

Market Information and Access to Structured Markets by Small Farmers and Traders

Evidence from an action research experiment in central Malawi: Synopsis

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1. BACKGROUND

Structured markets are organized platforms where economic agents such as farmers, traders, processors and financial institutions enter transparent and legal trading and financial arrangements (East Africa Grain Council 2013).

Structured markets are important for the stabilization of volumes and prices of agricultural commodities (Hernandez et al. 2017) and diversification of foreign exchange earnings (Edelman et al. 2014). If supported by export mandates, structured markets for cereals and legumes could also limit informal cross-border trade and increase agricultural exports (Government of Malawi 2016). They could potentially also provide better statistics on volumes traded to aid in the planning, production, and marketing of crops in Malawi (Baulch and Gondwe 2017).

Structured markets in Malawi include the long-established auctions for tobacco and tea, two commodity exchanges (Agricultural Commodity Exchange (ACE) and Auction Holdings Commodity Exchange), warehouse receipt systems as well as direct contracts with exporters.

Meanwhile, small farmers and traders, who contribute the largest volumes of agricultural commodities traded, cite missing markets as a major problem, particularly for staple crops (Ochieng et al. 2019). Lack of information from and understanding of these platforms has been identified as one of the limiting factors that keeps them away from structured markets (Baulch and Gondwe 2017; Baulch et al. 2018; Ochieng et al. 2019).

This policy note summarizes Working Paper 33 (Ochieng et al. 2020), which examines the impact of providing price information from a commodity exchange to small farmers and traders of maize and soybean in central Malawi. The study analyzes whether providing better price information increases volumes sold through structured markets, sales prices, and farmers' levels of commercialization.

2. METHODOLOGY

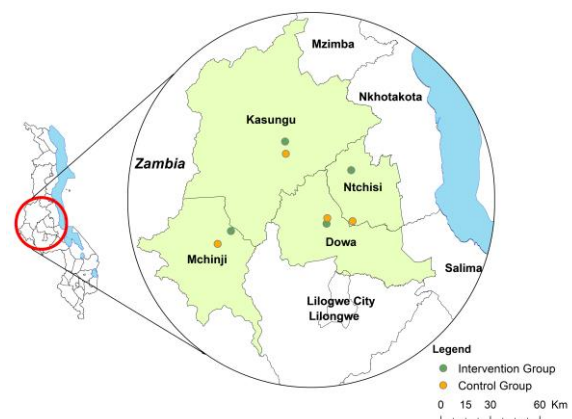
Our study used an action research experiment to analyze the effects of providing better price information to farmers and traders in four districts in central Malawi during the 2018/19 main harvest season.

We employed a multistage sampling procedure to sample the study areas, smallholder farmers and traders. The four

districts were chosen because of their contribution to the national maize and soybean output. In each district, we selected two farmers associations (FA), and assigned one FA that was closer to an ACE warehouse to the intervention group and another that was farther away from the ACE warehouse to the non-intervention (control) group.

The baseline sample for the study surveyed a total of 416 (204 treated and 212 non-treated) farmers and 78 traders in March 2019 while the endline sample in September 2019 included 399 (204 treated and 195 non-treated) farmers and 68 traders. The intervention involved providing all sampled traders and a treatment group of half the sampled farmers with weekly information on maize and soybean prices on ACE's trading platform from April to September 2019. The other half of farmers were included into the control group, which did not receive price information. Figure 1 depicts the study districts and farmers groups.

Figure 1. Study districts and farmers groups



Source: Authors' construction.

As farmers belong to the treated and control farmers groups, differed in some respects, we used kernel propensity score matching to ensure that similar farmers were compared. We then used difference-in-difference estimation to analyze the impact of providing price information on small farmers' sales through structured markets, sales volumes, sales price and commercialization levels. For traders, who could not be assigned to treatment or control groups, we analyzed impact in terms of the mean differences in sales through structured markets, sales

volumes and sales prices before and after the intervention. Descriptive statistics are used to provide an overview of maize and soybean marketing activities of farmers and traders as well as the general marketing environment.

3. RESULTS

The action research experiment and descriptive statistics produced a range of findings on small traders and farmers.

3.1. Findings from baseline surveys

About 80 percent of the surveyed farm household heads were men. The mean age of household heads was 47 years with about 6.5 years of formal schooling. Although the average household comprised five members, the dependency ratio was generally high (32 percent) for both the treated and control households. The average farm size was about 3.8 acres with a low level of crop diversity. In terms of market access, the average distance from dwelling place to the nearest market was about 4.8 kilometers (km) while the average distance to the nearest warehouse that stores agricultural commodities was about 1.7 km. About 64 percent of the farmers were able to sell whenever they wanted to, indicating that markets for both maize and soybean were not readily available to approximately one-third of all farmers. About 55 percent of farmers were aware about the existence of commodity exchanges in Malawi.

Table 1 presents a summary of percentages of farmers who accessed market information and reported type of lacking market information. Overall, about 60 percent of the farmers accessed market information. The proportion of treated farmers who accessed market information was 13 percent higher than for control farmers. Of the three types of market information farmers lacked, information on market opportunities was the most cited (76 percent) followed by information on prices (66 percent) and quality standards (38 percent). These types of information are important in facilitating small farmers' access to structured markets.

Table 1: Farmers' access to market information (%)

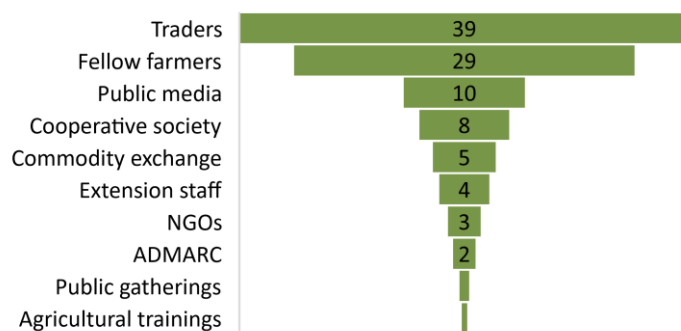
Type of information	All	Treated farmers	Control farmers
Access to market information	60	67	54
<i>Lacking information on...</i>			
Market opportunities	76	70	82
Market prices	66	59	73
Quality standards	38	38	38

Source: IFPRI baseline survey (2019).

In our survey, farmers were asked about their most important source of market information (Figure 2).

Many farmers valued market information from traders they sold to (39 percent), fellow farmers (29 percent) and public media, such as radio, TV and internet (10 percent). Other sources of information were cited by less than 10 percent of the farmers. Notably, only 5 percent of farmers cited commodity exchanges as important source of market information.

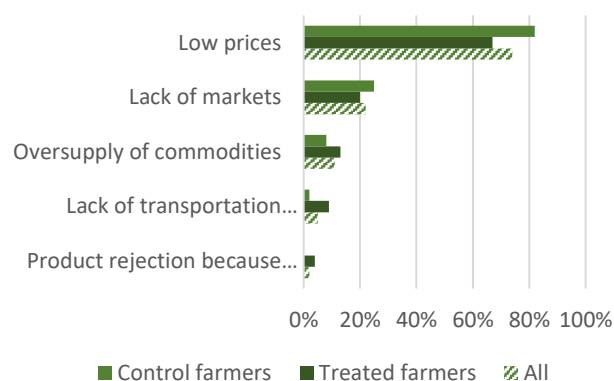
Figure 2: Most important source of market information (%)



Source: IFPRI survey data (2019).

Figure 3 presents a summary of the marketing challenges experienced. The most cited marketing challenge was low prices that cannot cover production costs (74 percent) and lack of markets for the two commodities (20 percent). Other challenges included oversupply of the two commodities in the market that led to price falls, lack of transportation means, and product rejection by buyers due to quality concerns.

Figure 3: Marketing challenges experienced



Source: IFPRI survey data (2019).

3.2. Effects of providing price information to farmers

Table 2 presents the empirical results on the impact of providing price information to farmers on volumes sold, sales price, sales through structured markets, and level of commercialization. Findings show that providing price information had a positive impact on sales through structured markets, sales price and levels of commercialization but this was not statistically significant. For maize sales, the price information had a significant but negative impact on maize sales. This paradoxical finding is not surprising for three reasons. First, even though the treated farmers could have become allocatively (price) efficient from the intervention, their aversion to production, market and price risks could have led to lower maize sales and retention of surpluses for household food security reasons. Second, a positive (though statistically insignificant impact) of the intervention on sales prices could have triggered a wait-and-see attitude among farmers hoping for better prices in the future. Lastly, small farmers with a target income may reduce further sales if they sell less at a higher price. Our findings are in line with other empirical

findings that providing price information to small farmers may have mixed effects on their trading (Aker and Ksoll 2016; Chikuni and Kilima 2019; Nakasone et al. 2014). It has also been argued that such interventions only have a significant effect on prices of perishable but not nonperishable commodities such as dry maize and soybean in this case (Muto and Yamano 2009).

Table 2: Seasonal share of purchases and sales (%)

	Sales			Sales price		
	Before	After	DiD	Before	After	DiD
Maize						
Coeff.	87.80	-68.5	-156.3**	2.86	9.32	6.46
SE	95.90	81.97	50.10	6.78	9.25	13.53
Obs.	391	407	797	214	220	434
Soybean						
Coeff.	281.80	226.8	-55.02	9.78	26.33*	16.54
SE	183.94	200.5	59.76	16.21	13.14	11.05
Obs.	380	371	751	357	353	710
Sales through structured markets			Commercialization rate			
Maize						
Coeff.	0.04	0.03	-0.02	0.03	-0.01	-0.04
SE	0.04	0.03	0.01	0.05	0.03	0.04
Obs.	408	389	797	406	389	795
Soybean						
Coeff.	0.07	0.18	0.11	0.07	0.04	-0.03
SE	0.04	0.16	0.17	0.04	0.07	0.06
Obs.	408	389	797	370	368	738

Source: IFPRI survey data (2019).

Note: DiD = difference-in-difference; Coeff = coefficient; SE = Standard errors. Obs = Observations; Before/After=Before and after the intervention.

3.3. Findings from trader surveys

On average, maize and soybean traders were 37 years old and the vast majority were men (95 percent). The traders had about 11 years of formal schooling and at least 7 years of experience in trading the two crops, which was the main source of income for 68 percent of them. Collective marketing by traders was minimal: only 4 percent of the traders were members of any organization marketing either of the commodities. Over 80 percent of maize and soybean traders relied on personal knowledge of the markets to set prices. About 45 and 40 percent of the traders obtained price information from public sources and other traders of the two commodities, respectively. (Table 3)

Table 3: Sources of price information for traders (%)

Source of price information	Maize	Soybean
Personal knowledge of the market	87	86
Public sources (internet, radio, TV, etc.)	45	47
Buyer of commodity	41	40
ACE	36	38
ADMARC	7	4

Source: IFPRI baseline survey (2019).

Note: ADMARC = Agricultural and Market Development Corporation.

Most traders used own capital to finance trading activities (84 percent) and only 2 percent financed their activities

using borrowed funds. About 15 percent used both own and borrowed funds. This is plausible given the high cost of collateralized financing with bank interest rates as high as 30 percent. Besides, collateral requirements are punitive for small businesses. This limits their capacity to aggregate higher volumes to access structured markets that demand higher volumes of supply.

3.4. Effects of providing price information to traders

Table 4 presents a comparison of the means selected trading variables in the baseline and endline surveys.

There were significant differences in level of awareness of ACE among traders and use of ACE services between baseline and endline periods. Perhaps unsurprisingly, the proportion of traders who were aware of ACE increased by about 25 percent. More importantly, the proportion of traders that used ACE services increased by 62 percent. There was also a positive and significant change in the average volume of maize sold between the two periods. However, the volumes of soybeans sold reduced between baseline and endline. Strikingly, the average maize and soybean prices per kg increased significantly between the two periods by MWK62/kg and MWK88/kg, respectively. This suggests a possible improvement of trader bargaining power when knowledge of market prices improved. The share of maize and soybean sales through structured markets also increased between baseline and endline although the increments were not statistically significant.

Table 4: Differences between baseline and endline periods

Variables	Baseline (n=78)	Endline (n=68)	Difference (Endline-Baseline)
Traders aware of ACE (%)	71.79	97.06	25.27***
Traders that used ACE services (%)	21.43	83.33	61.9***
Maize sales (in MT)	200.34	215.47	15.13*
Soybean sales (in MT)	246.96	90.89	-156.07
Maize price (per Kg)	139.1	201.43	62.33***
Soybean price (per Kg)	205.14	293.04	87.9***
Maize sales through structured markets (%)	17.94	23.4	5.46
Soybean sales through structured markets (%)	22.37	23.89	1.52

Source: IFPRI survey data (2019).

Note: MT = metric ton; Kg = kilogram; *p<0.1, **p<0.05, ***p<0.01.

4. CONCLUSIONS AND POLICY IMPLICATIONS

The key conclusions and policy implications from this study are:

1. For farmers, providing better price information had a positive but statistically insignificant impact on sales through structured markets, sales price and levels of commercialization. Surprisingly, better price information reduced the volume of maize sold by farmers in general.
2. For traders, we found positive and significant differences in several indicators: level of awareness of commodity exchanges; maize (but not soybean) sales; and maize and soybean sales prices. The change in the shares of maize and soybean sales made through structured markets was positive but not statistically significant.
3. Small farmers and traders make limited use of existing structured markets, such as commodity exchanges and warehouse receipt systems. Improving their access to information and understanding of existing structured market opportunities, and the quantity and quality requirements of such markets, will increase small farmers and traders use of structured markets.
4. Providing small farmers and traders with price information alone is not enough to facilitate their access to structured markets. There is need to standardize quality grades, lower costs of collateralized financing and warehousing charges in warehouse receipt systems in Malawi.

5. RESOURCES

- Aker, J. C., and C. Ksoll. 2016. "Can mobile phones improve agricultural outcomes? Evidence from a randomized experiment in Niger." *Food Policy* 60: 44-51.
- Baulch, B., and A. Gondwe. 2017. *The case for structured markets in Malawi*. MaSSP Policy Note 29. Lilongwe: Malawi. International Food Policy Research Institute.
- Baulch, B., A. Gross, J. D. Chimgonda-Nkhoma, and M. Chikumbutso. 2018. *Commodity Exchanges and Warehouse Receipts in Malawi*. MaSSP Working Paper 25. Lilongwe: Malawi. International Food Policy Research Institute.
- Chikuni, T., and F. T. Kilima. 2019. "Smallholder farmers' market participation and mobile phone-based market information services in Lilongwe, Malawi." *The Electronic Journal of Information Systems in Developing Countries*: 85 (6), p.e12097.
- East Africa Grain Council. 2013. *Structured Grain Trading Systems in Africa*. East Africa Grain Council. Nairobi, Kenya.
- Edelman, B., H. L. Lee, A. Mabiso, and K. Pauw. 2014. *Strengthening storage, credit, and food security linkages: The role and potential impact of warehouse receipt systems in Malawi*. MaSSP Working Paper 14. Lilongwe: Malawi. International Food Policy Research Institute.
- Government of Malawi. 2016. *National Trade Policy*. Lilongwe: Ministry of Industry and Trade.
- Hernandez, M. A., S. Rashid, S. Lemma, and T. Kuma. 2017. "Market institutions and price relationships: The case of coffee in the Ethiopian commodity exchange." *American Journal of Agricultural Economics* 99 (3): 683-704.
- Muto, M., and T. Yamano. 2009. "The impact of mobile phone coverage expansion on market participation: Panel data evidence from Uganda." *World Development* 37 (12): 1887-1896.
- Nakasone, E., M. Torero, and B. Minten. 2014. "The power of information: The ICT revolution in agricultural development." *Annual Review of Resource Economics* 6 (1): 533-550.
- Ochieng, D. O., R. Botha, and B. Baulch. 2019. *Structure, Conduct and Performance of Maize Markets in Malawi*. MaSSP Working Paper 29. Lilongwe, Malawi: International Food Policy Research Institute. <https://doi.org/10.2499/p15738coll2.133375>
- Ochieng, D. O., R. Botha, and B. Baulch. 2020. *Market Information and access to Structured Markets by Small farmers and Traders: Evidence from a Randomized Experiment in Central Malawi*. MaSSP Working Paper 33. Lilongwe, Malawi: International Food Policy Research Institute.

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