Regional Network of Agricultural Policy Research Institutes

ReNAPRI
REGIONAL NETWORK OF AGRICULTURAL
POLICY RESEARCH INSTITUTES

Anticipating the Future of Agriculture in Eastern and Southern Africa:
The Role of Market Intermediaries in Facilitating Grain Trade

1. Introduction

African countries have undergone significant transformation in their economic and policy environment over the years that has led to impressive levels of trade liberalization, increased openness, and heightened exposure to international competition. The trade liberalization process across Sub-Saharan countries has generally been coupled with sweeping market reforms in their agricultural sectors, and marked efforts to enhance market access both domestically and internationally, through improved coordination and efficiency in commodity markets.

Notably, governments across Sub-Saharan Africa continue to maintain an active role in staple food markets, with interventions ranging from facilitative to restrictive. Central to the high level of government intervention in agricultural market development has been a persistent and widespread distrust of private sector actors' participation in these markets (Sitko and Jayne, 2014). This perception has been anchored in the belief that market intermediary's practices are noncompetitive, predatory, and likely to result in rural smallholders falling prey to extortion by the perceived oligopolistic behavior. The role that market intermediaries play in African cereals markets has often been misunderstood due to a number of factors including not limited to; 'market access' being under-conceptualized in empirical studies (Chamberlain and Jayne, 2012; Chapoto and Jayne, 2015) leading to empirical analyses that reveal little about the challenges that smallholder farmers face with regards to food market development, as well as the important role that market intermediaries play assembling cereals (more especially grain) at the village-level.

This report summarizes findings from recent studies by Chapoto and Jayne (2016) and Sitko and Chisanga (2016), and draws key insights from the 2nd ReNAPRI Annual Stakeholders Conference held in Maputo, Mozambique in 2015 were in related papers and materials were presented and discussed with the view to inform regional policy making and implementation processes surrounding grain trade. More specifically, the brief provides insights to inform the process for the development of the FoodTrade Eastern and Southern Africa (FTESA) supported G-Soko Trading Platform whose principle aim is to facilitate trade between grain suppliers and buyers across the Eastern Africa region through a structured market mechanism.

Key Messages

- In three out of the four Eastern African countries (Ghana, Kenya, Mozambique and Zambia), grain assemblers have proved to be the most important market channel utilized by farmers, regardless of their relative degree of market access (Sitko and Jayne, 2014). The country with some variation in marketing behaviors relative to those in other countries was Zambia, were the study found that assembly traders where the most frequently utilized market channel for farmers in more remote villages and the second most important channel for those in more accessible villages.

- Roughly 70 per cent of farmers' maize sales transactions with private traders occurred within 1km of households' premises, indicating the extent to which private assembly traders are operating in areas typically categorized as isolated (Chapoto and Jayne, 2016).

- Long distances traveled by about five per cent of the farms generally represent a deliberate marketing strategy by those with large volumes who chose to sell directly to industrial buyers in towns (Chapoto and Jayne, 2016)

- Most households selling maize chose to sell to private traders. In Zambia for example, private traders account for over 60% of all maize transactions with farmers.

- Direct participation of governments in the market through food reserve agencies and marketing boards undermine the development of the assembly trading sector causing private sector players to exit the market and further exacerbating market inefficiencies and in fact, promoting market failure.

- Multinational firms are playing an increasingly prominent role in African grain and oilseed markets. In the 2011/2012 crop marketing season in Zambia, large-scale grain trading firms directly handled approximately 500,000 metric tons of maize, soybeans and wheat. This amounted to 25 percent 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.

- Recommendations to enhance the participation of market intermediaries in grain trading include;

  - Minimizing the direct participation of Governments in the market through Food Reserve Agencies and Marketing Boards;
  - Promoting the use of Commodity Exchange/ Structured Grain Trading Systems;
  - Developing and Implementing Well-managed Formal Export Trade Regimes
  - Creating Appropriate Policies and Regulations to Govern the Grain Trading Sector.

2. Market Access and Role of Intermediaries

Ever since von Theunen (1826), it has been well accepted that, even in the most efficient of markets, farmers in more remote areas would receive somewhat lower prices than those in less remote areas. Studies have been undertaken in an effort to provide evidence for policy formulation that resolves this challenge however, to date conclusions about African farmers being poorly served by markets are often based on price transmission or spatial/temporal market efficiency analysis, where the focus of attention is on the extent and speed of adjustments between prices in various markets (survey of the literature on price transmission in Southern African food markets (e.g. In Southern Africa; Goletti and Babu, 1994; Chirwa, 1999; Loy and Wichern, 2000; Tostao and Brorsen, 2005; Abdulai, 2007; Burke 2012; Myers 2013) and in the wider region (Abdulai, 2000; Rashid, 2004; van Campenhout, 2008)), which reveal nothing about the difficulties that farmers face in finding market outlets for their crops or the degree of competing buyers that they may choose from, and provide minimal evidence to guide policy makers in addressing concerns about farmers' market access conditions.

The studies found that market intermediation by assembly traders was able to bridge the geographic distances between farmers and urban markets weakening the link between geographic location and market access. Furthermore it highlighted that the so called "Briefcase Traders" have and continue to play a key role in providing a market for farmers in remote and isolated areas.

Conceptualizing market access as being multidimensional and related to the number of buyer options available to farmers, the distance traveled by farmers to the point of sale, and the price received by farmers brings to the fore the role that market intermediaries may play in bridging the divide between rural farms and urban markets. With a country focus on Zambia, the study evaluates the current status of farmers' access to markets for maize and fertilizer (two strategic commodities in Africa to which market failure is commonly attributed), and provides a nationally representative foundation for assessing the severity of market access constraints.

This straightforward approach can be easily replicated regionally in future household surveys, to provide a more generalizable picture of African farmers' market access conditions and allow for more effective policy formulation and implementation.

Figure 1 and 2 illustrate the important role assembly trader's play as market intermediaries as the largest group of private buyers in grain markets.

Figure 1: Private buyers of maize among small and medium-scale farmers in Kenya

Figure 1: Private buyers of maize among small and medium-scale farmers in Kenya

Figure 2: Private buyers of maize among small and medium-scale farmers in Zambia
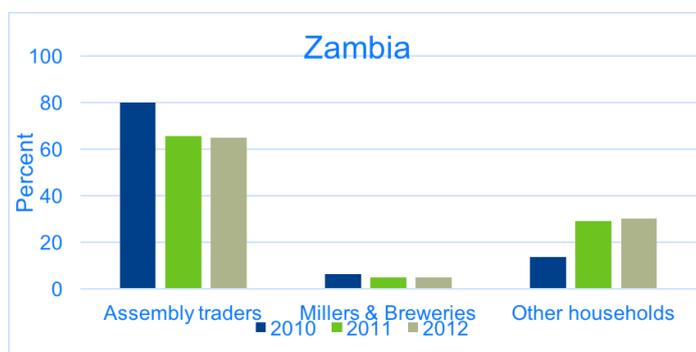
Sources: Market Access Presentation 1st ReNAPRI Annual Stakeholders Conference (Chapoto, Jayne, and Chamberlain, 2014)

Main findings

1. *Market Intermediaries Participation in Maize Markets is Substantial*

   Assembly traders are the most frequently utilized market channel for farmers in more remote villages, and the second most important channel for those in more accessible villages in Zambia. Contrary to conventional wisdom, the assembly trading sector is vibrant in more remote regions. Most households selling maize chose to sell to private traders. In the 2007/08 marketing season, private traders accounted for 70.1% of all maize transactions with farmers. Amongst farmers selling to private buyers, assembly traders operating in and around the villages are the dominant type of buyer. In the 2009/10 marketing year, assembly traders accounted for 80.0% of the transactions between farmers and private maize buyers. Notably, research has shown that that assembly trader prices in comparison to other channels of grain trade tend be lower.

2. Rising of the Multinational Firm Participation in Grains and Oilseed Markets

Sitko and Chisanga (2016) investigate the increasingly prominent role multinational firms are playing an in African grain and oilseed markets. They note the rising investment wave in the sector and the implication for the creation of new food market development strategies. Initial findings on the role on MNCs as market intermediaries posits that a demand driven model can trigger radical transformations in crop value chains in Africa. Amongst the key finding of this study was that during the 2011/2012 crop marketing season in Zambia large-scale grain trading firms directly handled approximately 500,000 metric tons of maize, soybeans and wheat. This amounted to 25 percent of the total marketed surplus for these three crops. Using estimated nominal 2012 farm-gate prices for these commodities, 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. 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. In general, the study identifies two major market channels for the selling of grain by smallholder farmers. The first entails multinational firms setting up buying points and purchasing directly from smallholder farmers, whilst the second and more common entails smallholder farmers selling grain to market intermediaries, who in turn sell to the multinational firms. The study notes in this regard, that smallholder farmers who sold their grain to multinational firms stated that the same provided them with more cost competitive, trustworthy, and professional market outlets than before. Furthermore, the study notes that multinational buying decisions to other sorts of investments, including input credit, extension services, and market price information. Chamberlin et al., (2014) reasserts that these ancillary services are primarily explored by firms with longstanding relationships to smallholders through cash crop outgrower operations.

Table 1 shows the transformation in the maize market patterns in Zambia by presenting a snapshot of buyers of maize in 2012 and 2015. The table illustrates an increase in the role of small scale-traders (market intermediaries) buying from small scale farmers (0 to 2 ha and 2 to 5 ha farms) increasing from 15% and 10% in 2012 to 27% and 18% in 2015 respectively. Similarly in the case of large-scale traders or multinational corporations, we note an increase in purchases from medium-sized farms (i.e. 5 to 10ha and >10ha respectively) from 2% and 5 % in 2012 to 10% and 18% in 2015. Overall, in comparison to 2012, the study observers an increase in purchases from large scale traders from 3% in 2012 to 12% in 2015, in comparison to a 7% increase in small scale-traders purchases, and a 5% increase in millers/ processors purchases and a fall in FRA purchases of 21%.

Table 1 Changing maize market patterns in Zambia.

Land Size	Small-scale traders		Large-scale traders		Millers/ processors		FRA		Total MT sold	% of total
	MT sold	row %	MT sold	row %	MT sold	row %	MT sold	row %		
2012										
0 to 2 ha	38 414	15%	6 308	2%	3 902	2%	193 246	74%	255 356	17%
2 to 5 ha	52 177	10%	8 491	2%	8 499	2%	424 900	83%	509 746	35%
5 to 10 ha	20 608	6%	7 652	2%	11 874	3%	300 365	87%	347 121	24%
>10 ha	31 403	9%	18 165	5%	23 505	7%	268 177	77%	348 130	24%
Total	142 602	10%	40 617	3%	47 780	3%	1 186 689	81%	1 460 353	100%
2015										
0 to 2 ha	58 789	27%	11 869	5%	6 934	4%	118 911	56%	212 367	10%
2 to 5 ha	98 881	18%	47 098	9%	20 730	4%	357 920	65%	546 466	26%
5 to 10 ha	106 503	17%	62 374	10%	46 951	8%	388 956	62%	622 911	30%
>10 ha	79 793	12%	119 729	18%	98 874	14%	369 129	54%	683 452	33%
Total	343 966	17%	241 071	12%	173 488	8%	1 234 916	60%	2 065 196	100%

Source: Jayne et al., (Forthcoming)

3. Increased Multinational Firm Participation is Regional

The rising investment trend is observed in all major grain producing countries in Eastern and Southern Africa including; Malawi, Tanzania, Kenya, and Mozambique. The observed trend is 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. Table 2 shows the export parity prices and production, surpluses/deficits of maize grain in 2016.

Table 1: Export Parity Prices Production, Surpluses/Deficits and Price for Zambia and the Region

Country	Production (MT)	Surplus/ Deficit (MT)	Export Parity (US$)
Zambia	2,873,052	634,681	
Zimbabwe	511,816	-700,000	320
Malawi	2,719,425	-223,723	300
South Africa	6,624,375	-3,650,000	174
Tanzania	6,000,000	-227,221	171
Kenya	3,600,000	-610,000	83
Uganda	2,600,000	-213,532	85
Mozambique	1,350,000	-1,463,532	193

Source: FAO GIEWS; NAMC, 2016.

The El Niño that swept through Southern Africa, left all the countries except Zambia with maize grain deficits. Countries such as South Africa (Traditionally a net exporter) recorded the largest grain deficits discounting them as the leading net exporter of grain for the 2016/2017 marketing season (Zambia Maize Outlook and Regional Analysis, 2016). Notably, the effects of El Niño in Zambia were moderate and the country managed to produce an exportable surplus of more than half a million metric tonnes presenting the country an opportunity to become the leading exporter of maize in the SADC region for the 2016/17 marketing season. However, an ongoing export ban on maize to ensure Zambia's food security has to-date seen Zambia forego this opportunity. With an export ban in place, instead of looking to purchase maize stocks from Zambia, countries such as Zimbabwe, Malawi, Mozambique, Botswa¬na, Lesotho, Namibia, and Swaziland have looked to deep sea options such as Ukraine, Mexico, USA and Brazil to meet their needs for maize grain. This uncertainty, combined with a growing and more affluent urban population, have prompted firms to explore opportunities to tap into domestic production to meet a greater share of domestic and regional demand. Notably the existence of well-managed formal export trade regimes would have better prepared countries such as Zambia to take advantage of the existing regional situation. Furthermore, coordination of early warning systems, monitoring of market interventions and food prices would have enhanced the region's preparedness for the effects of El Nino, and contributed to enhancing their climate resilience.

4. Changing Farm Structure – The Rise of Medium Scale Farms

Medium-scale farms are growing rapidly in most of Africa and now control more land than large-scale foreign investors in African countries such as Ghana, Kenya, and Zambia (ReNAPRI Policy Brief, 2014). The rise of medium-scale farms reflects a rising demand for prime land wherein, farmland acquisition is largely being driven by urban-based and rural elites. Evidence suggests that urban households own between 15-35% of national farmland. Moreover, holdings between 5 and 100 hectares now account for more land than small-scale farms (0-5 hectares) in two of the three countries examined (Ghana and Zambia) as depicted in Table 2. As depicted in Table 1, the rise in medium scale farms can and has been playing a major role in transforming maize markets (Jayne et al., 2014). Notably, the study finds that the bulk of the growth in large scale traders purchases (14% sales from >10 ha farms in 2015) has been attributed to their interactions with medium scale farms. This suggests that medium scale farms are playing a major role in creating the maize production surpluses that have fueled the heightened level of purchases from multinational firms.

Table 2: Medium Scale Farmers Land Acquisition

Country	Large Scale	Medium scale (5-100 ha)	Small Scale (0-5ha)	Potentially available cropland remaining
Millions of Hectares				
Ghana	3.08	4.21	5.08	3.56
Kenya	0.69	0.84	2.63	1.01
Zambia	2.11	2.47	2.09	3.35

Source: Jayne et al., (Forthcoming)

5. Market Intermediaries Minimize Role of Distance as a Factor for Smallholder Access to Markets

Assembly trader routinely purchase grain directly at the farm gate. Most farmers either sold their maize directly on their farms, or travelled very short distances to sell their maize to private buyers irrespective of volume. As such, distance to the nearest town, or even distance to the nearest wholesale market, appears to be a misleading indicator of smallholders' market access conditions for selling maize. This finding is reinforced by Sitko and Jayne (2014). Notably, distances from urban centers or tarmac roads are found to be uncorrelated with either the probability of farmers' participation in maize markets or the quantity of maize sold. Table 1 and 2 support the assertion that market access is enhanced by the presence of market intermediaries. The tables be evidence the assertion that the distance does not influence the volumes of maize sold by small-holder farms.

Table 1: Distance Travelled to Assembly Traders in Kenya

Bags of maize sold	No. of House-holds	Mean (Km)	Percentile of farm household distribution				
			10th	25th	50th	75th	90th
< 5 bags	797	0.9	0	0	0	1	3
5 – 25 bags	537	1.6	0	0	0	0	3
25 – 50 bags	111	2.2	0	0	0	0	7
>50 bags	104	6.2	0	0	0	0	14
All farmers	1,549	1.6	0	0	0	0.5	3

Sources: Market Access Presentation 1st ReNAPRI Annual Stakeholders Conference (Chapoto, Jayne, and Chamberlain, 2014)

Notably, the figures show that about 50% of farmers, irrespective of volume choose to sell grain on their farm.

Table 2: Distance Travelled to Assembly Traders in Zambia

Bags of maize sold	No. of House-holds	Mean (Km)	Percentile of farm household distribution				
			10th	25th	50th	75th	90th
< 5 bags	45,370	2.9	0	0	0	1	9
5 – 25 bags	105,134	6.2	0	0	0	3	18
25 – 50 bags	20,769	11.4	0	0	1	11	25
>50 bags	19,839	14.5	0	0	1	10	46
All farmers	191,138	6.9	0	0	0	3	20

Sources: Market Access Presentation 1st ReNAPRI Annual Stakeholders Conference (Chapoto, Jayne, and Chamberlain, 2014)

6. *Farmers Use Economic and Social Logic for Transaction with Assembly Traders:*

The results show that farmers generally have a number of options for selling grain to different assembly traders in their villages. There are a number of reasons for use of assembly traders as market channel;

1. Assembly traders buy maize directly in villages – thereby reducing transportation costs. This is particularly important for farmers who are unable to achieve sufficient economies of scale in production to lower the unit cost of transport to a point where transporting their surplus to markets outside of the village becomes profitable (Sitko & Jayne, 2014).

2. Direct cash transactions at the time of sale offer an incentive for farmers to sell to assembly traders.

3. Timing of sale also plays a crucial role as grain assemblers often purchase grain from rural markets soon after the harvest as compared to other market channels i.e. processors and marketing boards who await a drop in moisture content before purchasing. In this regard, the warehouse receipting system (WRS) set to be implemented under the Zambian Commodity Exchange (ZAMACE) for example, would create a structured market system that would enable farmers to delay sales until later in the season. However, it must be noted that appetite towards utilizing the WRS or structured grain systems are likely to only intensify once enough volumes have passed through these systems such that they become viable entities.

7. *Market Channel Choice is a Deliberate Marketing Strategy by Farmers*

The majority of farmers sold right on their farms to private buyers, regardless of transaction size. More than 75% of farmers selling to private buyers sell to assembly traders whilst only 6.5% sell to millers, breweries and non-household buyers. On average, households selling their maize directly to millers and other large-scale processors tended to travel greater distances compared to sales to other private buyers.

8. Government Participation in Markets

Sitko and Jayne (2014) find that in the absence of clear analysis of assembly traders' role in staple food markets in the region, the political rhetoric on their behavior frequently describes them as exploitative or parasitic. They argue that this rhetoric has provided the political justification for expanding the scope and scale of state-led marketing boards, such as the Food Reserve Agency (FRA) in Zambia, Malawi's Agricultural Development and Marketing Cooperation (ADMARC) and Kenya's National Crop and Produce Board (NCPB).

Nevertheless, increased participation of government in grain markets has resulted in limited the full development of private trade mainly due to policy inconsistencies arising from the inability of the government to maintain its position on announced quantities, purchasing timeframes, and prices. In Zambia for example, the Government's participation in the maize market has remained stubbornly high. In the 2015/2016 marketing season, the FRA announced its buying price of K85.00 per 50kg bag (approximately US$170/ tonne) to meet a strategic reserve quantity of 1 million metric tonnes - an amount above the mandated 500,000 metric tonnes. As of 11th October, 2016 the FRA had only managed to purchase about 276,000 metric tonnes, unlike other years where they would have fulfilled their target by this time (IAPRI White Paper, 2016). . This was due to fiscal constraints Conversely, private traders as of July 2016, were buying maize at an average price of K95 -K112 per 50kg (approximately $190-$224/tonne) and paying on the spot. This means that private traders have been and continue to compete heavily with the FRA. Furthermore, although private maize traders are expected to remain active this season after entering the market much earlier and ahead of the FRA, it does not take away from the fact that active Government participation in the market has resulted in the high crowding out private traders in the sector. The ad hoc and often unplanned manner in which policy changes are effected in the market have raised the level of uncertainty, and subsequently led to a more cautious approach in investments in the sector.

In the absence of well-structured grain markets and rules and regulations to govern the conduct of key players in the market, assembly traders will continue to compete for market share with the Government. Unpredictable policies such as the on-going export ban in Zambia deter private investments in the sector and narrow their full participation.

3. Conclusion and Recommendations

Market intermediation has the potential to bridge the geographic distances between farmers and urban markets, and therefore weaken the link between geographic location and market access. While agricultural policy in Africa has often been based on the premise that market access constraints are the primary impediment to smallholder commercialization and productivity growth, the findings here support Barrett's (2008) assessment of applied market participation studies that weak access to productive assets and technologies, and the low efficiency with which limited productive assets are used, may well represent the more serious constraints that prevent most households from producing a marketable surplus in the first place. We posit that farmers' market access conditions are influenced by the productive potential of the area, access to feeder road infrastructure, and related factors influencing the incentives of market intermediaries to operate in a given area. Serious efforts to encourage market development and to ameliorate market failure will require an increased commitment to investment in public goods, e.g., more widespread use of grades and weight measures, strategic investment in road, rail and port infrastructure, research and development of crop varieties and agricultural extension systems to raise smallholders' productivity to enable them to produce marketable surpluses.

The findings of this study seriously question the notion that state operations in remote rural areas are typically necessary to provide smallholder farmers with viable access to strategic grain markets. They indicate that Governments may indeed choose to support the price obtained by farmers for their grain, or reduce the variability of prices over time, but the analysis from Zambia suggests that the marketing board is not necessary to provide farmers with access to multiple buyers within their villages. The role of market intermediaries such as grain traders and Multinational Corporations in developing these markets therefore cannot be ignored.

In this regard, we propose the following recommendations;

a) *Minimize direct participation of governments in the market through Food Reserve Agencies and marketing boards;* as these types of interventions tend to undermine the development of the assembly trading sector causing private sector players to exit the market and further exacerbating market inefficiencies and promoting market failure. Taking the case of Zambia, to allay the concerns of the private sector about FRA's involvement into the market, the government should review the FRA mandate. In particular, the Government should direct its investments towards other key drivers of agricultural growth that would benefit many more people and help farmers diversify away from maize only.

b. *Promote the Use of Commodity Exchange (or Structure Grain Trading) Systems:* In Zambia for example, the Zambia Commodity Exchange (ZAMACE) will soon to be fully rolled out, it becomes pertinent therefore that FRA considers buying its strategic reserves through the commodity exchange when it is fully operational. This approach would result in a reduction in costs of maintaining the strategic reserve (IAPRI estimates that the cost to the National Treasury for holding 500,000 metric tonnes of maize is approximately US$26.7 million using a conservative storage loss of 10% over a period of 8 months) as logistics to procure grain such as handling, transportation, storage costs etc. will be borne by private sector rather than FRA.

c. *Develop and implement well-managed formal export trade regimes:* Unlocking regional grain trade opportunities in times of deficit requires open borders. Instead of a well-publicized export bans, countries such as Zambia should embrace a well-managed formal export trade regime. This will help the country to increase export earnings and reduce levels of maize smuggling/informal maize exports. More specifically, the regime should provide guidance on the involvement of government in the maize market, fertilizer, seed, crops and livestock markets; and introduce trigger mechanisms for the activation of established trade remedies to minimize policy uncertainty and maximize transparency. Policy consistencies in maize marketing and other agricultural products will enhance the market for smallholder farmers and in turn, create a conducive business environment for assembly traders and multinational corporations alike.

d. *Creation of appropriate policies and regulations to govern the grain trading sector:* Enhanced predictability and certainty in the application of policies to facilitate the creation of an enabling business environment will encourage greater investment in the agricultural sector. In Zambia, this involves fast fracking the enactment of the Agricultural Marketing Bill, and developing clear guidelines to signal/trigger the need use of trade remedies such as export bans.

e. *Reduce Government Participation in Maize Markets:* Governments should direct investments towards other key drivers of agricultural growth that would benefit many more people and help farmers diversify away from the focus on one key crop e.g. maize.

Other key drivers of agricultural growth include investment in research and development, and extension services.

Main References

Chapoto, A, Jayne, T. S., 2015. Reassessing the Concept and Measurement of Market Access: Evidence on Zambian Maize Markets. Working Paper

Sitko, N and Chisanga, B., 2016. How is Multinational Investment in Grain and Oilseed Trading Reshaping the Smallholder Markets in Zambia? Working Paper No. 104.

Sitko, N, Jayne, T.S., 2014. Demystifying the Role of Grain Assemblers in the Rural Maize Markets of Eastern and Southern Africa. Working Paper, No. 84.

Bibliography

Abdulai, A., 2007. Spatial and vertical price transmission in food staples market chains in eastern and southern Africa: What is the evidence? Paper prepared for the Conference on Staple Food Trade and Market Policy Options for Promoting Development in Eastern and Southern Africa. Trade and Markets Division, FAO Headquarters, Rome, Italy, March 1-2, 2007.

Barrett, C. 2008. Smallholder market participation: Concepts and evidence from eastern and southern Africa. Food Policy, 33, 299–317.

Burke, W.J., 2012. Maize Production in Zambia and Regional Marketing: Input Productivity and Output Price Transmission. Ph.D. dissertation. Lansing, MI: Michigan State University.

Chamberlin, J. and T.S. Jayne 2013. Unpacking the Meaning of 'Market Access': Evidence from Rural Kenya. World Development 41 (January): 245–264.

Hichambwa, M., Jayne, T.S., 2011. Agricultural Commercialization and Landholding Size in Zambia's Small- and Medium-Scale Farm Sector. FSRP Working Paper, forthcoming. Lusaka, Zambia: Food Security Research Project.

IAPRI White Paper. Opportunities and Challenges in Enhancing Agricultural Development in Zambia. http://www.iapri.org.zm/images/WorkingPapers/white_paper_2016.pdf

Jayne, T.S, A. Chapoto, N. Sitko, C. Nkonde, M. Muyanga, J. Chamberlin. 2014. Is the Scramble for Land in Africa Foreclosing a Smallholder Agricultural Expansion Strategy? Journal of International Affairs, 67 (2), 35-53.

Mather, D., D. Boughton, and T. Jayne. 2011. Smallholder Heterogeneity and Maize Market Participation in Southern and Eastern Africa: Implications for Investment Strategies to Increase Marketed Food Staple Supply. International Development Working Paper 113, East Lansing, Michigan State University.

Minot, N. 2008. Are Poor, Remote Areas Left behind in Agricultural Development: The Case of Tanzania, Journal of African Economies, 17(2): 239-276.

Tembo, G. A. Chapoto, T.S. Jayne, M. Weber. 2010. Fostering Food Market Development in Zambia. Zambia Social Science Journal, Volume 1(1): 39-60.

Tostao, E. and Brorsen, W., 2005. Spatial price efficiency in Mozambique's post-reform maize markets. Agricultural Economics. 33(2), 205–214.

T.S. Jayne, Ferdinand Meyer, and Lulama Ndibongo Traub. 2014. Africa's Evolving Food Systems: Drivers of change and the scope for influencing them. IIED Working Paper. IIED, London.

Von Thünen, Johann H., The Isolated State. Hamburg:, 1826. English translation. Oxford: Pergamon, 1966.
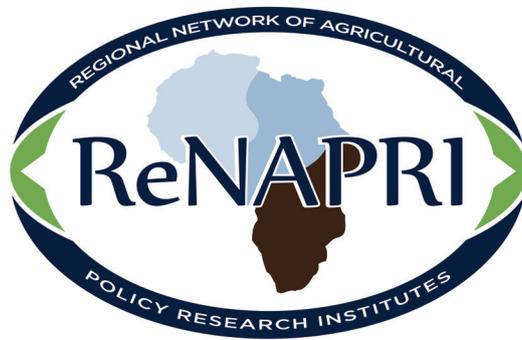
Funding for underlying research provided by:

FoodTrade Eastern and Southern Africa, Dar Es Salaam, Tanzania