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STRATEGY SUPPORT PROGRAM | POLICY NOTE 31 | May 2018

Impacts of the 2016/17 Food Insecurity Response Program on Maize Prices in Malawi

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1. BACKGROUND

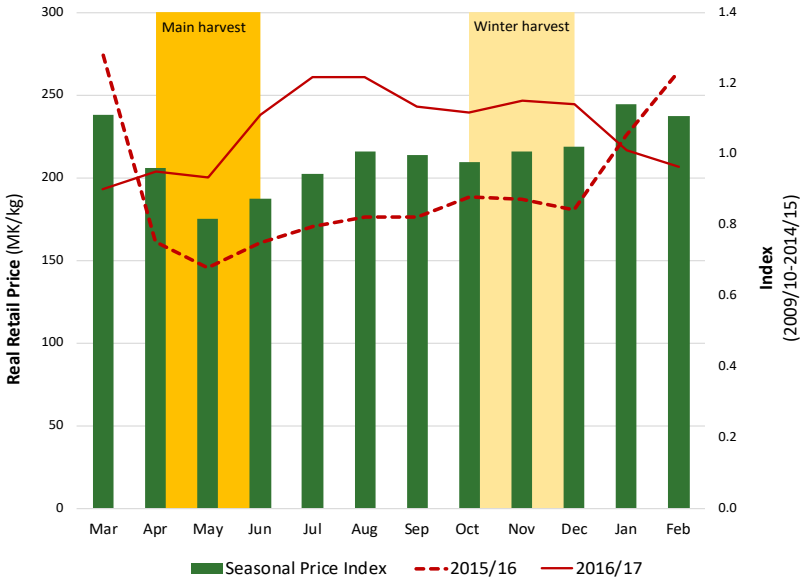
In early 2016, Malawi suffered its second consecutive year of harvest failure, with maize production estimated to be 2.4 million metric tons (MT) compared to 3.2 million MT in a normal year. The President of Malawi declared an emergency in early April 2016 and appealed for US$395 million in assistance from the international aid community and the private sector. The resulting humanitarian response, the Food Insecurity Response Program (FIRP), was of unprecedented scale, covering nearly 40 percent of the population.

The Malawi Vulnerability and Assessment Committee (MVAC) assessment of May 2016 envisaged 6.5 million beneficiaries, of whom 4.7 million would receive in-kind food transfers and 1.8 million would receive cash transfers. This was modified to 6.7 million total beneficiaries in October 2016, with in-kind food beneficiaries increasing to 5.4 million and cash beneficiaries decreasing to 1.4 million. The aid was delivered through various modalities: cereals and oil in-kind, maize vouchers, cash, and mobile money. A mixed delivery method, which provided both maize vouchers plus cash to buy other non-maize foods, was introduced from December 2016 onwards.

In-kind food distribution was coordinated by the World Food Programme (WFP) and delivered through their 18 district-level cooperating partners. Cash transfers (and vouchers) were split between WFP and the INGO (International NGO) Cash Transfer Consortium, which was led by five international non-governmental organizations. The final cost of the FIRP is estimated to have been US$287 million, of which 23 percent was financed by the Government of Malawi and the remainder by its international development partners. In-kind food transfers (excluding vouchers) represented an estimated 9 to 10 percent of Malawi's annual maize consumption requirements, while cash transfers represented less than 2 percent of maize consumption.

Figure 1 compares monthly retail maize price patterns in real (inflation-adjusted) terms during the 2016/17 humanitarian response with those of 2015/16 and a seasonal price index based on maize prices during the preceding five years. Maize prices reached their highest level in July and August 2016, and then declined. This was contrary to the usual seasonal price pattern, in which maize prices tend to peak between January and March – the lean season before the main maize harvest.

Figure 1: Seasonal maize price patterns and recent prices



Source: Author's construction from monthly prices of the Government of Malawi's Agricultural Markets Information System (AMIS).

This policy note examines what explains this paradox, focusing on why in-kind food distribution did not depress maize prices while cash transfers did not raise them. Normally, one would expect large increases in the quantity of maize in a market (an increase in supply) to decrease the price. Similarly, one would expect a large influx of cash to increase demand for maize, thereby increasing its price.

The note also investigates the extent to which maize prices in markets in different parts of the country are linked. This allows us to identify which markets are important to national maize price formation, as well as markets where prices are more independent.

Finally, the policy note quantifies the impact that different modes of assistance had on daily maize prices in selected markets in Malawi. This has important implications for the design of future humanitarian response activities in a country like Malawi, where the market price of the main staple food, maize, is a primary determinant of household food security.

2. DATA SOURCES

This study uses three data sources covering November 2016 through March 2017. Retail maize price data was obtained from IFPRI's daily maize price monitoring activities, undertaken in 15 markets, six days in a week, excluding Sundays. In-kind food distribution data was obtained from WFP, comprising distribution dates, locations, and total volumes of in-kind food distributed in the districts that overlapped with markets covered by IFPRI'S price monitoring. The INGO Cash Transfer Consortium provided similar data for cash transfer distributions in the 7 districts where IFPRI monitors maize prices.

Table 1. Cash and food distributed by district

District	Cash (MK million)	District	Food (MT)
Lilongwe	2,880	Chikwawa	18,703
Dowa	1,760	Blantyre	14,559
Mchinji	1,530	Lilongwe	9,382
Dedza	1,520	Mulanje	9,168
Mulanje	843	Nsanje	9,108
Blantyre	566	Dedza	3,934
Chikwawa	470	Dowa	3,723
Mwanza	169	Mzimba	3,239
Nsanje	169	Mwanza	1,037
Mzimba	-	Mchinji	-

Source: WFP; INGO Cash Transfer Consortium.
Note: Cash includes WFP and INGO transfers; maize vouchers are included in food transfers.

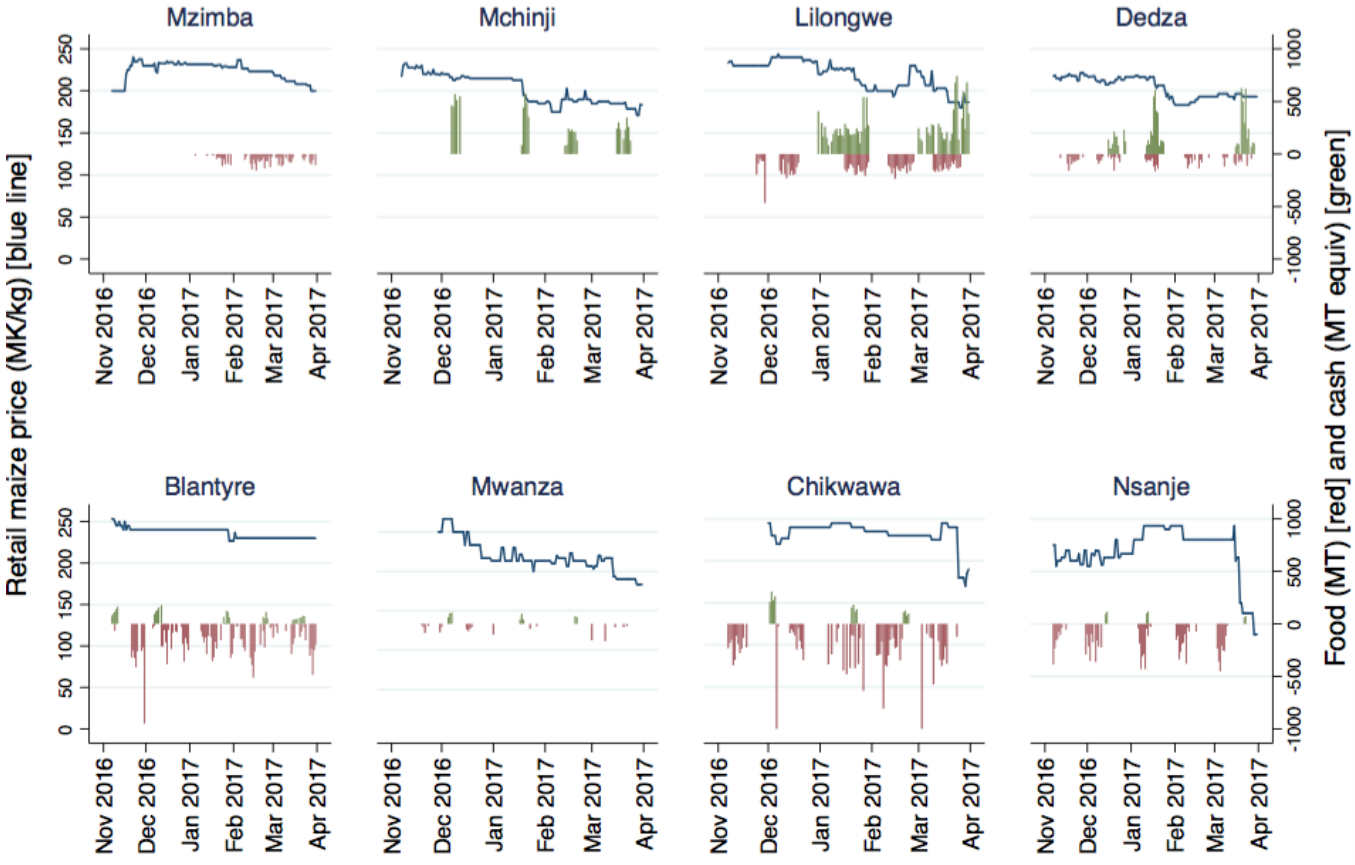
Table 1 shows the amount of cash and food distributed by WFP and the INGO Cash Transfer Consortium in each district from November 2016 through March 2017. During this time, Chikwawa, Blantyre, Mulanje, and Nsanje districts in southern Malawi received substantial quantities of food aid, while Lilongwe, Dowa, Mchinji, and Dedza districts in central Malawi received the largest amount of cash transfers. Most districts received a mixture of food and cash, except for Mchinji (cash only) and Mzimba (food only).

3. METHODOLOGY

This study used time series methods to investigate the properties of daily maize prices in Malawi during the FIRP, as well as price linkages between markets, to determine how prices in one market depend on previous prices in that market as well as prices in other markets it trends with. The study also estimated various time series models to explore the short-and long-run dynamics of the relationship between daily maize prices and the distribution of food and cash transfers during the FIRP. Specifically, the study's main results rely on an autoregressive distributed lag model (ARDL). For more details on the methodology, please see the full Working Paper (Baulch, Gondwe, and Chafuwa 2018).

Figure 2 shows time series plots of daily maize prices and cash and food distributions in selected markets. In these graphs, retail prices are shown by the blue lines, in-kind food distribution by the downward red bars, and cash transfers (expressed in terms of metric tons of maize at the prevailing market price) by the upward green bars. At this descriptive level, there are no detectable consistent trends between food and cash transfers with the level of retail maize prices. As such, additional methodologies were required to better understand these trends during the response.

Figure 2. Time series plots of daily maize prices, cash, and food distribution in selected markets, Nov 2016-March 2017



Source: Authors; IFPRI Price Monitoring, WFP, and INGO Cash Transfers Consortium.
Note: Retail maize prices (MK/kg) = blue line; food transfers (MT) = red bars; cash transfers (MT equivalents) = green bars

4. EMPIRICAL RESULTS

Price linkages between pairs of markets were investigated using Granger causality tests, which demonstrated that the direction of most price linkages ran from the Central to the Southern region of Malawi (Figure 3). In other words, prices appeared to be formed mainly in markets in Central Malawi and transmitted (minus transportation and other market costs) to other markets within two or three days.

Although it is not a particularly large market, Chimbiya market (near Dedza) appeared to occupy a strategic position in the price formation process. Chimbiya's importance in the price formation process was also confirmed by interviews with traders in southern Malawi, who stated that they regularly procured from Chimbiya rather than nearer wholesale markets because traders in Chimbiya offered more competitive prices and were more flexible regarding delivery volumes. Mchinji and Mwanza also played important roles in the formation of maize prices. Both are border towns, through which significant yet unquantifiable flows of maize are known to have entered Malawi during late 2016 and early 2017 (FEWS NET 2017).

Figure 3. Price linkages between markets

Source: Authors.

In contrast, Mzimba and Nsanje markets exhibited rather weak linkages with other markets. There were only weak linkages from Mzimba to Mchinji, and from Mwanza to Nsanje. The case of Nsanje is relatively easy to understand as Nsanje was the district in which the food crisis was most severe and where the duration of the response lasted the longest. These factors will have driven a wedge between maize price behavior in Nsanje and other markets. Similarly, no price linkages were found between Chikwawa, which received the most in-kind food of all the districts considered here, and any of the other markets. Further north, Mzimba only influenced prices in Mchinji on the Zambian border, but not in the neighboring, smaller market of Mponela. This suggests that Zambian market prices may have driven maize prices in Mchinji and Mzimba.

Error correction models and bounds tests were used to test for long-run relationships between market pairs. A long-run relationship between two markets means that prices will eventually return to their equilibrium level after a shock. Long-run relationships were found between maize prices in Chimbiya-Mchinji, Mitundu-Mponela, and Chikwawa-Mulanje, but there was no evidence of long-run price relationships between Chimbiya-Lunzu and Nsanje-Chikwawa and inconclusive evidence for the remaining market pairs. The results also showed a relatively quick adjustment in the prices of maize between markets, except for Chimbiya-Lunzu and Nsanje-Chikwawa for which no long-run relationships exist.

For the three Central region market pairs (Chimbiya-Mchinji, Mitundu-Mchinji, and Chimbiya-Mponela), the estimated relationship is such that a 10 percent change in the price of maize in the sending market will result in a long-run change of approximately 10 percent in the price of maize in the receiving market. However, for Mitundu-Mponela, a maize price change of 10 percent in Mponela is associated with a 21 percent increase in maize prices in Mitundu.

Table 2. Effects of food distribution and cash transfers on daily maize prices (%)

Market pair	Food	Cash
Chimbiya-Mchinji	-0.01	0.02
Mitundu-Mchinji	-0.01	-0.04
Chimbiya-Mponela	0.01	0.03
Mitundu-Mponela	-0.02	0.03
Chimbiya-Lunzu	0.02	0.00
Nsanje-Chikwawa	0.04	0.02
Chikwawa-Mulanje	0.00	-0.05*

Source: Authors' estimation.
Note: * indicates statistical significance at the 10% level

Finally, the time series analysis and models estimated suggest that volumes of cash and food distributed in the last two days had little impact on daily maize prices. Table 2 shows that the percent change in daily maize prices as a result of food distributions and cash transfers for the selected market pairs were very small, and not statistically significant from zero, except for cash in Chikwawa. Furthermore, the size of the effects was so small as to be economically unimportant (less than half of a percent of the market price) in all cases. These results held for several different specifications of the model.

4. CONCLUSIONS AND POLICY IMPLICATIONS

Overall, our pricing analysis indicates that maize markets in Malawi are quite poorly linked. While our estimated models track maize prices quite closely, tests for long-run relationships between daily maize prices only held between three pairs of markets, with inconclusive results for two more market pairs.

Cash transfers, which comprised about 18 percent of the total value of food and cash transfers distributed as part of the food insecurity response, had very small and statistically insignificant effects on daily maize prices in the markets analyzed. The switch from cash to maize vouchers in late 2016 reduced the inflationary impact of cash transfers during the lean season. Sharing of food transfers by many beneficiaries, of which there is considerable qualitative evidence, will also have diluted the deflationary impact of vouchers (IFPRI 2017; Margolies, Aberman & Gelli 2017).

What is particularly surprising, given that the volume of in-kind food transfers represented nine to ten percent of maize consumption requirements, is that food transfers had negligible impacts on daily maize prices in all but one of the markets considered. This is likely because in-kind beneficiaries – who derived 67 percent of their maize consumption needs from food transfers and another 19 percent from own production (WFP, 2017b) – had little need to purchase maize. In addition, because in-kind maize transfers were provided along with other commodities (cooking oil and pulses for all households, plus 'super-cereals' for households with children under two years old and/or pregnant and lactating women), there was little need for MVAC beneficiaries to sell some of the maize they received in order meet to their non-maize food needs.

Put differently, recalling Sen's (1981) distinction between direct and trade-based entitlements, most of the households who received in-kind food transfers or maize vouchers had extremely limited purchasing power. Therefore, food transfers enhanced their direct entitlements, thereby reducing hunger and saving lives, while having little impact on markets and trade-based entitlements because so little of the maize distributed in-kind was resold.

RESOURCES

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The Malawi Strategy Support Program (MaSSP) is managed by the International Food Policy Research Institute (IFPRI) and is financially made possible by the UK Department of International Development (DFID) and the generous support of the American people through the United States Agency for International Development (USAID). This publication has been prepared as an output of MaSSP. It has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, USAID, DFID, or CGIAR.