Maize in Times of Deficit*. FSRP Policy Synthesis No. 6. Lusaka, Zambia: MSU/MACO/FSRP. http://www.aec.msu.edu/fs2/zambia/polsyn6zambia.pdf

Rubey, L. 2004. *How Well-Intentioned Government Actions Exacerbate Food Insecurity: Two Case Studies from Malawi*. Unpublished USAID Report. Lilongwe, Malawi: USAID/Malawi Agricultural Office.

Sachs, J. D. and A.M. Warner. 1995. Economic Reform and the Process of Global Integration. *Brookings Papers on Economic Activity* 26.1: 1-118.

Stepanek, J. 1999. Lessons from Ethiopia's High-input Technology Promotion Program: How the Organization of the Fertilizer Subsector Affects Maize Productivity. Ph.D. dissertation, Michigan State University.

Tembo, G. and T.S. Jayne. 2007. *Increasing Returns to Marketing and Unobserved Market Effects*. Unpublished Research Report. Lusaka, Zambia: FSRP.

Tembo, G. and T.S. Jayne. 2009. Agricultural Trade Flows among Developing Countries: Do Regional Preferential Trade Agreements Make a Difference? Contributed paper accepted for presentation at the 27th International Conference of Agricultural Economists, 16-22 August. Beijing, China.

Thurlow, J., S. Benin, X. Diao, H. Kalinda, and T. Kalinda. 2008. *Agricultural Growth and Investment Options for Poverty Reduction in Zambia*. IFPRI Discussion Paper No. 00791. Washington, D.C.: IFPRI.

United Nations. 1993. United Nations Conference on Environment and Development (UNCED), 3-14 June 1992. Rio de Janeiro. New York: United Nations.

Uphoff, N. (ed.). 2002. *Agro-Ecological Innovations: Increasing Food Production with Participatory Development*. London: Earthscan Publishing Ltd.

Wanzala, M., T.S. Jayne, J. Staatz, A. Mugera, and J. Kirimi. 2002. *Fertilizer Markets and Agricultural Production Incentives: Insights from Kenya*. Tegemeo Working Paper No. 3. Egerton University, Nairobi: Tegemeo Institute.

Waner, J. 2001. New Generation Cooperatives and the Future of Agriculture: An Introduction. In *Generation Cooperatives: Case Studies Expanded 2001*, ed. M. Holmes, N. Walzer, and C.D. Merrett. New Macomb, IL: Illinois Institute for Rural Affairs.

Zambia Land Alliance. 2009. *Zambia Land Alliance Recommendations to the Land and Environment Committee of the National Constitutional Conference*. Lusaka, Zambia: Zambia Land Alliance. http://www.zla.org.zm/media/ncc_recos.doc

ZNFU (Zambia National Farmers Union). 2001. *The Zambian Farmer*. Number 5.

Zulu, B., T.S. Jayne, and M. Beaver. 2006. *Smallholder Household Maize Production and Marketing Behavior in Zambi*a. FSRP Working Paper No. 17. Lusaka: FSRP.