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Indaba Agricultural Policy Research Institute (IAPRI)

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The Indaba Agricultural Policy Research Institute is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. IAPRI exists to carry out agricultural policy research and outreach, serving the agricultural sector in Zambia so as to contribute to sustainable pro-poor agricultural development.

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Any views expressed or remaining errors are solely the responsibility of the authors.

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EXECUTIVE SUMMARY

African agrifood systems are being transformed by an influx of multinational capital. Research on this transformation focuses primarily on the rise of supermarkets and demand for African land. An under-appreciated facet of this transformation is multinational investment in African grain trading. This paper uses basic descriptive statistical data and qualitative evidence to examine the implications of the recent multinational investment wave into cereal and oilseed trading in Zambia.

Key Findings:

1. In the 2011/2012 crop marketing season large-scale grain trading firms directly handled approximately 500,000 metric tons of maize, soybeans, and wheat. This amounted to 25% of the total marketed surplus for these three crops. By 2015 these firms were handling 621,000 metric tons of grain, with a significantly expanded presence in the smallholder market. Household survey data show that these firms increased their smallholder market presence by nearly 178,000 metric tons. This amounts to \$233 million in payments to farmers, with \$53 million going to small-scale farmers.
2. Multinational investments in the small-scale sector were almost completely confined to two provinces (Eastern and Central Provinces) in 2014/15, which account for 93% of all smallholder soybean sales to large-scale trading firms and 79% of all maize sales.
3. The timing of the current multinational investment wave in Zambia is not a coincidence, nor is it only occurring in Zambia. Similar investments in grain trading are occurring in all major grain producing countries in eastern and southern Africa. This has been partly driven by increased uncertainty over global grain supplies and prices, which has made the region's historical reliance on cheap grain imports from abroad more costly and tenuous. This uncertainty, combined with a growing and more affluent urban population, has prompted firms to explore opportunities to tap into domestic production to meet a greater share of domestic and regional demand.
4. This wave of multinational investment into trading has occurred along three primary paths. The first is through an expansion of existing cash crop operations—particularly cotton in Zambia—into the grain sector. The second pathway is through an extension of established African operations into new African markets. This pathway includes the migration of established South African firms into other African grain markets, including Zambia. The final pathway for multinational firms to establish a presence in new African markets is through the acquisition of an existing domestic firm or establishment of a new domestic subsidiary.
5. The primary comparative advantage that multinational firms enjoy relative to domestic firms is their ability to access significantly cheaper financing than is available in domestic credit markets. In Zambia, lending from domestic banks to the agricultural sector is limited, and interest rates on short-term loans can exceed 20% on dollar loans and are even higher for loans in the local currency. This high cost, combined with large collateral requirements, makes access to commercial credit for domestic actors difficult. Multinational firms do not face the same sorts of credit constraints.
6. Multinational firms often link their buying activities to other sorts of investments, including input credit and extension services. Through these cash crop operations, firms have already assumed many of the costs associated with screening potential input credit recipients. With cheap credit to acquire inputs and an established group of farmers with a record of input credit repayment under cash crop outgrower schemes, these firms have begun exploring opportunities for input credit for grains and oilseeds.

7. Focus group discussions with smallholders operating in regions that have seen an expansion of multinational investment in grain trading share a broadly positive view of this market transformation. Farmers were asked to compare the experience of selling to these firms relative to selling to local wholesalers and to the parastatal Food Reserve Agency (FRA). Smallholders' responses to these questions were surprisingly consistent. Respondents stated that relative to local market actors, multinational firms provide a higher level of professionalism and trustworthiness in their interactions with farmers. Several key points that were repeated are: 1) multinational firms utilize weighing scales are more reliable than local traders'; 2) they provide additional services, including SMS-based market updates, input credit in some cases, and extension advice, and; 3) they offer more competitive prices.
8. The influx of multinational capital into small-scale grain and oilseed markets raises concerns about its potential effects on income inequality. We find that contrary to this concern, of the total volume of soybeans purchased directly by large-scale trading firms, 25% is supplied by households in the bottom half of the net income distribution. This is considerably larger than the 15% supplied to large-scale traders by the lower income groups in the maize market. Within the lower income groups, large-scale traders are the second most important market channel behind small-scale traders for soybean. Conversely, large-scale traders are the third or fourth most important market channel for maize sellers in the lower income groups. Taken together, these data suggest that there is solid evidence that poor households do sell directly through this emergent market channel. However, the crop context matters.
9. We find that between 2008/09 and 2013/14, wholesale margins for maize in Zambia declined from \$69/ton to \$14/ton. Though the decline has not been secular in dollar terms, it has been in local kwacha terms. The volatility of dollar costs and margins are associated with sharp movements in exchange rates during this period. The substantial declines in margins are driven by both an increase in the price paid to acquire grain, which rose 16% in this period, and a decline of 9.6% in average selling prices.

Conclusion

Our analysis suggests that the wave of multinational investment into Zambia's grain trading sector has thus far proved broadly beneficial to the performance of the market. Smallholder farmers who sell grain suggest that the influx of these multinationals has provided them with more cost competitive, trustworthy, and professional market outlets than before. These are markets that are available to both rich and poor households. Moreover, some of these firms are providing ancillary services to farmers, including market price information, input credit, and extension advice. In addition, these firms are in some cases pumping credit into local wholesale markets through contractual arrangements with small-scale local traders, which enables an expansion of assembly trading activities. Finally, this investment wave has coincided with a sharp decline in marketing margins, which is beneficial for both consumers and producers.

Yet this positive story must be read with some caution. While the sharp decline in trading margins has likely helped to improve efficiency in the market and forced higher margin traders out, there is concern that relatively efficient, lower volume traders, cannot profitably remain in the market under current conditions. If this were the case we would anticipate a steady rise in trading margins as these traders exit the sector and competition for grain begins to dwindle.

Recommendations

Our analysis suggests that addressing differences in the cost of credit for domestic and multinational firms is a potentially important point of leverage, which can enable domestic firms to be cost competitive with multinationals. Addressing these differences requires developing strategies to lower both the cost of domestic borrowing and collateral requirements for domestic wholesalers to borrow.

However, in Zambia the opposition is occurring. Interest rates in Zambia are high and rising, due in large part to a rapid increase government borrowing from domestic credit markets. Treasury bill yields on 182-day bills have increased from a low of 2.6 in April 2010 to 17.5 as of August 2014. This has had the effect of mopping up much of the available capital in domestic credit markets and pushing up the cost of what remains. Greater fiscal discipline is therefore needed to improve the competitiveness of domestic lending and to support domestic industry growth.

More specifically to the grain-trading sector, policy-makers must provide the necessarily enabling environment to support the development of a warehouse receipt system linked to a functional commodity exchange. While the Zambian commodity exchange has languished in recent years, the government has recent designated a warehousing authority, which is seen as the last legal hurdle to implementing a warehouse receipt system (Sitko and Jayne 2012). Warehouse receipts can enable local wholesalers to utilize grain stocks held in certified warehouses as collateral to access commercial credit (Coulter and Onumah 2002). This has the dual advantage of improving credit conditions for these traders and enabling them to store grain in anticipation of higher prices later in the season.

However, while these strategies offer potential instruments to improve lending to the sector, the effectiveness of these interventions ultimately requires a more predictable policy environment. Current state interventions in grain markets are not only driving down margins in the trading sector, and thus putting substantial pressure on smaller-scale local wholesalers, the unpredictability of these interventions also stymies lending to the sector. Banks may be unwilling to lend against warehouse receipts, or will only lend a small percentage of the current value of stocks held in warehouses if future price uncertainty is high due to policy unpredictability.

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LIST OF ACRONYMS AND ABBREVIATIONS

CSO	Central Statistical Office
FRA	Food Reserve Agency
GTAZ	Grain Traders Association of Zambia
IAPRI	Indaba Agricultural Policy Research Institute
NGO	Non-Governmental Organization
RALS	Rural Agricultural Livelihoods Survey
ReNAPRI	Regional Network of Agricultural Policy Research Institutes
SMS	Mobile Short Message Service or Text Messaging
SSA	Sub-Saharan Africa

1. INTRODUCTION

Multinational capital is flowing into African agrifood systems in ways that are dramatically altering how food is produced and consumed in the region. While multinational investments in African food systems are not new, shifts in the political, economic, and demographic landscape of the region have expanded the scope and scale of these investments. Over the last decade or so, much of Sub-Saharan Africa (SSA) has witnessed rapid urbanization, sustained Gross Domestic Product growth, single digit inflation, and the emergence of an African middle class (Losch 2012; Fine et al. 2012; Ncube, Lufumpa, and Vencatachellum 2011; Chikweche and Fletcher 2014). These domestic transformations are taking place within a global context of increasing uncertainty over global grain supplies and prices (Dewbre et al. 2008). The interactions between these domestic, regional, and global factors have created incentives for multinational investment throughout African agrifood systems, from food production to retailing.

To date, research on the transformation of African agrifood systems has focused most intently on the rise of supermarkets (Weatherspoon and Reardon 2003; Reardon et al. 2003; Neven et al. 2009) and the growth in demand for African land for commercial agricultural purposes (Deininger and Byerlee 2011; Cotula 2009; Hall 2011). This research has highlighted important system-wide benefits of the corporatization of African agrifood systems, including improved capacity to manage environmental and financial risk, increased pace of technology adoption, and supply chain modernization (Collier and Dercon 2014; Reardon and Berdegue 2008; Minten, Randrianarison, and Swinnen 2009).

However, there is considerable concern over the potential ramifications of the transformation of African agrifood systems to small-scale producers, who continue to make up the majority of the population in SSA and among whom poverty levels remain unacceptably high (Weatherspoon and Reardon 2003; Haggblade et al. 2012). This includes the displacement of traditional food markets by supermarkets, which may weaken the capacity of smallholders to tap into expanding urban demand opportunities (Reardon et al. 2003; Weatherspoon and Reardon 2003; Tschirley et al. 2014), and the enclosure of smallholder farming areas by commercial agriculture investments (Jayne et al. 2014; Hall 2011; Cotula 2009).

Missing in the debates over the role of multinational capital in the transformation of African agrifood systems is the growth of multinational investment in African cereal and oilseed trading and associated activities. Investments in grain and oilseed trading in Africa by large multinational firms has been prompted, in large part, by the same sets of incentives driving investments in other aspects of African food systems, including growing urban demand on the continent, increasing uncertainty over global food prices, and higher potential profit margins relative to global averages.

What are the implications of this wave of investment interest in African grain and oilseed trading? More specifically, can this investment interest be harnessed in ways that are beneficial for smallholders and consumers? In this article we use Zambia as a case study to examine the effects of multinational investment in cereal and oilseed trading. We argue that these investments are becoming an increasingly important dimension of Africa's agrifood transformation, and if well managed have the potential to: 1) improve competition within the intermediary markets that most smallholders depend on; 2) lower margins in food marketing systems; 3) improve price and supply risk management throughout grain and oilseed supply chains; 4) stimulate rural non-farm opportunities, particularly in grain assembly and transport; and 5) add a powerful voice for free cross-border trade and predictable agricultural

policies. Yet, our analysis suggests that the potential exists for a less positive outcome. In particular, this investment wave may squeeze out domestic competition in the sector, as well as to provide a conduit for multinational firms to gain vertical control of domestic food markets through ancillary investments in input supply, domestic processing, and production (Anseeuw and Ducastel 2013). By highlighting the potentially divergent pathways this investment wave can stimulate, we hope to provide concrete recommendations to policy makers on how to effectively manage this investment interest to maximize its beneficial effects.

2. DATA SOURCES AND METHODOLOGY

The data for this article were derived from multiple sources. To understand the ways in which smallholder grain markets function and the effects of multinational investment in grain trading on these markets we carried out interviews with smallholder farmers, small-scale assembly traders, and local grain wholesalers in five districts in Zambia. These are detailed in Table 1. Districts were selected because they were high production areas and have witnessed recent investments from multinational firms in domestic grain trading.

Farmers selected to participate in focus group discussions were identified with the help of local Ministry of Agriculture and Livestock extension officers. Only farmers who sold grain in the previous year were selected to participate in the discussions. During focus group discussions farmers were asked to identify local traders in their area. This snowball sampling strategy enabled the identification of local assembly traders and the primary local wholesaler(s) in each market.

To understand how and why multinational firms have begun investing in Zambia's grain trading markets we conducted interviews with representatives of five of the major firms in Zambia, which we complemented with online research of company websites. Both local and multinational wholesalers also provided data on trading costs and prevailing prices that enabled us to calculate trends in wholesale margins over time. We also interviewed a representative of the Grain Traders Association of Zambia (GTAZ), who provided key informant data on broader industry trends and changes in association membership composition.

We supplement this qualitative data with nationally representative survey data on production and marketing collected by the Zambian Central Statistical Office. In this article we utilize the Crop Forecast Survey in 2012 and 2014, which collects anticipated sales volumes from over 14,000 small and large-scale producers, and the 2012 and 2015 Rural Agricultural Livelihoods Survey (RALS), which collects actual sales behavior by small-scale farmers. The RALS surveys capture specific smallholder marketing behavior. However, they do not effectively disaggregate multinational large-scale traders from domestic one. In the RALS 2012 the survey response for sales channel is simply large-scale trader. However, there are several reasons why we are confident that this market channel is almost exclusively multinational large-scale traders.

Table 1. Interview Respondents

Districts	Chipata, Katete, Choma, Mpongwe, Mkushi
Farmer Focus Group Discussions with smallholders	25
Total number of farmers	382
Assembly Traders	44
Local small and medium- scale wholesalers	7
Large-Scale multinational wholesalers	5

First, when we examine sales volumes through different market channels by province, we find that the large-scale trader purchases occur almost exclusively where multinational firms operate (primarily in Eastern and Central Provinces, and a far lesser extent in Southern¹). Second, large-scale domestic traders in Zambia focus mostly on the commercial farming sector. To the extent that they buy from the smallholder sector, this occurs through small and medium scale traders that aggregate for them. A farmer would not recognize these as proxies for larger buyers. Finally, only one large-scale domestic wholesaler operates a buying depot in a rural part of Zambia, and this is located within Lusaka Province. Direct purchases by large-scale traders in Lusaka Province accounted for a small fraction of total large-scale trader purchases in our data. For these reason we believe that these data do provide insights into smallholder marketing to the multinational sector.

¹ During the reporting period only AFGRI operated buying centers in Southern Province.

3. SUBSTANTIATING THE INVESTMENT WAVE IN GRAIN AND OILSEED TRADING

In Zambia, ten multinational firms of various national origins have made substantial investments in cereal and oilseed trading and associated services, including input and asset financing, collateral management, and post-harvest management. While private investments in food crop origination began soon after market liberalization in the 1990s, uncertainty over government trade policies, coupled with limited tradable supplies and domestic market opportunities pushed most of these initial investors out of the market (Dorosh, Dradri, and Haggblade 2009; Nijhoff et al. 2002). According to the GTAZ, by 2002 multinational firms played an inconsequential role in Zambian grain wholesale markets. Yet this all changed in 2008, in the wake of the global food price spike. Beginning in 2008 multinational firms began establishing trading operations in Zambia or initiated an expansion of existing agricultural operations into grain trading. The scale of these investments has been impressive.

Using a combination of smallholder household survey data and interviews with industry experts Table 2 estimates that in the 2011/2012 crop marketing season large-scale grain trading firms directly handled approximately 500,000 metric tons of maize, soybeans, and wheat. This amounted to 25% of the total marketed surplus for these three crops. Using estimated nominal 2012 farm-gate prices for these commodities (ReNAPRI 2015), the purchase value amounts to \$260 million dollars spent in direct payments to farmers, of which over \$18 million went directly to small-scale farmers. By 2015 these firms were handling 621,000 metric tons of grain, with a significantly expanded presence in the smallholder market.

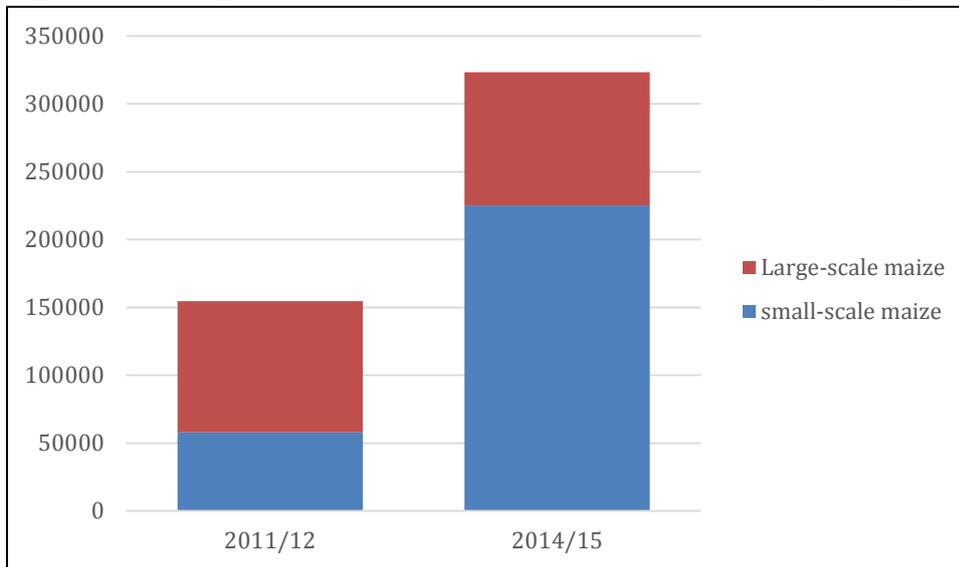
Table 2. Maize, Soybean, and Wheat Sales Volume and Quantities Purchased by Large-Scale Traders

Farmer category	Sales 2011/12 (MT)			Share of total purchases by large-scale grain traders (%)		
	Maize	Soybean	Wheat	Maize	Soybean	Wheat
Large-scale	120,993	188,586	250,629	80	80	80
Small-scale	1,446,262	14,452	0	4	22	0
Total (MT)*	1,567,255	203,038	250,629	154,645	154,048	200,503
	Sales 2014/15 (MT)			Share of total purchases by multinational grain traders (%)		
Large-scale	122,691	162,675	192,514	80	80	80
Small-scale	2,047,642	35,993	0	11	38	0
Total (MT)	2,170,333	198,668	192,514	323,393	143,817	154,011
Total change 2011/12 to 2013/14 (MT)	603,078	-4,370	-58,115	168,749	-10,231	-46,492
Change in smallholder purchases (MT)	601,380	21,541	0	167,390	10,498	0

Sources: Large-scale from CSO/MAL Crop Forecast Survey 2012 and 2015. Share small-scale purchases calculated from CSO/MAL/IAPRI Rural Agricultural Livelihoods Survey 2012 and 2015. Share of large-scale purchases estimated by GTAZ.. *MT=Metric Tons.

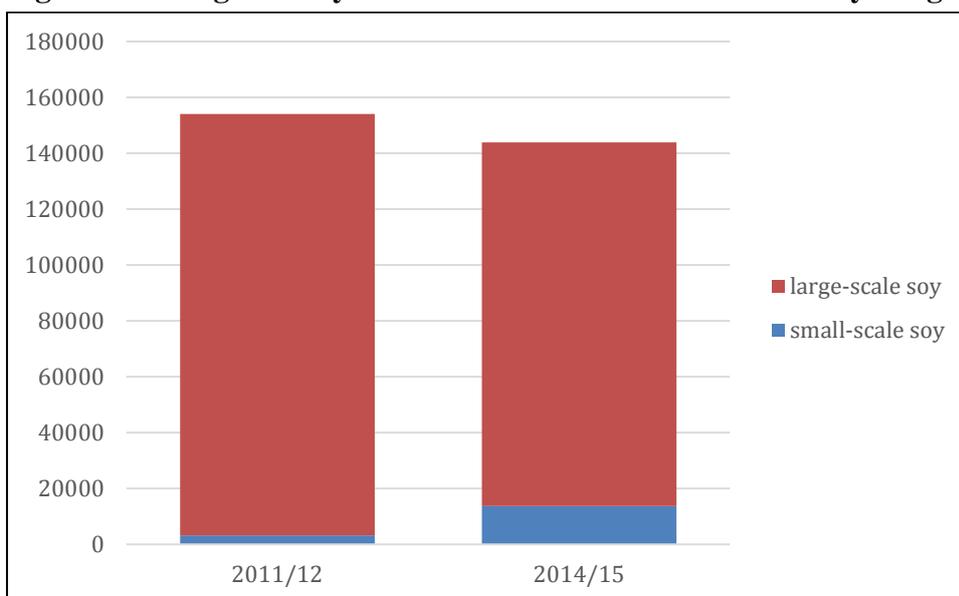
Household survey data show that these firms increased their smallholder market presence by nearly 178,000 metric tons. Figures 1 and 2 provide a visual representation of this rapid expansion. This amounts to \$233 million in payments to farmers, with \$53 million going to small-scale farmers.

Figure 1. Changes in Maize Purchases 2011/12 to 2014/15 by Large-scale Traders



Sources: Large-scale from CSO/MAL Crop Forecast Survey 2012 and 2015. Share small-scale purchases calculated from CSO/MAL/IAPRI Rural Agricultural Livelihoods Survey 2012 and 2015. Share of large-scale purchases estimated by GTAZ.

Figure 2. Changes in Soybean Purchases 2011/12 to 2014/15 by Large-scale Traders



Sources: Large-scale from CSO/MAL Crop Forecast Survey 2012 and 2015. Share small-scale purchases calculated from CSO/MAL/IAPRI Rural Agricultural Livelihoods Survey 2012 and 2015. Share of large-scale purchases estimated by GTAZ.

Table 3. Percent of Sales to Large-scale Trading Firms by Province, 2014/15

Province	Soybeans	Maize
Central	48.3%	34.9%
Copperbelt	.4%	2.8%
Eastern	44.5%	43.9%
Luapula	.8%	.7%
Lusaka	2.4%	3.3%
Muchinga	.3%	3.3%
Northern	1.9%	1.5%
Northwestern	0.0%	.1%
Southern	1.4%	9.4%
Western	0.0%	0.0%

Source: CSO/MAL/IAPRI RALS 2015.

This national level picture obscures the regional dimensions of this investment. As shown in Table 3, multinational investments in grain wholesaling from the small-scale sector were almost completely confined to two provinces in 2014/15 (Eastern and Central Provinces). In these two provinces firms such as Cargill, AFGRI, and NWK agri-services all operate smallholder origination operations. The geographic clustering of these investments is evident from household survey data. As shown in Table 3, these two provinces account for 93% of all soybean sales to large-scale trading firms and 79% of all maize sales.

The figures on the share of small-scale sales procured by large-scale traders under-estimates the scale of these traders' operations in this sector, because only direct sales to large-scale traders are accounted for in this estimate. As will be discussed in more detail below, small-scale intermediaries that bulk crops from small-scale farmers for onward sale frequently sell to large-scale multinationals, either directly under contract or independently. These small-scale traders accounted for 58% and 7% of the total volume of small-scale soybean and maize sales, respectively, in 2012. By 2015, this figure changed to 48% for soybeans and 17% for maize. The declining role of small-scale traders and the increasing role of multinational traders in the context of rapidly expanding smallholder soybean production are likely due to increased input financing and forward contracting for soybeans by some multinational firms. A point we will return to below.

The timing of the current multinational investment wave in Zambia is not a coincidence, nor is it only occurring in Zambia. Interviews with representatives from multinational firms in Zambia suggest that similar investments in grain trading are occurring in all major grain producing countries in eastern and southern Africa, including Malawi, Tanzania, Kenya, and Mozambique. This has been partly driven by increased uncertainty over global grain supplies and prices, which has made the region's historical reliance on cheap grain imports from abroad more costly and tenuous. This uncertainty, combined with a growing and more affluent urban population, has prompted firms to explore opportunities to tap into domestic production to meet a greater share of domestic and regional demand.

Firms also indicate that margins in Zambia's grain markets, like those in neighboring countries, tend to be higher than in more advanced markets, due to the large number of intermediaries involved in the markets, high transactions costs associated with limited

economies of scale and poor infrastructure, and limited market information leading to opportunities for rents to be earned through asymmetrical market information. Through various marketing network arrangements, including diffuse smallholder procurement networks and forward contracting arrangements, multinational firms see opportunities to overcome some of these transactions costs in ways that enable them to capture higher margins relative to more established global grain markets.

This wave of multinational investment into trading has occurred along three primary paths. The first is through an expansion of existing cash crop operations—particularly cotton in Zambia—into the grain sector. Changes in Cargill Corporation’s investment strategies in Zambia, and Africa more broadly, reflect this investment pathway into grain trading. Cargill’s initial African investments focused on traditional cash crop procurement and processing, including tea handling and storage in Kenya, cotton procurement and ginning in Zimbabwe, Zambia, and Uganda, and cocoa in Ghana and Ivory Coast. As global grain prices began to rise in 2007/08, Cargill began a “process of strategic growth into grains and oilseeds” (Cargill website). This included expansion into maize and soybean origination and trading in Zambia (2010), Zimbabwe (2011), Mozambique (2013), and Kenya (2013).

The second pathway is through an extension of established African operations into new African markets. This pathway includes the migration of established South African firms, such as AFGRI and Senwes, into other African grain markets, including Zambia. Yet it is not just South African firms moving north. In Zambia two large East Africa firms—Export Trading Group and the Metl Group—have entered Zambia’s grain wholesale markets. These firms are also well established in other major production areas in SSA.

The final pathway for multinational firms to establish a presence in new African markets is through the acquisition of an existing domestic firm or establishment of a new domestic subsidiary. For example, in Zambia, the South African firm NWK Agri-Service, in partnership with Louis Dreyfus, acquired Dunavant Cotton Company and then subsequently expanded operations into grain trading and financing. Other companies, such as Holbud Limited based in the United Kingdom, have established grain-trading subsidiaries in Zambia, mostly trading in wheat produced on commercial farms. In this case Holbud Limited operates in Zambia under the name DomZam.

It is important to note that many of the firms making investments in Zambian and other African cereal and oilseeds markets have diverse investment interests and expertise, which may have important implications for their broader impact on domestic food markets. These include interests in production financing, input supply, direct food and fiber production, and food processing. These diverse areas of interest and expertise enable these firms to generate margins all along the supply chain. In some cases this can enable these firms to take risks in the market that they wouldn’t otherwise be able to take, because losses in one part of the chain, for example input financing, can be made up elsewhere, for example in cooking oil processing.

However, this integration raises concerns that by establishing a foothold in African grain markets through investments in trading, these firms will seek to gain greater control of the production and marketing systems through the vertical integration of input supply, marketing, storage, and processing, thereby limiting competitiveness in the system (Anseeuw and Ducastel 2013). There are indications that this process is underway in Zambia. Of the ten multinational firms currently operating in Zambia two have acquired shares or outright ownership of grain and oil processing firms, two are involved in commercial agricultural

production in Zambia and other African countries, three offer financing services, and three are involved in input supply. While this provides opportunities to develop institutional arrangements to overcome persistent smallholder market failures, it also raises concerns about smallholders' loss of control over production and marketing decisions (Key and Rusten 1999; Kirsten and Sartorius 2002).

Ultimately, the specific outcome of this investment wave for smallholders is contingent on the policy decisions being made today. To guide these policies it is critical to examine how these firms are integrating into domestic wholesale markets and what this means for the structure and performance of the markets.

4. MULTINATIONAL INTEGRATION INTO DOMESTIC MARKETS

Grain markets in Sub-Saharan Africa are often characterized as embedded within social networks, where repeated transactions and local reputations enable the markets to function in the absence of statutory contract enforcement mechanisms or structured trading platforms (Fafchamps 2004). Understanding how multinational firms, which often lack the local social capital that domestic firms enjoy, integrate into these markets is important for assessing their implications on domestic and regional food markets.

The primary comparative advantage that multinational firms enjoy relative to domestic firms is their ability to access significantly cheaper financing than is available in domestic credit markets. In Zambia, lending from domestic banks to the agricultural sector is limited, and interest rates on short-term loans can exceed 20% on dollar loans and are even higher for loans in the local currency. This high cost, combined with large collateral requirements, makes access to commercial credit for domestic actors difficult. Multinational firms do not face the same sorts of credit constraints. Due to their considerable scale and global reach, these firms can source credit from numerous sources, including from within their own corporate structures or from commercial banks outside of Zambia that offer significantly cheaper credit terms. Indeed, many of these firms maintain headquarters or subsidiary branches in the United States, Singapore, or Dubai, which facilitates access to low cost lending.

Access to low cost financing enables multinational firms to engage in grain procurement and storage strategies that are generally not available to their domestic counterparts. Multinational firms routinely use their access to cheap financing to provide credit to smaller scale grain buyers in surplus regions to buy grain on their behalf. In most surplus regions of Zambia several medium-scale local traders have traditionally competed for smallholder maize. These medium-scale traders have well established networks of small-scale grain assemblers that operate in smallholder production areas. By providing credit to these medium-scale local buyers, multinational firms are able to tap into existing procurement networks without necessarily establishing a physical presence in these regions.

These grain assembly networks are complex and require substantial amounts of local knowledge to navigate. In particular, these networks enable the aggregation of marketable lots of grain from extremely dispersed smallholders with limited surpluses to sell and who lack the economies of scale to ferry their grain to district markets (Sitko and Jayne 2014; Poulton et al. 2006). The complexity of this aggregation market is a function of the prevailing structure of smallholder market participation in Zambia. In 2010/11, which was a very good production year, only 40% of Zambian smallholder sold maize, though nearly 90% grew maize. Of these, 5.4% accounted for 50% of the total marketed surplus, with the other 50% provided by the remaining 35% of surplus producers (Chapoto and Jayne 2011). Thus, the bulk of the maize being sold is sold in very small quantities. Without effective grain aggregation and intermediation services, most surplus producers in Zambia would find it difficult to engage in market since they lack the economies of scale to justify transportation to external markets.

Data suggest that Zambian intermediary assembly markets are widespread and competitive. As shown by Chapoto and Jayne (2011), 75% of maize sellers travelled less than 3 km to sell their grain. When farmers sell through these markets they are paid roughly 82% of the prevailing price in nearby wholesale markets (Sitko and Jayne 2014). Interviews with

assembly traders and local wholesalers suggest that the influx of multinational capital into these markets has enabled both an expansion of the number of assembly traders and greater price competition. Sustaining these competitive assembly markets that poorer rural households depend on will require continued competition at the wholesale level. As Barrett (1997) has shown, competition at the assembly stage of grain markets is conditioned by the degree of competition at the wholesale stage (Also see Sitko and Jayne 2014). To the extent that multinational capital injections into local wholesale markets can continue to drive competition in assembly markets, then this investment will prove beneficial for both smallholders and for other types of rural non-farm economic activities, including assembly trading and transport. However, there is concern that by utilizing local traders to buy on their behalf, multinational firms may in the medium to long-term decrease competition in these assembly markets by limiting available downstream markets. Prior to the infusion of multinational investment, local traders sold grain to a wide range of downstream buyers, including commercial processors and local, informal consumer markets. If the provision of capital to these local traders limits their available markets then the effect will be to decrease price competition throughout the local market networks.

While the majority of multinational firms operate their smallholder grain purchasing operations through the sorts of local contractual arrangements discussed above, a growing number of these firms have established buying points in key production areas. The majority of these are firms with established cash crop buying operations, such as Cargill and NWK, which have been adapted to handle grain trading. For these firms there is a significant incentive to spread the cost of risk of operating cash crop outgrower programs over a wider range of crops, including maize and soybeans. Other firms, namely AFGRI, have also opted to by-pass local trader contracts and instead source grain from established buying points in the major smallholder production regions of Eastern and Central Provinces.

Established local buying points enable these firms to more fully integrate into smallholder markets and production systems. In particular, these firms often link their buying activities to other sorts of investments, including input credit and extension services. These sorts of linked production and marketing activities are primarily being explored by firms with longstanding relationships to smallholders through cash crop outgrower operations (Chamberlin et al. 2014). Through these cash crop operations, firms have already assumed many of the costs associated with screening potential input credit recipients. With cheap credit to acquire inputs and an established group of farmers with a record of input credit repayment under cash crop outgrower schemes, these firms have begun exploring opportunities for input credit for grains and oilseeds. For example, since 2013 Cargill in Zambia provided nearly \$12 million in input financing for maize and soybean to approximately 45,000 smallholder farmers. Cargill is able to use various financial instruments to hedge some of the price risk associated with this investment and repayment risk associated with contract non-compliance. These risk management tools are not available to local, less sophisticated firms.

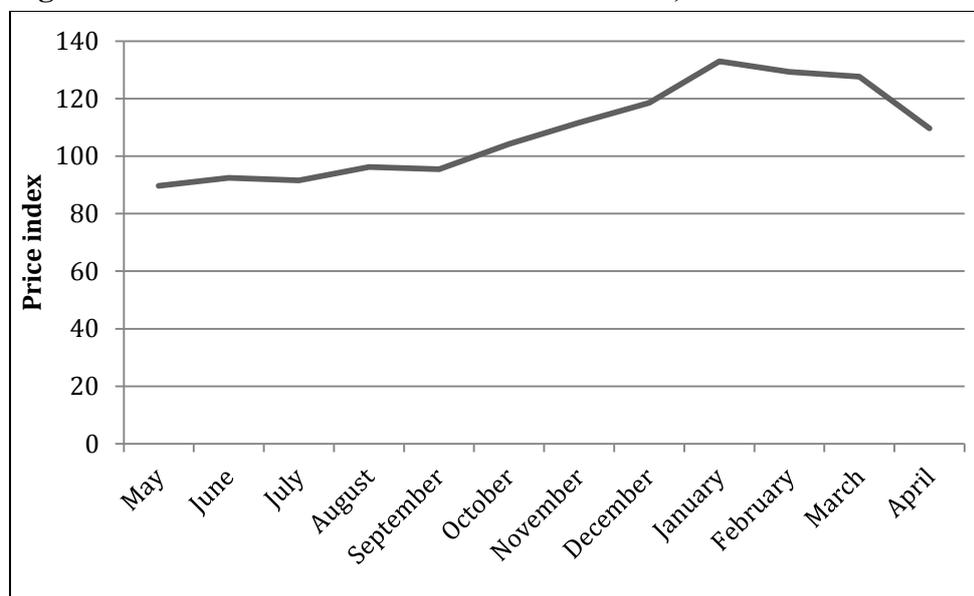
Cheap financing also supports multinationals' integration into domestic grain market structures by enabling investment in grain storage and seasonal arbitrage. In Zambia, storage infrastructure has traditionally been concentrated in the hands of the state, as part of its Food Reserve Agency, and the commercial milling sector. Few domestic wholesalers or small-scale traders are willing or able to store grain. In rain-fed, unimodal agricultural systems like Zambia's, grain storage is critical for smoothening seasonal price fluctuations and limiting crop losses. The lack of domestic investment in grain storage is, therefore, detrimental to grain price stability. Due to the high cost of domestic credit most domestic wholesalers utilize their own capital to purchase grain. Obstacles to grain storage are further exacerbated by the

price uncertainty created by the government’s involvement in maize markets resulting from *ad hoc* releases of subsidized grain into domestic consumer markets and trade restrictions (Jayne, Zulu, and Nijhoff 2006). Because of the costs and risk to storage, domestic traders rely primarily on earning smaller margins from back to back trades spread over as much volume as possible. Yet as one domestic wholesaler stated during an interview “storage is where the money is.”

As shown in Figure 3, seasonal grain price movements in Zambia are substantial. Figure 1 shows the average monthly price index for real wholesale maize prices in Zambia between 2000 and 2013, with a score of 100 representing the average annual price. It shows that wholesale maize prices tend to be there lowest in May, as the smallholder maize harvest begins, and reach their peak in January, the middle of what is called the hunger period in Zambia. On average, wholesale maize prices in Zambia increase by 48% between May and January. This represents a substantial profit opportunity for firms willing and able to store grain.

Access to cheap financing enables multinational trading firms to more easily assume the costs and risks of storing smallholder grain than their domestic competitors. Moreover, they are capable of utilizing their access to finance to enter into collateral management arrangements with commercial farmers in Zambia, thereby providing production financing to commercial farms and ensuring themselves access to grain during the smallholder production season. Through these two mechanisms multinational wholesalers are able to play a beneficial role in Zambia’s grain markets, both in terms of supporting commercial producers to access inputs and smoothing supplies in Zambia’s seasonal markets.

Figure 3. Zambian Wholesale Maize Price Index, 2000-2013



Source: Central Statistical Office.

5. EFFECTS OF MULTINATIONAL INVESTMENT ON GRAIN MARKETS

In this section we examine the effects of multinational investment wave on the performance of grain markets in four different ways. First, we explore smallholders' perceptions of how grain markets have evolved as a result of the establishment of multinational firms in their areas. Second, we use household survey data to examine the extent to which these market channels are available to poorer segment of the rural population. Third, we examine how domestic wholesalers, both medium and large-scale, perceive these investments. Finally, we investigate trends in trading margins for maize over the period of multinational firms' expansion in Zambia. Together, this assessment will highlight both the benefits of multinational investments in grain trading, as well as areas of concern.

5.1. Smallholders' Perceptions

Focus group discussions with smallholders operating in regions that have seen an expansion of multinational investment in grain trading share a broadly positive view of this market transformation. Farmers were asked to compare the experience of selling to these firms relative to selling to local wholesalers and to the parastatal FRA. Smallholders' responses to these questions were surprisingly consistent. Respondents stated that relative to local market actors, multinational firms provide a higher level of professionalism and trustworthiness in their interactions with farmers. Several key points that were repeated are: 1) multinational firms utilize weighing scales are more reliable than local traders'; 2) they provide additional services, including SMS-based market updates, input credit in some cases, and extension advice; and 3) they offer more competitive prices.

Relative to the FRA, these firms are generally thought to offer low prices, but they provide a valuable alternative because farmers are paid cash on delivery, while the FRA is notorious for delayed payments due to lack of available funding. Moreover, some focus group respondents indicated that accessing FRA markets frequently required making payments to FRA depot managers, a problem not encountered with multinational firms.

The enhanced professionalism and efforts to build trust among smallholders can be viewed as a broadly positive development for local grain markets. If these attributes become sources of comparative advantage, they may force local actors and government parastatals to improve the ways they engage with smallholders in order to retain market share. However, the accounts described here relate only to farmers selling directly to depots operated by these firms. As discussed previously, many of the firms utilize local buyers and their assembly agents to purchase on their behalf. Moreover, the majority of maize sellers do not enjoy the economies of scale needed to transport their maize to an established buying point. This raises some concern, as the contractual arrangements that exist between the firms and local buyers are such that they may actually increase incentives for the sorts of unscrupulous market behaviors that farmers frequently complain about. In particular, cash advances to local traders are typically for a predetermined quantity of grain, with the local traders' margins coming from the cash remaining after the specified quantity is acquired. In this context, incentives exist for local traders to maximize their margins through the manipulation of weighing scales and by offering lower prices than were anticipated in the contract. Thus, while focus group discussions were clear that the presence of multinational firms in local markets is beneficial to those farmers able to sell directly to their depots, the broader impact on smallholder marketing is less clear.

5.2. Market Participation: Do the Poor Participate?

The influx of multinational capital into small-scale grain and oilseed markets raises concerns about its potential effects on income inequality. Given the significant asset and production heterogeneity and concentration within most African smallholder systems, including in Zambia, there is reason to be concerned that the potential market benefits described above will only accrue to a minority of already better-off smallholders. To determine whether poorer households are able to engage with these markets directly, we disaggregate the smallholder sector into net household income quartiles.

In Tables 4 and 5 we quantify the share of total sales of soybeans and maize passing through specific market channels by income quartile. We find that of the total volume of soybeans purchased directly by large-scale trading firms, 25% is supplied by households in the bottom half (1st and 2nd quartile) of the net income distribution. This is considerably larger than the 15% supplied to large-scale traders by the lower income groups in the maize market.

Table 4. Share of Total Soybean Sales Volume through Each Market Channel by Income Quartile, 2014/15

Market channel	Net Income Quartiles			
	1st	2nd	3rd	4th
Small-scale trader	20.50%	23.30%	22.60%	33.60%
Large-scale traders	9.90%	16.00%	41.20%	32.90%
Miller/processor	24.00%	33.00%	17.60%	25.40%
Other households (HH)	14.00%	32.80%	32.90%	20.40%
Govt. (FRA)	0.00%	0.00%	0.00%	0.00%
Other (schools, NGOs, etc.)	1.90%	13.30%	5.20%	79.60%

Source: RALS 2015.

Table 5. Share of Total Maize Sales Volume through Each Market Channel by Income Quartile, 2014/15

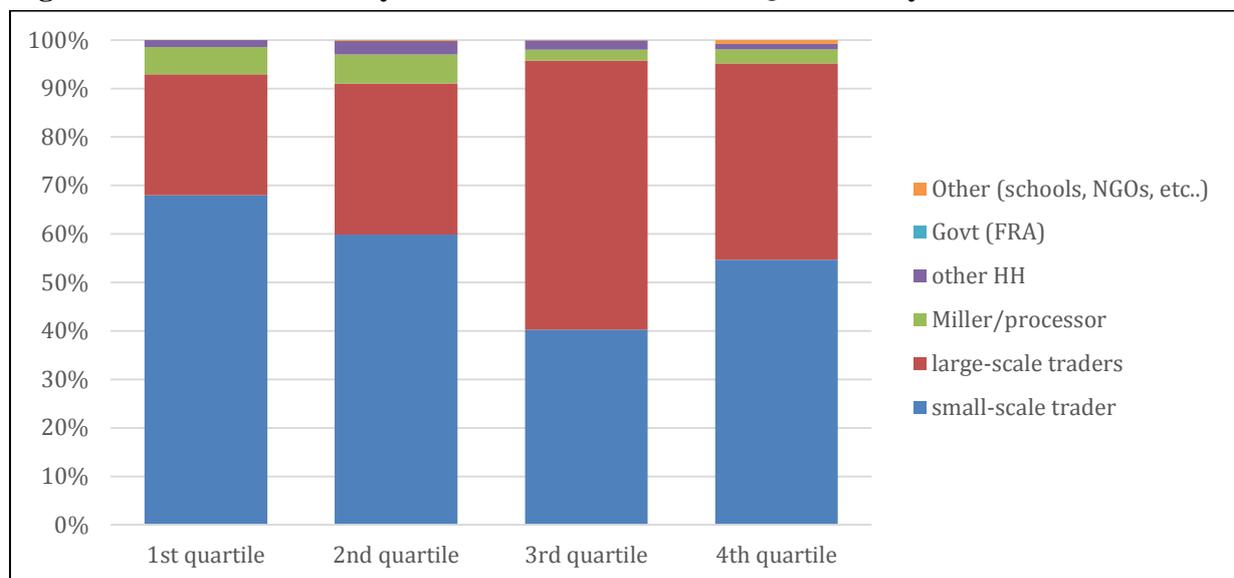
Market Channel	Net income Quartiles			
	1st	2nd	3rd	4th
Small-scale trader	14.50%	22.60%	24.90%	38.00%
Large-scale traders	3.80%	11.10%	24.40%	60.70%
Miller	2.10%	4.90%	8.90%	84.10%
Other HH	23.60%	27.00%	21.10%	28.30%
Govt. (FRA)	8.80%	15.80%	26.60%	48.90%
Other (schools, NGOs, etc.)	16.70%	41.30%	32.70%	9.30%

Source: RALS 2015.

In Figures 4 and 5, we break down the share of total sales within each income quartile by market channel. Figure 4 shows that within the lower income groups, large-scale traders are the second most important market channel behind small-scale traders for soybeans. Conversely, as shown in Figure 5, large-scale traders are the third or fourth most important market channel for maize sellers in the lower income groups.

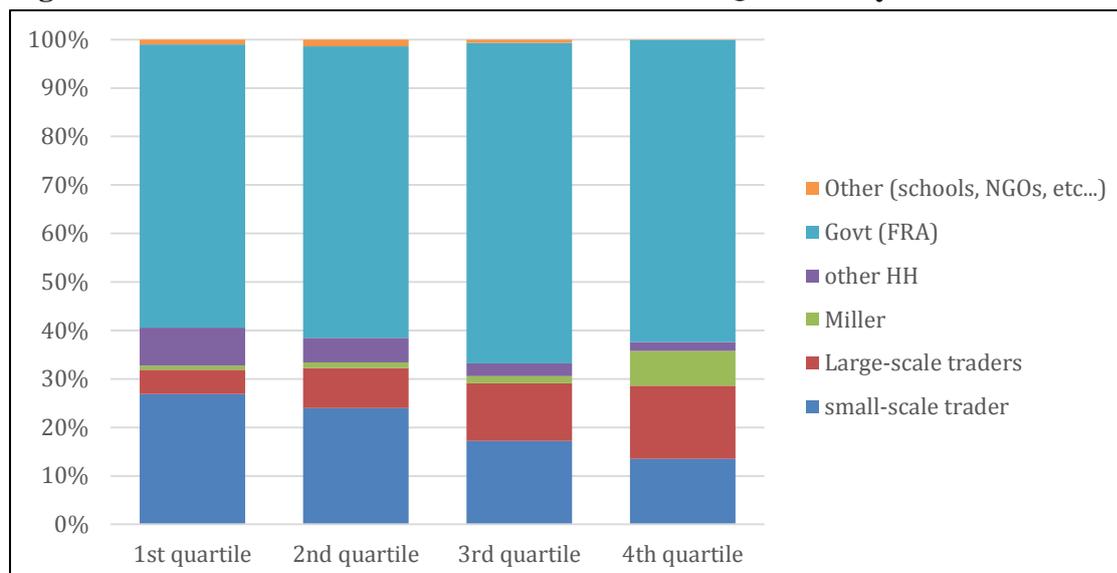
Taken together, these data suggest that there is solid evidence that poor households do sell directly through this emergent market channel. However, the crop context matters. Several important differences exist between maize and soybeans, which likely influence market behaviors. First, maize is both a staple food and cash crop. As such, poor households will retain the bulk of the maize they produce for consumption. This is not the case for soybeans, which are grown almost entirely as a cash crop in Zambia (Lubungu et al. 2013). Maize market participation is also closely associated with the size of the area cultivated, while this relationship is much weaker for soybean (ibid). Thus, poorer more land-constrained households that grow soybeans are still likely to sell. The fact that such a large volume of surplus soybeans purchased by large-scale traders comes from poorer households, with smaller surpluses to sell, also suggests that the sorts of origination networks described above are reasonably good at linking to these farmers. This is less so for maize. The role of the state marketing board is also important. As shown in Table 5, FRA purchases substantial volumes of maize, which limits the amount available for private sector actors. Conversely, the FRA is not active in the soybean market.

Figure 4. Share of Total Soybean Sales within Income Quartiles by Market Channel



Source: CSO/MAL/IAPRI 2015.

Figure 5. Share of Total Maize Sales within Income Quartiles by Market Channel



Source: CSO/MAL/IAPRI 2015.

5.3. Local Wholesalers' Perspectives

Whether or not multinational investment in grain trading triggers improvements in smallholder marketing conditions depends in large measure on the extent to which this investment improves competitive conditions in local assembly markets. Multinational investment can effect market competition in two primary ways. The first is through the expansion or contraction of wholesale market opportunities within local markets. This comes down to whether or not the entry of a multinational wholesaler into a local market serves to expand the number of existing wholesalers or whether it leads to consolidation. Although other mitigating factors are also likely at play, including the large and unpredictable role of the FRA in smallholder market markets, three attributes of multinational firms' integration into local markets suggest that they may contribute to local wholesale market consolidation. These are: 1) Access to cheap finance and larger economies of scale, which enable these firms to operate on smaller margins than local traders; 2) the use of local traders to procure on their behalf, which from a competition standpoint is functionally equivalent to these traders exiting the market; and 3) a seeming preference among smallholders for multinational firms over local domestic traders leading to less trade volume passing through local traders' hands.

Although we are unable to directly measure changes in the number of small and medium scale domestic traders in Zambia we are able to infer how the sector has changed by examining their contribution to the GTAZ. Membership in GTAZ is required for traders to acquire import and export permit and is the primary conduit for licensing a grain-trading firm in Zambia. Thus, changes in membership fees likely reflect changes in actual trader numbers. According to GTAZ, over the period 2008 to 2014, the contribution of small and medium scale domestic traders to GTAZ dropped from over US\$ 3000 to less than US\$1000. This is indicative of a substantial decline in active domestic trading. This decline is, of course, not solely the result of an inability to compete with multinational firms. During this same period the FRA substantially expanded its role in smallholder grain markets. However, local traders confirm that their business has been placed under pressure by multinational entry into their markets, thus limiting tradable volumes and leading to some traders exiting the market.

Because this wave of investment is in an early stage in Zambia, it is unclear if the apparent consolidation of local trading will prove beneficial to the grain-trading sector, by forcing out high margin, inefficient traders, or will limit competitive market opportunities for smallholders.

The second mechanism by which multinational firms influence competition in local domestic trading is through their policy advocacy efforts. Trade and price policies for agricultural commodities in Zambia are characterized by high unpredictability, which increases risks for grain traders and limits incentives to develop transparent, structured trading platforms such as commodity exchanges (Sitko and Jayne 2012). While this policy-induced uncertainty can generate rents for those with asymmetric knowledge about government's intentions, the overall effect on the sector is to limit investment and willingness to take riskier positions in the market. As such, multinational firms have invested considerable time and effort advocating to policy mechanisms that can improve the predictability of government trade policies, the scope and scale of the FRA in domestic markets, and to put in place legislation to enable the creation of a functional commodity exchange. To the extent that these advocacy efforts are successful, they can enable more level playing field for all actors in the market to participate.

In 2014, advocacy efforts of large-scale trading firms, both domestic and multinational, succeeded in convincing the Minister of Agriculture to sign a Statutory Instrument that enables the trading of warehouse receipts in Zambia. The warehouse receipts, which will be linked to a commodity exchange, can theoretically help both small and large domestic wholesalers to access lower cost financing and improve their capacity to store grain. Thus, through their advocacy efforts multinational firms may support the development of more competitive market conditions for local traders.

5.4. Trends in Grain Trading Margins

Thus far we have highlighted the potentially divergent ways in which the multinational investment wave can affect the performance of domestic grain markets. Whether or not the effects of this investment is positive or negative for the performance of the market can be gauged by examining trends in trading market margins. A decline in trading margins over time would indicate increasingly competitive conditions, which would be beneficial to both producers and consumers. Conversely, an increase in margins would indicate a decline in competitive forces and would reflect market concentration.

To measure trends in trading margins we conducted a survey of 12 grain wholesalers, five multinational, and seven local, drawn from seven provinces of Zambia. This survey sought to determine trends in costs and margins in grain trading from 2008/09 marketing season to 2013/14 season. The major cost items identified during the survey were labor/handling, fumigation, transport, and the farm-gate cost of maize grain. Table 6 summarizes trends in the maize costs and marketing margins from the 2008/09 to the 2013/14 marketing seasons.

We find that between 2008/09 and 2013/14, wholesale margins for maize in Zambia declined from \$69/ton to \$14/ton. Though the decline has not been secular in dollar terms, it has been in local kwacha terms. The volatility of dollar costs and margins are associated with sharp movements in exchange rates during this period. The substantial declines in margins are driven by both an increase in the price paid to acquire grain, which rose 16% in this period, and a decline of 9.6% in average selling prices. Cost associated with storage and transport all remained stable over this period.

Table 6. Costs and Margins Estimates for Maize Trading in Zambia in Real US\$ per Ton

Cost item in US\$ per ton	Marketing Season					
	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Labor and handling	14	12	12	12	12	12
Fumigation	1.3	1.0	1.0	1.0	1.0	1.3
Transportation	36	30	31	31	31	31
Maize purchase price	192	164	195	203	212	224
Total	243	206	238	247	256	268
Selling prices (into-mill-price)	312	252	259	284	286	282
Margin	69	46	21	36	31	14

Source: Author's Calculations.

This trend in marketing margins is, therefore, beneficial to consumers and producers, and is indicative of an increasingly competitive wholesale grain market. This decline in margins coincides with the expansion of multinational investment in grain trading. Yet, there is concern that this decline in margins could be short lived. With prevailing margins as low as \$14 per ton smaller scale domestic wholesalers suggest it is increasingly difficult to remain in business. The concern is that as these margins begin to force smaller volume, but otherwise relative efficient traders from the market, competition within Zambia's wholesale and assembly markets will decline. If that is the case, then the positive trends in marketing margins may reverse.

Yet it is important to note that the entry of multinational capital into Zambian grain trading is not the only factor driving declining trading margins. Another important contributing factor is government price controls. Over the period of interest, the government has expanded its role in smallholder grain markets through its FRA operations, purchasing up to 80% of the smallholder maize crop in 2010 (Sitko and Kuteya 2013). The FRA offers pan-territorial prices and therefore tends to pull up average farm-gate prices. Thus, grain wholesalers are forced to raise their buying price from farmers in order to compete with the government price. At the same time, the government sells maize to millers at prices lower than the purchase price in order to maintain low consumers prices of mealie meal (a staple food in Zambia). In order for grain wholesalers to sell their grains locally, grain wholesalers have to match the lower government price. The net effect is that wholesale margins are squeezed, thus substantially undermining the capacity of wholesalers, particularly lower volume local traders, to be profitable.

6. CONCLUSION AND RECOMMENDATIONS

Our analysis suggests that the wave of multinational investment into Zambia's grain trading sector has thus far proved broadly beneficial to the performance of the market. Smallholder farmers who sell grain suggest that the influx of these multinationals has provided them with more cost competitive, trustworthy, and professional market outlets than before. These markets are available to both rich and poor households. Moreover, some of these firms are providing ancillary services to farmers, including market price information, input credit, and extension advice. In addition, these firms are in some cases pumping credit into local wholesale markets through contractual arrangements with small-scale local traders, which enables an expansion of assembly trading activities. Finally, this investment wave has coincided with a sharp decline in marketing margins, which is beneficial for both consumers and producers.

Yet this positive story must be read with some caution. While the sharp decline in trading margins has likely helped to improve efficiency in the market and forced higher margin traders out, there is concern that relatively efficient, lower volume traders, cannot profitably remain in the market under current conditions. If this were the case we would anticipate a steady rise in trading margins as these traders exit the sector and competition for grain begins to dwindle.

What can policy makers in Zambia, and other African countries facing the same sort of investment interest, do to capitalize on the beneficial aspects of this investment while managing its risks? Our analysis suggests that addressing differences in the cost of credit for domestic and multinational firms is a potentially important point of leverage, which can enable domestic firms to be cost competitive with multinationals. Addressing these differences requires developing strategies to lower both the cost of domestic borrowing and collateral requirements for domestic wholesalers to borrow.

However, in Zambia the opposition is occurring. Interest rates in Zambia are high and rising, due in large part to a rapid increase government borrowing from domestic credit markets. Treasury bill yields on 182-day bills have increased from a low of 2.6 in April 2010 to 17.5 as of August 2014. This has had the effect of mopping up much of the available capital in domestic credit markets and pushing up the cost of what remains. Greater fiscal discipline is therefore needed to improve the competitiveness of domestic lending and to support domestic industry growth.

More specifically to the grain-trading sector, policy-makers must provide the necessarily enabling environment to support the development of a warehouse receipt system linked to a functional commodity exchange. While the Zambian commodity exchange has languished in recent years, the government has recent designated a warehousing authority, which is seen as the last legal hurdle to implementing a warehouse receipt system (Sitko and Jayne 2012). Warehouse receipts can enable local wholesalers to utilize grain stocks held in certified warehouses as collateral to access commercial credit (Coulter and Onumah 2002). This has the dual advantage of improving credit conditions for these traders and enabling them to store grain in anticipation of higher prices later in the season.

However, while these strategies offer potential instruments to improve lending to the sector, the effectiveness of these interventions ultimately requires a more predictable policy environment. Current state interventions in grain markets are not only driving down margins in the trading sector, and thus putting substantial pressure on smaller-scale local wholesalers, the unpredictability of these interventions also stymies lending to the sector. Banks may be

unwilling to lend against warehouse receipts, or will only lend a small percentage of the current value of stocks held in warehouses if future price uncertainty is high due to policy unpredictability.

Thus, in many ways Zambia's grain markets, and indeed the grain markets of the region, are at a critical juncture. If the policy status quo is maintained, Zambia is likely to see industry consolidation and a substantial decline in competition in the grain-trading sector, which will have long-run detrimental effects on producer and consumer prices. Yet, if pro-active steps are taken to improve policy predictably and increase credit availability to local wholesalers, the opportunity exists for a truly radical and pro-poor transformation in the functioning of these markets. It is hoped that by elevating the visibility of this on-going transformation, this article can play a role in informing current policy discussions on grain market development.

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