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Covid-19 Bulletin

The Impact of the COVID-19 Pandemic on Staples Food Prices in Local Markets: The Case of Millet Markets in Senegal

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This bulletin examines the short-run effects of the COVID-19 pandemic on millet prices across local markets in Senegal.

For that purpose, it compares actual monthly prices with predicted prices that would have prevailed based on seasonal patterns and historical price data from January 2010 to December 2019. Price comparisons are carried out for twenty-eight local markets in both millet surplus and deficit areas over the first semester of 2020. Price data used in the study was obtained from Senegal's Market Information System. In addition, price correlations among local markets are analyzed to explore the extent to which the connectivity between markets helps explain observed patterns of actual price deviations from predicted levels. The findings summarized below focus on the period from March to June, in the aftermath

of measures taken to curb the propagation of the pandemic, in particular restrictions of travel between districts or departments. Detailed results are presented in Table 1 in the appendix.

Measures to curb the pandemic have raised prices in a growing number of local markets

The effects of COVID-19 and the related government actions are observable from the behavior of millet prices between March and June across local markets. As would be expected, restrictions enacted in March to limit the movement of people, which in turn affected the movement of goods, pushed millet prices below their predicted levels in many surplus area markets,

LOCAL STAPLE FOOD MARKET DYNAMICS UNDER COVID

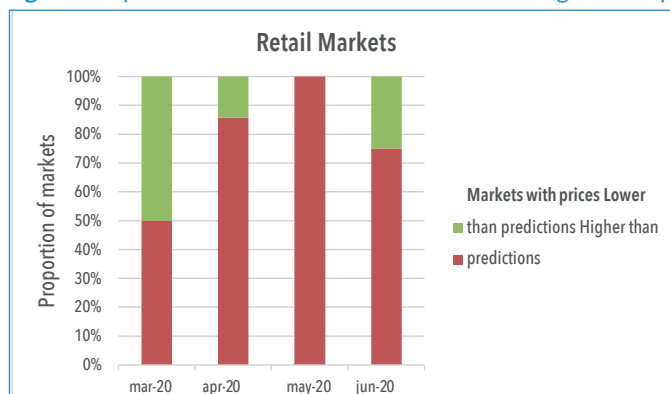
The pandemic is likely to be more disruptive to local food markets and thus have more serious effects on the poorest and most vulnerable groups and communities than any of the crises in recent years. This is because the poor and vulnerable are affected by changes in local food staple prices significantly 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

while the opposite was observed in deficit area markets. Over time, the price increases spread to more markets as the pandemic spread and restrictions to market activities took hold. Figure 1, for instance, shows that the proportion of markets that actually recorded higher than predicted prices increased steadily from March to May 2020, when the confinement measures were in full force. From 50 percent in March, the proportion rose to 86 percent in April and reached 100 percent in

Figure 1. Rapid increase in the share of markets with higher than predicted prices

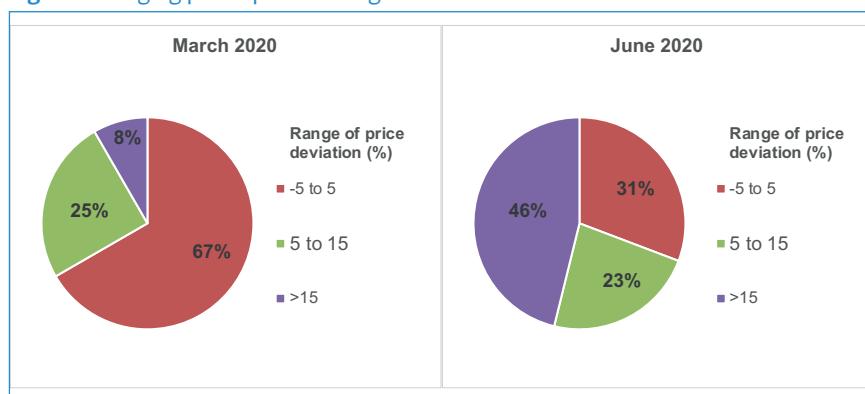


May. However, this trend started to reverse following the easing of restrictions in June, when the proportion of markets with higher than predicted prices fell to 75 percent.

The surge in prices intensified across markets as the restrictions took hold

The distribution of the magnitudes of price deviations across all rural markets is explored in Figure 2. In March 2020 (see the left pie chart), up to two-thirds (67%) of rural markets under consideration showed very modest price deviations from predicted levels, within the -5 to +5 per-

Figure 2. Surging price spikes among rural markets



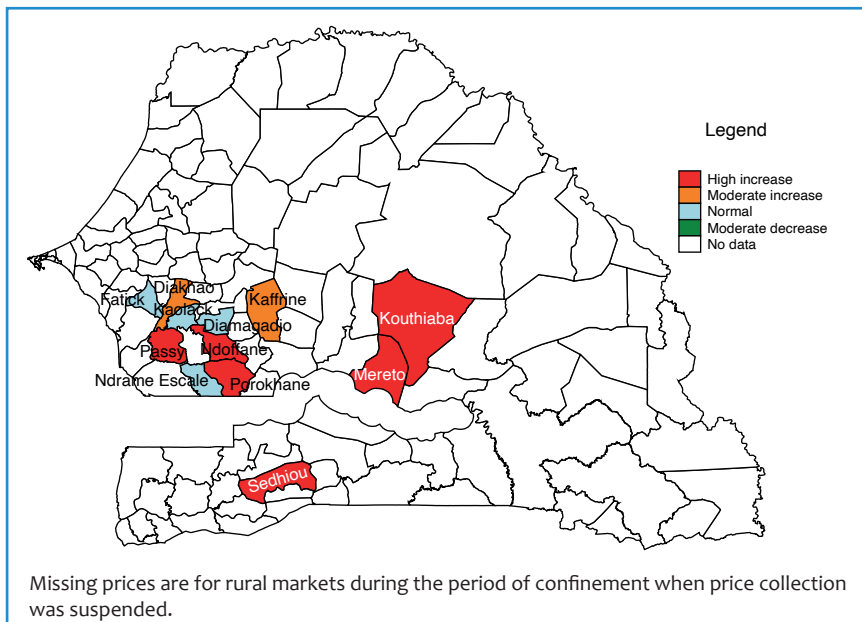
cent interval. Less than 10 percent of all markets experienced price deviations from predictions that were higher than 15 percent. The pandemic and related government measures had not yet significantly affected the movement of goods and people. In contrast, by June (see the right pie chart), almost a half (46 percent) of all markets showed price deviations that were higher than 15 percent, while the share of markets with modest price deviations decreased to 31 percent, compared to 67 percent in March.

A moderate to normal increase in the price of millet in surplus area markets.

As shown in Figure 3, millet prices behaved somewhat differently across surplus area markets but exhibit a general upward trend. From April to May, when the confinement measures were in place, millet prices increased moderately in markets in surplus areas such as Kaolack, Sédhiou, Diakhao and Kaffrine. They remained closer to predicted levels in other surplus area markets like Diamagadio, Fatick, Mbirkilane and Ndrame Escalé. In most of these markets, prices started to increase more sharply above predicted levels with the lifting of confinement in June.

This trend is illustrated in Figures 4a and 4b which depict the cases of markets in the Sédhiou and Kaolack districts. The case of the Kaolack market is interesting. Although located in a surplus producing zone, Kaolack is the largest city in the area and a major consumption center. The surge in supplies from the surrounding areas following the lifting of restrictions in June has pushed prices downward, more like deficit area markets and unlike markets in purely surplus areas such as Sédhiou. The introduction of restrictions nudged prices slightly under their predicted levels around March, in particular in the case of Sédhiou. They started to recover in April and May, as the shock that came with the confinement subsided and people started to find ways to evade the restrictions. Prices continued their upward trends in Sédhiou but fell slightly in Kaolack. The difference in behavior post deconfinement is most likely linked to the difference in the degree of interconnectedness with other markets. In both cases, though, prices were still clearly above the predicted level,

Figure 3. : Behavior of millet prices in surplus area markets



by 5 percent in Kaolack and 28 percent in Sédhiou. This pattern of price behavior is found across all surplus area markets with a generalized increase in prices over predicted levels with the lifting of movement restrictions in June. Prices exceeded predicted levels by 12 to 26 percent in other surplus

area markets such as Kaffrine, Kouthiaba, Mereto, Ndoffane, Passy and Porokhane. The much higher than predicted prices in June are a result of increasing demand from deficit area markets following deconfinement. They rose more in more connected markets such as Kouthiaba and

Figure 4a. Actual and predicted millet prices in Sédhiou (CFA francs per kg)

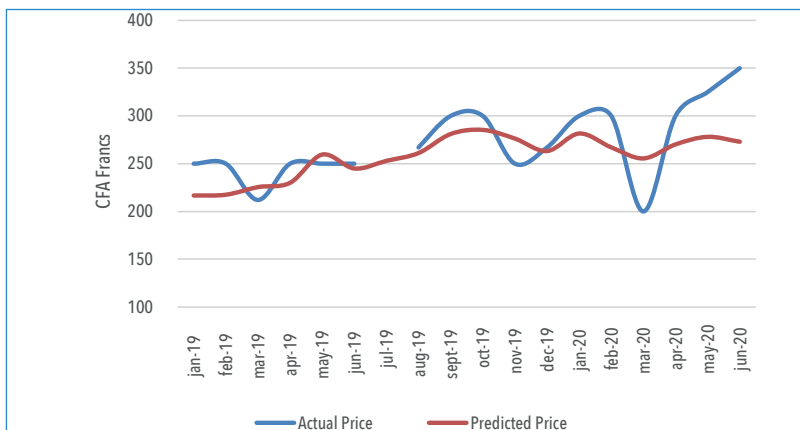
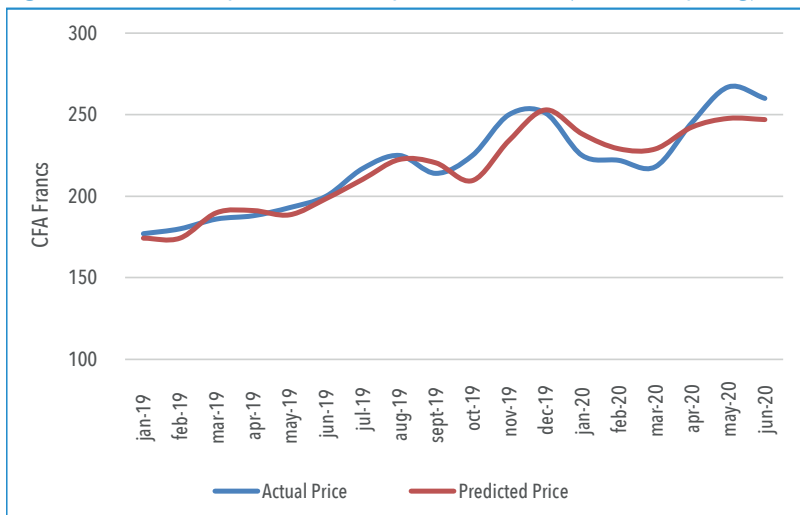


Figure 4b. Actual and predicted millet prices in Kaolack (CFA francs per kg)



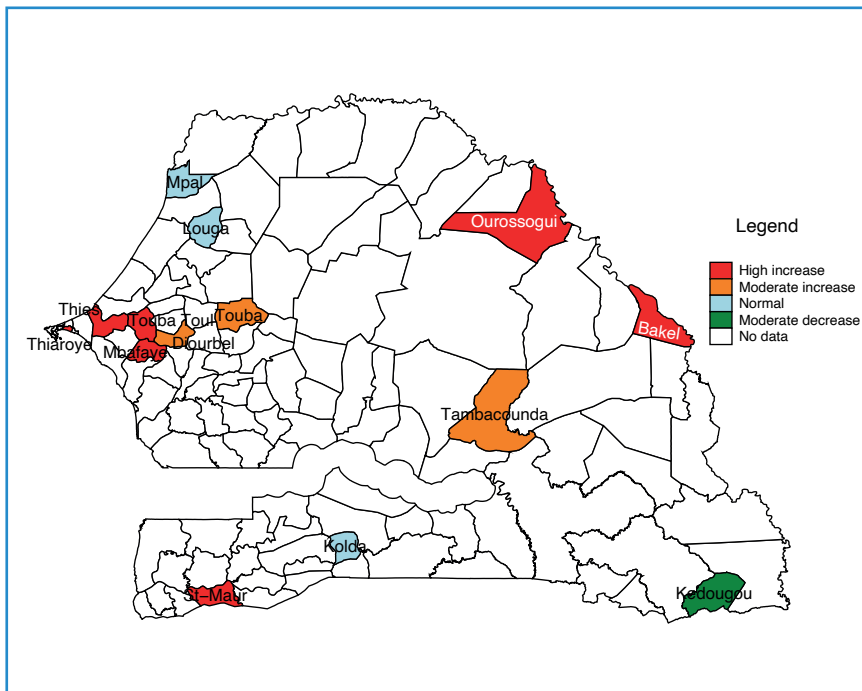
least in less connected markets such as Ndrame Escalé.

In general, one would have expected that confinement would depress prices in surplus areas below expected levels and that they would recover once the confinement had been lifted. While prices indeed fell below expected levels in some markets around March, this was observed in just two markets, Diamagadio and Mbirkilane, and only for a very brief period. In contrast, prices in surplus area markets rose sharply above predicted levels, leading to a nearly generalized increase in prices, post deconfinement. One possible explanation is that the demand that had built up in deficit areas over the confinement months, and which would have been spread over 2-3 months, suddenly descended onto supplying markets, creating a stronger than usual surge and thus pushing prices considerably above predicted levels. It appears, therefore, that the restrictions in response to Covid-19, by creating an artificial shortage of food staple supplies, have disrupted the arbitrage mechanism across markets, resulting in a more generalized upward trend in prices, not just in deficit areas but also in surplus areas.

A sharp rise in millet prices in deficit areas during the confinement

Contrary to surplus area markets, millet prices are expected to rise above predicted levels during confinement. As shown in Figure 5, prices were indeed significantly higher than predictions in almost all markets located in deficit areas, including Bakel, Ourosogui, Saint-Louis, Saint Maur (Ziguinchor), Thiaroye (Dakar), and Touba Toul. Generally, price spikes are steeper in markets that are weakly connected to primary millet collection areas like Thiaroye, in Dakar (Figure 6a). In many of these markets, millet prices have

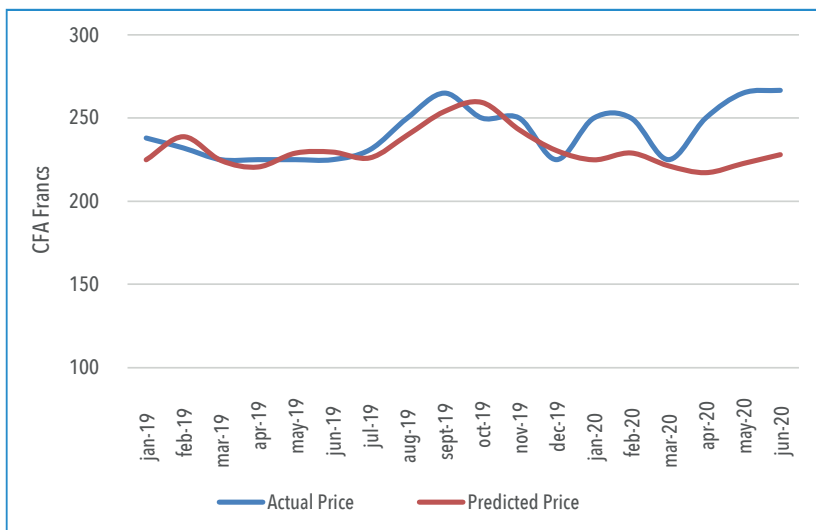
Figure 5. Behavior of millet prices in deficit area markets



remained higher than predicted levels over the entire confinement period. Better networked markets such as Touba, Louga, Bakel, Kolda or Tambaounda (Figure 6b) have experienced moderate to negligible price increases, even during the confinement period. As in the case Koulack, the Tambaounda market exhibits a somewhat untypical behavior. Because it operates as an assembly market, the drop in demand during confinement has tended to depress prices, which in turn rose after the lifting of the restrictions, just as a market in a surplus area would behave.

Conclusions

Figure 6a. Actual and predicted millet prices in Thiaroye (CFA francs per kg)



Measures taken by governments to control the spread of the COVID-19 pandemic, including travel restrictions and constraints to the movement of goods, disrupt local staple markets and thus impact on the cost of food consumed by the poorest and most vulnerable segments of the population. In the case of millet markets in Senegal, confinement and other containment measures have pushed up millet prices in deficit areas far above their predicted levels. The same increase was observed in surplus area markets, and was sustained even in June following the deconfinement. One would have expected that the end of confinement would normalize market conditions and bring prices back to their seasonal levels, as supplies start to move from supplying markets into deficit areas. The general upward trend in prices means that poor and vulnerable households have experienced erosion of purchasing power and pressure to adjust food staples demand and consumption. The government initiated a major food distribution program in efforts to mitigate the likely impact on these households, especially in deficit areas but also in favor of

Figure 6b. Actual and predicted millet prices in Tambaounda (CFA francs per kg)

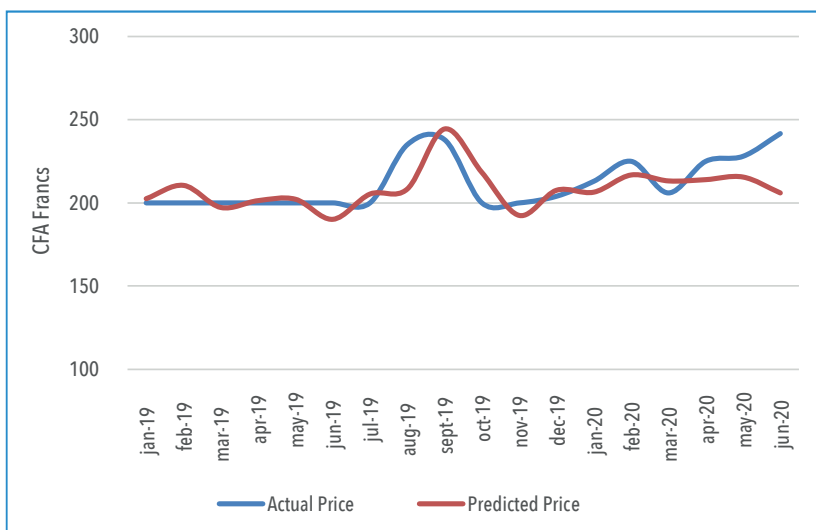


Table 1. Actual millet price deviations from predictions (%)

Area	Millet price trend	Market	Market type	Mar-2020	Jun-2020	Scorecard variation (V)
Deficit Area	High increase	Bakel	Retail/Urban	19	24	
		Ourossogui	Assembly /Urban	9	6	
		Saint Louis	Assembly /Urban	3	22	
		Saint Maur	Assembly /Urban	-5	9	
		Thiaroye	Assembly /Urban	2	17	
		Thiès	Assembly /Urban	15	21	
Deficit Area	Moderate increase	Touba Toul	Collection/Rural	3	18	
		Diourbel	Retail/Urban		9	
		Tambacounda	Assembly /Urban	-3	17	
Deficit Area	Normal	Touba	Assembly /Urban		9	
		Kolda	Assembly /Urban	-5	-2	
		Mpal	Assembly /Rural	-5	3	
Deficit Area	Moderate decrease	Louga	Assembly /Urban	-6	-3	
		Kedougou	Assembly /Urban		-13	
Surplus Area	High increase	Kouthiaba	Collection/Rural	3	24	
		Mbafaye	Collection/Rural	36	16	
		Mereto	Collection/Rural	12	26	
		Ndoffane	Collection/Rural	4	16	
		Passy	Collection/Rural	9	12	
		Porokhane	Collection/Rural		15	
		Sedhiou	Retail/Urban	-22	28	
Surplus Area	Moderate increase	Diakhao	Collection/Rural	1	8	
		Kaffrine	Assembly/Urban	22	16	
Surplus Area	Normal	Diamagadio	Collection/Rural	2	-4	
		Fatick	Retail/Urban	5	2	
		Kaolack	Assembly/Urban	-5	5	
		Mbirkilane	Collection/Rural	9	2	
		Ndrame Escale	Collection/Rural	-4	3	

net food buying households in surplus market areas.

A key lesson for future shocks is to better plan and roll out confinements and other restrictions so as to minimize disruptions to market operations and ensure continuity of flows of food staples between surplus and deficit areas. This is not an easy condition to meet but with better targeting and early identification and isolation of affected areas, large scale disruptions can be avoided. Non-affected areas can continue to operate, and a slower spread of infections would make it easier to modulate responses and create corridors for safe circulation of food and people.

Legend :

$V \geq 10\%$: High increase	
$5 \leq V < 10$: Moderate increase	
$-5 \leq V < 5$: Normal	
$-10 \leq V < -5$: Moderate decrease	

Source: Based on Senegal's Market Information System data (2010-2020).



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