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# Covid-19 Bulletin

## The Impact of the COVID-19 Pandemic on Staples Food Prices in Local Markets: The Case of Maize in Rwanda

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*This bulletin analyzes the short-run effects of the COVID-19 pandemic and measures taken by government to control it on the prices of maize across local markets in Rwanda.*

Maize has become the most important cereal crop in Rwanda as a result of government support through the crop intensification program. The production has grown from less than 100,000 tons in 2005 to over 400,000 tons in 2020. Over the same period, the yields rose from less than 1ton/ha to about 2ton/ha while the area has also increased. Surplus maize production is traded with neighboring countries (especially eastern DRC) which is a market of over 2 million people that largely depends on imports for their food needs.

The analysis involved a comparison between the actual monthly prices during the months following the onset of the pandemic with predicted prices that would have prevailed based on seasonal patterns and historical price data from January 2013 to December 2019. Price data was obtained from the Ministry of Agriculture and Animal Resources (MINAGRI). The bulletin focuses on 5 markets: Kimironko (in Kigali), Kibungo (Eastern province), Byumba (Northern Province), Gasarenda (Southern Province) and Musanze (Northern province). These five markets were selected for analysis because of availability and completeness of long-term time series data (2013-2020) that is a requirement for undertaking such analysis. Prices that would prevail in the first half of 2020 in the absence of COVID-19 were estimated by applying a model used to accurately predict local prices from January 2013 to December 2019. The predicted prices in 2020 are then compared with the actual monthly prices of maize to assess the impact of the pandemic and as well as that of efforts to respond to it on local markets for the period from January to July 2020. For the sake of simplicity, we interpret price variations between -5% and +5% as indicative of normal price behavior and thus absence of disruption.

The findings focus on the period from March to July, during which different measures were put in place to contain and control the spread of COVID-19 whose first case was reported in Rwanda on March 14<sup>th</sup>, 2020.

The government instituted measures that included an initial two week lock down in March that was extended twice, closure of borders, ban on all public

## Global commodity market disruptions and african economies

The pandemic has not left a single region of the world untouched. Its disruptive effects have equally reached into every corner of the global economy. Global primary commodity markets in particular are affected by many of the measures taken to adapt to and control the spread of the pandemic. Measures to minimize the risk of cross-border infections interfere with the normal operations of commerce, slowing down or impeding the movement of goods around the globe. The changes affecting global supply chains can have significant repercussion on national economies. Changes in prices received for exports or paid for imports translate into gains or losses of foreign exchange earnings. The same applies to changes in availability of cargo or the operation of airports and ports, as they affect the cost and volume of goods shipped. Changes in consumer behavior, including under confinement conditions or otherwise, have similar consequences.

The forces of supply and demand ultimately dictate which prices move in which direction. Individual economies are affected based on the exposure to shocks in different markets, which in turn depends on the bundle of goods they sell to or buy from foreign markets. The more their exports or imports are skewed towards goods for which global prices move favorably, the more they tend to benefit and vice versa.

Changes in exported and imported quantities as well as related prices are transmitted to domestic firms and consumers, resulting in changes in production activities and demand for goods, which in turn affect the pace of growth, available incomes and thus livelihoods. The final impact depends on the ability of the economy to adjust to the changing market conditions. The more an economy finds ways to compensate for changes in prices or traded quantities, the more it is likely to minimize the negative impact from global market disruptions.

Ousmane Badiane, Executive Chairperson

gatherings, strict restriction of vehicular transport and movements, closure of schools, places of worship and recreation facilities, hotels, restaurants night-time curfews, closure of markets and imposition of strict rules for opening and operation of the markets. These measures affected the prices of agricultural

commodities such as maize directly or indirectly. The findings of the analysis are discussed in the subsequent sections.

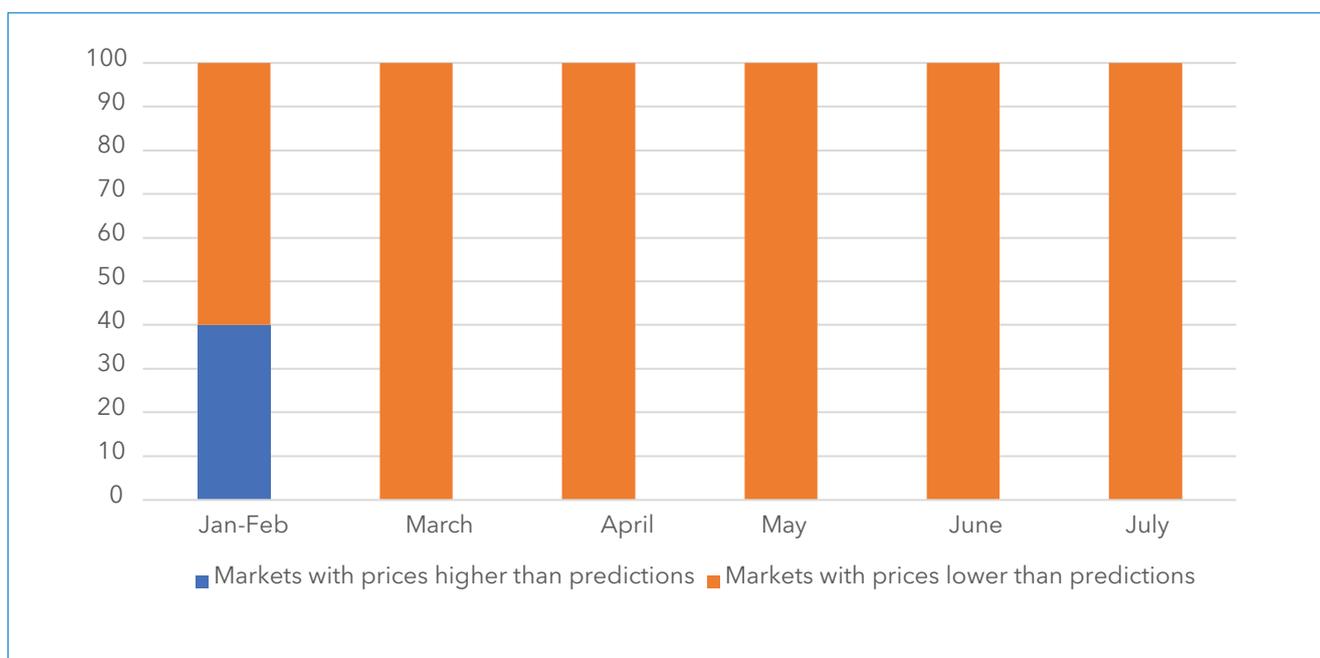
### Restrictions affected the maize market by causing a sharp decline in prices

The restriction measures undertaken by the government led to a sharp decline in maize prices. This observation has been reported in the global information and early warning system (GIEWS) on food and agriculture country brief prepared by FAO (2020). Restriction in movement and closure of borders affected the export of maize to neighboring countries (especially eastern DRC). The closure of hotels and restaurants and learning institutions that are a major market for maize led to a decline in demand and plummeting of prices.

The strict travel restrictions within the country also severely affected the ability to access markets by sellers and buyers of maize. Furthermore, the operations of the markets were restricted by new standard operating procedures implemented by the government to control the spread of COVID-19.

The effects of COVID-19 and the related government actions are observable from behavior of Maize prices between March and July across 5 local markets spread across the country. As would be expected, restrictions enacted in March to limit the movement of people, which in turn affected the movement of goods, led to a decline in maize prices relative to long term prediction. Figure 1 shows that all the markets (100%) recorded lower than

Figure 1: Share of markets with lower/higher than predicted prices in retail markets



Source: Authors' computation based on price data from MINAGRI

predicted prices from March to July 2020, the last month considered in this study. With the onset of COVID and related restrictions, price decline spread to all the markets considered in the study and stayed below the predicted levels throughout to the month of July, the latest month covered by the study. The dynamics in local prices are illustrated in Figures 2-6, which show the actual

and predicted prices of maize for the five markets of Byumba, Musanze, Gasarenda, Kibungo, and Kimironko respectively. It is important to note that Rwanda has two crop planting seasons (Season 'A' and 'B').

Figure 2: Actual and predicted Maize prices in Byumba Market (RWF/Kg)



Source: Authors' computation based on price data from MINAGRI

Season A runs from September to November while season B runs from March to May. As noted by FAO's report on 'Crop prospects and Food Situation' in Rwanda, the maize prices increased by 40-50 percent between September and December of 2019, but later declined by 5-10 percent in January as "2020A" season crops increased market supplies.

**Figure 3: Actual and predicted Maize prices in Musanze (RWF/Kg)**



Source: Authors' computation based on price data from MINAGRI

**Figure 4: Actual and predicted Maize prices in Gasarenda (RWF/Kg)**



Source: Authors' computation based on price data from MINAGRI

**Figure 5: Actual and predicted Maize prices in Kibungo (RWF/Kg)**



Source: Authors' computation based on price data from MINAGRI

Rwanda received exceptionally heavy rains during the 2019 season A that led to high maize production.

The results of the study generally show similar patterns in all the five markets; maize prices began falling in December and continued to be lower than predicted from March to July 2020. For individual markets however, some peculiarities were observed: In Byumba (in the north) of the country, the maize prices began to dip around December 2019 and continued to decline till around March 2021 before stabilizing for the rest of the reporting period (see Figure 2).

Byumba market is located in surplus areas in the Northern Province and is a major collection markets for cross-border trade with Uganda. In 2019, a trade disruption

(closure of border) between Uganda and Rwanda occurred. According to Southern and Eastern African Trade, Information and Negotiations Institute (SEATINI), more than 6,000 small-scale traders were affected.

This, in addition to the increase in season A production and market supplies, could explain the unusual dip in price in Byumba market.

In Gasarenda (in the South) of the country, prices began to dip around January while in Musanze (in the north the decline began in February) and continued to decline throughout the period considered till July 2020. The earlier dip could be explained again by same unusually high production in the September-October-November 2019 season. Byumba and Musanze are in the northern province of the country; COVID-19 related restrictions affected cross-border trade between Rwanda and its neighbours in the North (DRC and Uganda) hence depressing prices in Rwanda. However, the decline in prices in Byumba and Musanze were a bit less drastic than in Gasarenda Market in the south. This could probably be explained by continued trade flow especially to DRC even under the restriction due to porous border.

Similar pattern applies to Gasarenda market in the south (bordering Burundi). Kibungo market in the eastern province (border with Tanzania and Uganda), actual prices declined sharply in March relative to prediction and remained lower till July (the latest period considered in this study).

Kimironko market in Kigali (center of the country), recorded a decline in maize prices relative to predicted prices from March onwards. The effects of COVID-19 restrictions in a major city like Kigali may have been through decline in demand due to closure of hotels and restaurants (except for take-away services), depressed demand due to loss of income particularly for the petty traders and business owners, closure of all learning institutions and restrictions in movement of goods and people.

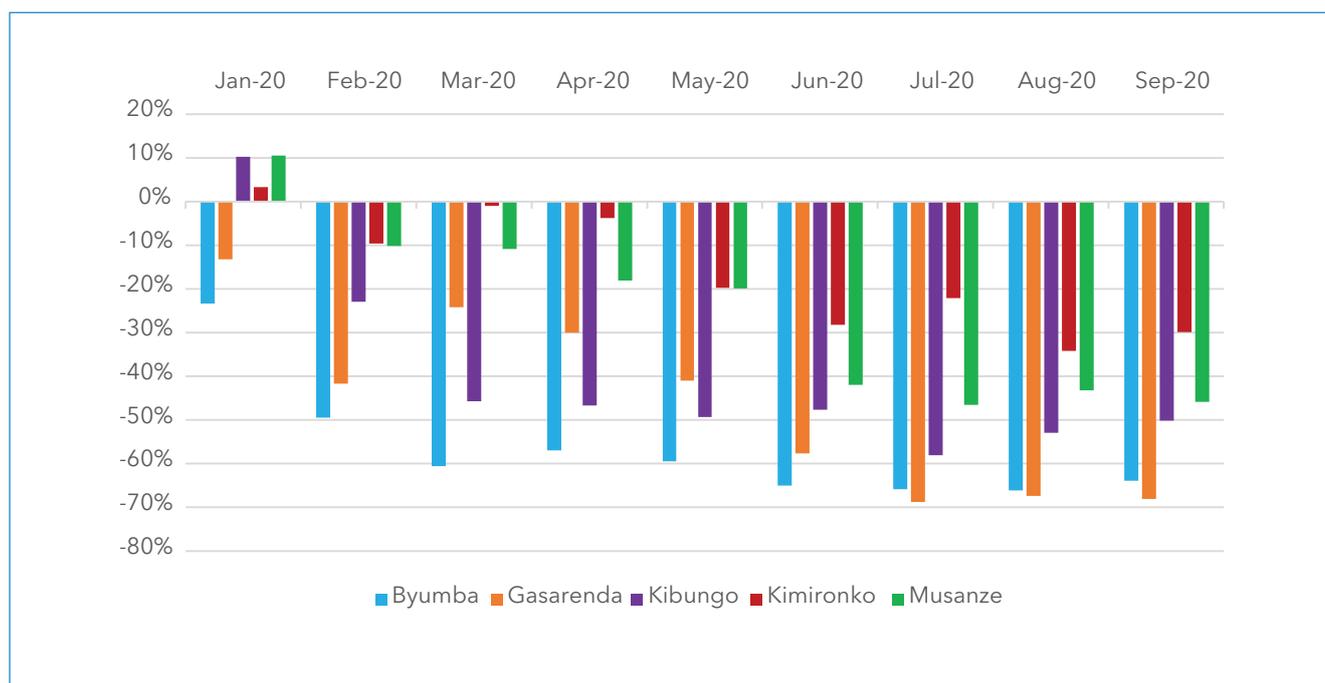
**Figure 6: Actual and predicted Maize prices in Kimironko (RWF/Kg)**



Source: Authors' computation based on price data from MINAGRI

It is clear from the observed price trends that the COVID-19 pandemic and related control measures, which have literally disrupted the supply, restricted demand and inhibited cross border trade had a significant, immediate, uniform and negative impact on prices in local markets as shown in Figure 7. Actual changes in prices in retail markets were observed to range between -68% to -1% below the predicted prices over the March to July 2020 period (See Figure 7). During the months of May and July, all the markets experienced their largest decline in prices. The declining prices were expected given the good maize

**Figure 7: Percentage difference between actual and predicted Maize prices (Jan to Sep 2020)**



Source: Authors' computation based on price data from MINAGRI

Rwanda's area planted with maize and maize production and has continued to rise under the crop intensification program as noted in the introduction section. Given the high and rising maize production, there is pressure to export surplus production. The surplus production of maize in the season preceding outbreak of COVID-19 pandemic followed by restriction in cross-border trade with neighbors provides a strong explanation for the observed decline in maize prices in Rwanda.

The difference in market behavior reflects the importance of cross-border trade in determining domestic maize prices in Eastern and Southern Africa as opposed to millet prices in West Africa or maize in Burkina Faso which are traded primarily in domestic markets.

This revise the need for better cross-country coordination in responding to future crises, particularly for Eastern and Southern African countries or commodities that are more intensely traded in transborder markets.

harvest in 2019 and the restrictions that disrupted both cross-border trade and local markets.

Interestingly, the behavior of Maize prices in Rwanda is similar to that observed in other countries in Eastern and Southern Africa but differs quite a bit from what is observed in staples food markets in West Africa.

Similar studies in West Africa have shown different price behavior in millet and maize markets with decreases in surplus markets and increases in deficit markets (Taondyande, 2020). Maize markets in Southern Africa (Malawi and Mozambique), exhibit similar trends of depressed prices, primarily in border area markets, but with more variation across markets (Matchaya 2020). Cooking Banana market in Uganda showed a similar behavior of declining prices (Guthiga et al, 2020).

## Conclusion

Measures taken by the government to control and contain the spread of COVID-19 had unintended effects of disrupting the prices of maize which is an important staple food in Rwanda. As discussed in this bulletin, the containment measures made it difficult for maize to flow uninterrupted from production markets to consumption markets and across borders with neighboring countries. The closure of hotels and restaurants that are a major demand points for the staple exacerbated the situation. The declining actual prices relative to predicted prices continued even into the month of July despite some relaxation of the initial measures.

To better manage future shocks like COVID-19 and allow responses such as the above to achieve their intended impact, it is critical to ensure minimal disruption in the flow of staple commodities from farms to market areas and trade flows with neighboring countries. Furthermore, better informed targeting of areas for which to impose restrictions would help reduce large scale disruptions.

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