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Maize Grain Price trends in food surplus and deficit areas of Malawi under Covid-19

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Understanding staple food price dynamics is important for planning and targeting of interventions to protect livelihoods among the poor and vulnerable in time of crisis.

This bulletin presents an overview of maize grain price dynamics in Malawi with the view of investigating whether the incidence of COVID-19 and the restrictions on domestic and international travels that were announced by the Government of Malawi had an effect on maize prices in local markets. To achieve this goal, we built a model to analyse the seasonal behaviour of maize prices on the basis of historical data from 2015-2019. We used the model to predict prices for the first part of 2020 based on their historical patterns. These predictions were then compared with the actual prices observed in 2020 for all the 23 markets analysed. The bulletin then concludes with a number of key observations and recommendations gleaned from the maize price dynamics across local markets.

Maize (*Zea mays* L) is the staple food for many Malawians and accounts for 60 percent of total food production. It is the most important crop for food security and accounts for over 80% of cultivated land (Stevens & Madani, 2016). As such, lack of maize is associated with a lack of food for most households in Malawi. Maize is grown by the majority of farmers on small plots and commonly eaten as the main meal (locally known as Nsima). Maize yields have remained stagnant at under 2 tons/hectare, which is lower than the 10 tons/hectare or more, that characterizes advanced agricultural systems of Asia and the West (Chilonda, et al., 2013). The demand for maize continues to grow with population growth and similarly, its production is increasingly challenged by erratic

LOCAL STAPLE FOOD MARKET DYNAMICS UNDER COVID

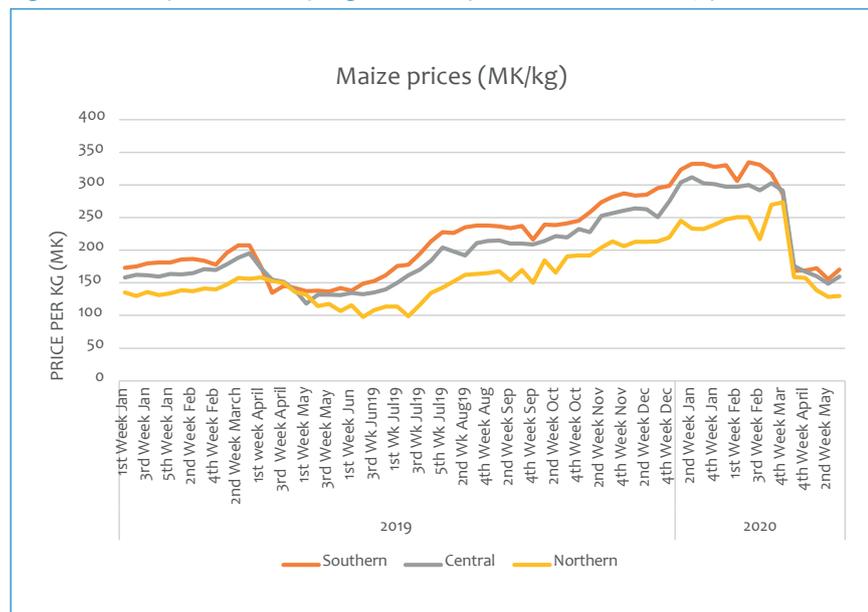
The pandemic is likely to be more disruptive to local food markets and thus have more serious effects on the poorest and most vulnerable groups and communities than any of the crises in recent years. This is because the poor and vulnerable are affected by changes in local food staple prices significantly more than other population groups, not only because of more limited purchasing power but also because of differences in consumption baskets. Moreover, domestic markets for local food staples such as yam, cassava, white maize, cowpeas, millet or sorghum tend to behave differently during times of crisis than global markets for major commodities such as rice, wheat or yellow maize. For instance, the last global food price crisis had much more significant impacts on the latter group of food commodities. Local food staples markets tend to be rather segmented from global food markets. Staple food prices therefore tend to be isolated from global market shocks. The difference with Covid is that the disruption of food supply chains has hit both domestic and global food markets rather badly.

The global nature and complex ramifications of the pandemic make it impossible to avoid the pain from rising food prices, in particular among vulnerable groups. Different staples weigh differently in local diets. Different communities are affected differently by changes in prices of different staples. Some markets are more connected than others and therefore price changes for the same staple food vary across geography and over time. Consequently, a good understanding of how local staples markets behave and close tracking of changes in food prices at community level have to be key elements of any strategy to protect livelihoods. AKADEMIYA2063 scientists and their partners are working to ensure that governments and other national stakeholders have sufficient information to plan and respond to the effects of the pandemic on local markets.

Ousmane Badiane, Executive Chairperson

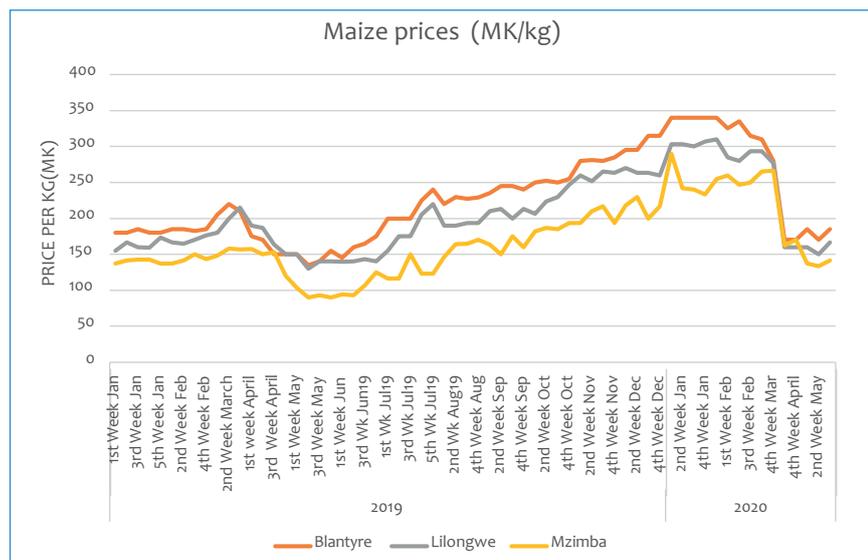
rainfall and other extreme weather conditions characteristic of that part of Southern Africa. Maize is traded both domestically and with neighbouring countries. It is thus, an important undertaking to analyse maize price

Figure 1. Maize price trends by regions in the pre and within Covid-19 period



Source: Source: Constructed by authors with data from WFP (2020)

Figure 2. Maize price trends by key city in the pre and within Covid-19 period



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movements over the COVID-19 period, in the context of widespread domestic and international commodity movement and travel restrictions.

The production of maize in Malawi varies spatially owing to heterogeneous agro-climatic conditions. For example, the Central region, and the Northern region districts have high production potential whereas the Southern region districts are less favourable for agricultural production (Zinyengere, Crespo, Hachigonta, & Tadross, 2014).

The main agricultural seasons in Malawi comprise of the wet (growing season), (November to April) which is characterised by low food supplies as food stocks from the previous harvest deplete by use and sale. Secondly, there is the dry (harvest) season, which runs from May to October. The beginning of the dry season is generally characterised by high food supplies throughout Malawi.

Malawi confirmed its first Covid-19 case in early March 2020, but the government had already started taking measures to limit the spread of Covid-19 from as early as February 2020 (Ministry of Health, 2020). It was in mid-February 2020 that the government and the opposition political parties embarked on spreading the initial preventive awareness messages through mass media such as the Malawi Broadcasting Corporation and the private media houses. For purposes of this analysis therefore, it is expected that the effects of the Covid-19 prevention actions would manifest more after February 2020.

The current bulletin focuses primarily on maize price movements in selected food deficit areas of the southern region and the high food producing areas of the central and northern regions. Figure 1 shows price movements in selected markets of the Southern, Central and Northern administrative Regions of Malawi.

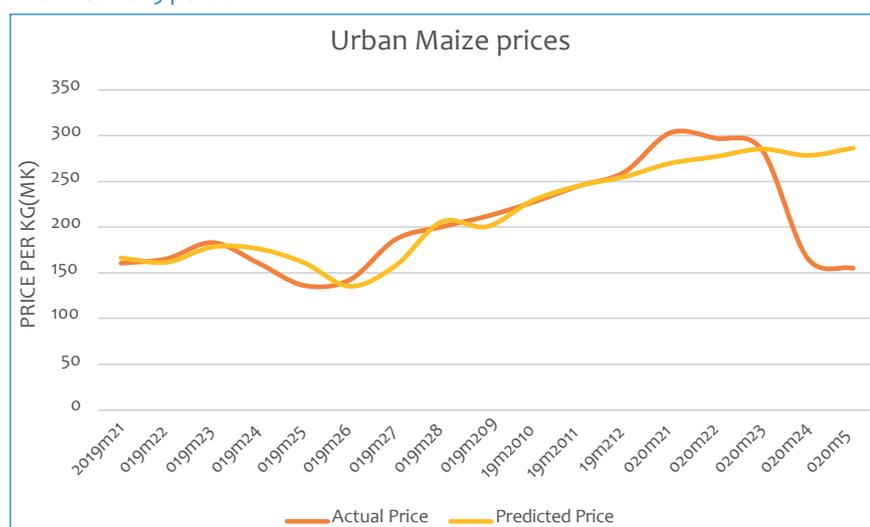
It is clear that the Northern region enjoyed relatively low maize prices, followed by the Central region. The Southern region had relatively higher maize prices almost throughout the period. This can be ascribed to the usual low production in the region leading to higher prices relative to the rest of country. This may partly be explained by the differences in land availability between the regions, whose population densities are respectively, 84/Km², 210/Km² and 240/Km² for Northern, Central and Southern regions.

The Figure 1 also shows that prices were on an increasing trend from June 2019 and until the end of February 2020. The prices dropped by almost 50% after February 2020 in all the regions. For example, prices dropped from a peak of MK331/KG in February 2020, to a low of MK170/KG in May 2020, in the Southern region. In the Central

region, the prices dropped from a high of MK303/KG in February 2020 to a low of around MK160/KG in May 2020, and finally the drop was from around MK274/KG to MK130/KG in the Northern region over the same period. The cross-region differences in peak prices may be explained by the production and urbanization differentials between them. However, the sudden changes in the trend after February 2020 were likely as a result of, firstly, the onset of the harvesting season which increased supplies of food in markets, and secondly, the government actions taken domestically and in neighbouring countries in response to Covid-19 spread which dampened market demand for food commodities. With the onset of the harvest period later in April/May, the downward pressure on prices continued as supplies in local markets rose relative to demand for maize purchases. These patterns in price changes are also observable at the level of district markets as shown in the Figure 2.

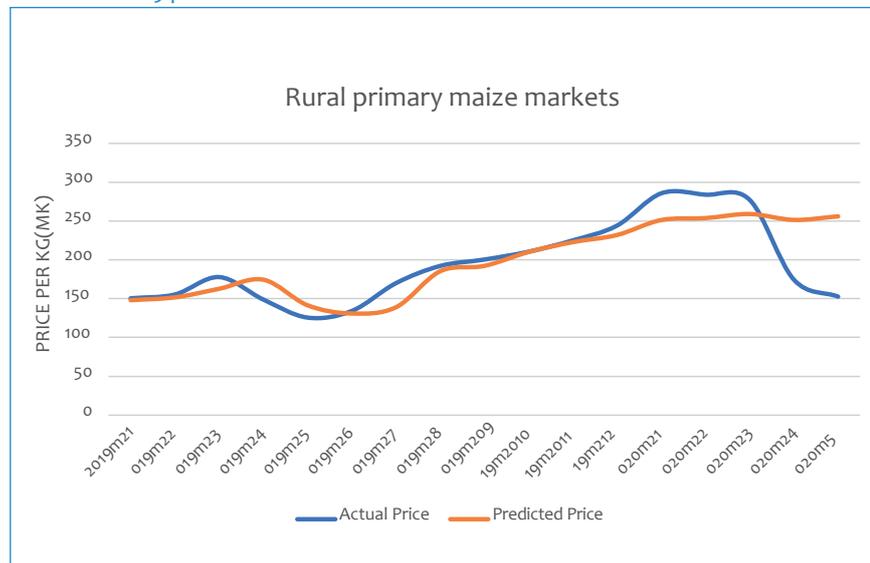
Figure 2 shows maize price trends in Malawi's major cities of Lilongwe, Blantyre and Mzimba (where Mzuzu city is located). Blantyre in the South has low agricultural potential, while Lilongwe is a key producer of maize and yet also faces enormous urbanization. Mzimba on the other hand is considered as an area with high level of arable land suitable for agriculture. The price drop from March to May can be interpreted from a perspective of two processes working jointly to yield an unusually low price. Specifically,

Figure 3. : Observed and predicted maize price trends in urban markets in the pre and within Covid-19 period



Source: Constructed by authors with data from WFP (2020)

Figure 4. Predicted and observed maize price trends in rural markets in the pre and within Covid-19 period



Source: Constructed by authors with data from WFP (2020)

the onset of the harvesting period in April and May increased food supplies on the markets leading to low prices. The downward pressure on prices imposed by the onset of the harvest season was also exacerbated by the reduction in the demand for food supplies in response to government Covid-19 awareness campaigns both domestically and in the neighbouring countries. The campaigns, although well intended had the effect of reducing food demand and exports, which, in the presence of increased availability due to the harvest season, led to low prices across all these cities.

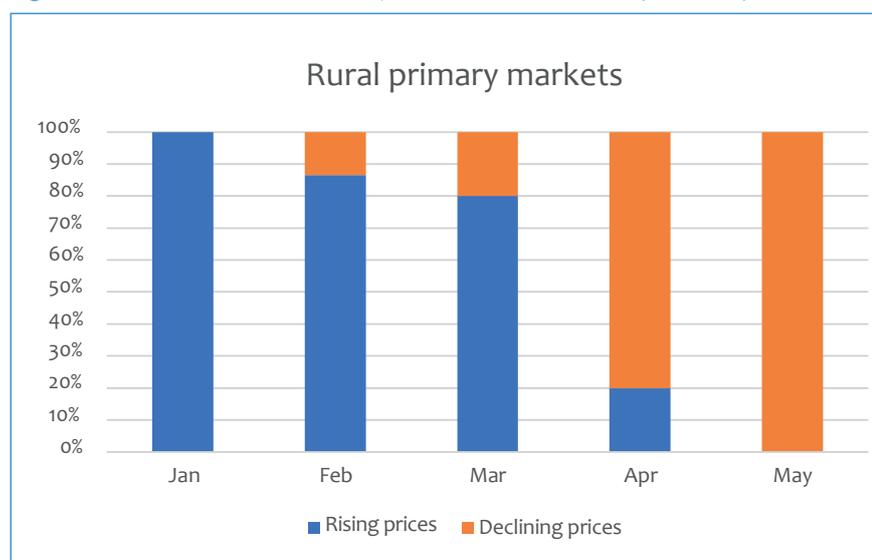
We have hitherto looked at actual price trends across different markets. In order to assess the possible impact of Covid-19, we now expand the analysis to compare actual with predicted monthly prices in 23 markets comprising 15 rural (Sorgin, Marka, Mtowe, Manyamula, Kamsonga, Kamwendo, Jenda, Bangula, Nsundwe, Lirangwe, Euthin, Waliranji, Nambuma, Nthalire, and Kameme) and 8 urban/peri-urban (Dzaleka, Area23, Nsanje Boma, Nsungwi, Mponela, Lunzu, Chitipaboma, and Mchinji Boma) markets. These markets are drawn from Nsanje and Blantyre districts in the Southern Region, Lilongwe, Dowa and Mchinji districts in the Central Region, and Chitipa and Mzimba districts in the Northern Region.

Figure 3 shows that urban maize prices in Malawi dropped significantly after March 2020 and this drop was contrary to the increase predicted by our model. The differences between the observed urban prices and the predicted urban prices after March appear to be a result of social distancing and movement restrictions announced within Malawi and neighbouring countries, as explained previously. This difference cannot be explained by the onset of the maize harvest season in around April, because

the models accounted for seasonality. Thus, the international travel restrictions, announced towards the end of March, and in April, as well as the increase in awareness about the dangers of Covid-19 among many consumers reduced food movements within and across borders leading to too much supply of food at low demand over that period.

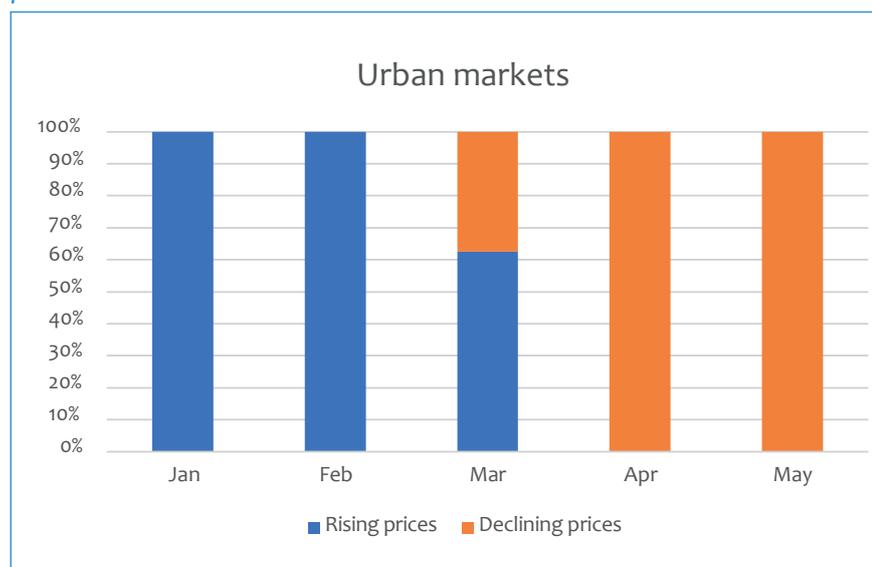
Price movements in the rural markets were similar to those of urban markets, as can be seen from Figure 4. This can similarity be explained by the fact that rural and urban markets are interdependent, since the urban supply often comes from rural markets. There was a steady increase in prices in urban markets from 2019, but this trend was broken by the onset of a period of rapid price drop from March 2020. After March 2020, the observed prices were much lower than the prices predicted by our models despite adjusting for seasonality. This pattern is to be explained

Figure 5. Marked reduction in share of markets with lower than predicted prices



Source: Constructed by authors with data from WFP (2020)

Figure 6. Rapid increase in share of urban markets with lower than predicted prices



Source: Constructed by authors with data from WFP (2020)

by the reduction of demand coming from urban centres and neighbouring countries for the surplus maize production in rural areas as both domestic and cross-border market activities slowed down after the news of the spread of Covid-19 became widespread and control measures by government entered into effect. International travels were also prohibited

and flights from and into Malawi restricted from March 25 2020. Schools closed down and the limit for internal gatherings was set a 100 people at a time (Ministry of Health, 2020).

That many markets in rural and urban centres were experiencing price reductions rapidly after February 2020, is also evident in the analysis of price changes in the 23 markets in focus. Figure 5 and Figure 6 present this evidence by analysing the shares of rural and urban markets in which prices were falling each month.

Figure 5 shows that while by January 2020, 100% of the rural markets had rising prices, by February 14% of the rural markets had, declining prices. By April 2020, more than 80% of the rural markets had declining prices, such that by May 2020 100% of the rural markets recorded declining prices. This overall trend supports the findings from our model estimations presented above and which show a generalized declining trend in prices after the onset of the pandemic. The urban markets depicted a similar pattern, where the share of markets with decreasing prices rose rapidly from March 2020 (see Figure 6).

In other words, many of the markets in rural and urban areas experienced a rapid reduction in prices of maize after March 2020, which coincides with the spread of Covid-19 in Malawi as well as the SADC region, and governments' actions to limit the damage resulting from the spread. One would have expected the disruption of markets to lead to rising prices in deficit areas and the opposite in surplus. The fact that prices declined in all types of markets may indicate limited interconnection between markets with supply and demand conditions having to adjust locally. Because supplies don't move much across markets in such conditions, changes in demand due to confinement and other

restrictions weigh more heavily on demand and thus tend to push prices downward. Another reason for the price drop in these deficit areas, at least partially, may still be the onset of the harvesting period in April/May which increased food availability, amidst low demand (due to Covid-19 restrictions) thereby pushing down prices.

Conclusions and recommendations

The unexpected steeper, more than seasonally expected, decline in maize prices across all market types and areas after February 2020 is most likely a result of reduced market activities in both rural and urban markets in response to the spread of Covid-19. This, at a time of increased supplies in local markets from the onset of the harvest period in April and May put maize prices under heavy downward pressure. Government pronouncements of the need to observe social distancing to limit the spread have impeded arbitrage between markets and further led to rising supplies relative to demand, thus leading to falling prices in local markets.

From a policy perspective, the decline in prices may have advantaged consumers, but they hurt producers, which may negate their ability and willingness to produce more maize in the next season as maize may be considered non-profitable. Perhaps a policy lesson emerging from this is that future responses should be coordinated in a manner that does not harm producers disproportionately, by for example having programs that encourage market activities rather than discouraging them, when dealing with crises similar to Covid-19.

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