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IMPACT OF COVID 19 ON THE MARKET BEHAVIOUR FOR AGRICULTURAL PRODUCT: A CASE OF MAIZE IN KANO STATE, NIGERIA

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Abstract
The Covid-19 pandemic no doubt had ravaged almost all sectors of the economic system inclusive of the Agricultural sector directly or indirectly. In a bid to assess some of the impacts in this sector, the current paper examines the impact of Covid-19 on the Maize market in terms of the price and quantity in Kano State in the early periods of the pandemic given the lockdowns and restrictions. To achieve this, a survey method through the use of structured questionnaires and informal interview of key farmers as well as direct observation of respondents was used. The multi-stage sampling technique was employed in selecting samples for the study. The logit regression and correlation were further used to determine the magnitude of the impact. The results of the study revealed that Covid-19 had affected the market for Maize especially the market quantity which was constricted due to the lockdown in Kano State and hence affected the price of Maize. The study recommends that government should not only relax the Covid19 lockdown but should also support the farmers with incentives to boost their production to curtail the prices from rising further given that most of these farmers in the study are subsistent farmers.
JEL Codes: Q10, Q11

Keywords: Covid19, lockdown, price and quantity, Maize

Introduction

The novel Corona virus disease (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus-2 and was declared a public health emergency on January 30th 2020 and marked as a pandemic on 11th March 2020 by the World Health Organization (WHO). The Corona virus is a large family of viruses that are known to cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome MERS and Severe Acute Respiratory Syndrome SARS. The major symptoms inclusive of fever, cough, shortness of breath and difficulty in breathing (WHO, COVID 19, 2020) However, the virus was discovered in Nigeria on the 27th of February. Henceforth, the virus spread across the major Commercial States of the country which include Abuja, Kano, Kaduna among other major cities.

Business activities have been disrupted globally as the Covid19 pandemic intensified. Nigeria on the other hand has had its fair share of the pandemic effect resulting from the lockdown with the Inflation rate rising from 12.13 to 15.75 between January and December 2020 2020 (CBN 2020). This was mainly driven by increases in food prices

which say increases from 14.85 to 19.56 within the same year. Though, before the outbreak, the outlook for the world economy and especially developing countries like Nigeria was fragile, as global GDP growth was estimated to be only2.5 per cent in 2020 (WHO, COVID19, 2020). In addition, the Nigeria economic growth had plummeted by about -6.1% and -3.6% in the 2nd and 3rd quarter of the year respectively. World-Wide conferences, legal gatherings, sporting events, political rallies, economic transactions, have all been affected by the outbreak. The world of work is being profoundly affected by the global virus pandemic. The crisis has already transformed into an economic and labour market shock, impacting all businesses regardless of their size. The prices of commodities were virtual, affected as a result of low or standstill production due to the Covid19 Lockdown.

Nigeria on the other hand, had responded to the pandemic through several measures. One of the concerted measures is the approval of the Economic Sustainability Plan in June 2020 in which the sum of USD 5.9 billion (NGN 2.3 trillion) was to be released for the stimulation& diversification the economy, retention& creation of jobs, as well as serving as a safety net for the protections of poor. In addition, the programme has Mass Agricultural scheme as one of its core objective in actualization of the plan.

The Covid19 pandemic has affected the global economy in two ways. One the spread of the virus encouraged social distancing which led to the shutdown of financial markets, corporate offices, businesses and events. Two, the rate at which the virus was spreading and the heightened uncertainty about how bad the situation could get, led to a flight to safety in consumption and investment among consumers and investors (OziliandArun,2020).was a consensus among top economists that the corona virus pandemic would plunge the world into a global recession. Top IMF economists such as Gita Gopinath and Kristalina Georgieva stated that the Covid19 pandemic would trigger a global recession (IMF, 2020). The global Covid19 pandemic is poised to further widen this divergence between global economic and financial paths.

There are five main ways through which the Covid19 pandemic spilt over into Nigeria. One, the Covid19 pandemic affected borrowers' capacity to service loans, which gave rise to non-Performing loans that depressed banks' earnings and eventually impaired bank soundness and stability. Subsequently, banks were reluctant to lend as more and more borrowers struggled to repay the loans granted to them before the Covid19 outbreak. Two, there were oil demand shocks which were reflected in the sharp decline in oil price. The most visible and immediate spillover was the drop in the price of crude oil, which dropped from nearly US$ 60 per barrel to as low as US$ 30 per barrel in March. During the pandemic, people were no longer travelling and this led to a sustained fall in the demand for aviation fuel and automobile fuel which affected Nigeria's net oil revenue and eventually affected Nigeria's foreign reserve. (CBN, 2020)

Three, there were supply shocks in the global supply chain as many importers shut down their factories and closed their borders particularly China. Nigeria was severely affected because Nigeria is an import-dependent country and as a result, Nigeria witnessed a shortage of crucial supplies like pharmaceutical supplies, spare parts, and finished goods from China. Four, the national budget was also affected. The budget was initially planned with an oil price of US$57 per barrel. The fall in the oil price to US$30 per barrel meant that the budget became obsolete and a new budget had to be formed that was repriced with the low oil price (CBN, 2020).

Finally, the Covid19 pandemic affected the Nigerian stock market. Major market indices

in the stock market plunged when investors pulled out their investments into so-called safe havens like US Treasury bonds. Stock market investors lost over NGN2.3trillion (US$5.9bn) barely three weeks after the first case of corona virus was confirmed and announced in Nigeria on January 28, 2020. The market capitalization of listed equities, which was valued at NGN 13.657 trillion (US$35.2bn) on Friday, February 28, 2020, depreciated by NGN 2.349 trillion to NGN 11.308 trillion (US$29.1bn) on Monday, March 23, 2020. The All-share index closed at 21,700.98 from 26,216.46 representing 4,515.48 points or a 20.8 per cent drop. (CBN, 2020)

No doubt, the COVID-19 has brought about a substantial disruption to the food supply chain especially in low- and middle-income countries (Lusk & Anderson 2020). This was chiefly a result of the imposition of the strict lockdown in red areas to minimize the risk of infections of the spread. Again, as noted by Laborde et al., (2020) the COVID-19 associated risks to the food system have been greatest especially where labour is the dominant factor of production. This is because the availability and stability of food are particularly acute in developing economies where labour-intensive traditional value-chain still exists. Lusk and Chandra (2021) have also noted that the advent of COVID-19 has identified the susceptibility of the food supply as consequential from the losses in farm and agricultural labour. In a related study, Jaacks et al., (2021) found that the COVID-19 lockdown in India has principally affected them negatively as it has restricted them from selling their crops and livestock products, hence decreasing their daily wages and dietary diversity.

Though, it was never expected that the public health crisis could trigger an economic crisis in the country. But the crisis was severe as the major economic agents who should have helped to revive the economy were unable to engage in economic activities due to fear of contracting the Covid19 disease, as others could not engage in economic activities due to the imposition of the mitigation policies such as physical social distancing and movement lockdown in Abuja, Lagos and Ogun states on the 30th March of 2020. For Kano State, the lockdown was imposed on April 27th, which was further extended on the 18th of May. Again, the impact on the agricultural sector may be discernable because as noted by Ilesanmi et al., (2021) Nigeria agricultural labour is operated manually daily due to the inaccessibility of mechanized farming tools. Hence, the annual periods of peak agricultural activity necessitate high demand for labour, but the lockdown and restriction of movement, therefore, limited access to farmlands by farmers and labourers.

Given the aforementioned, the study sought to examine the effect of Covid19 Lockdown on the price and quantity of Maize in Kano Metropolis, Nigeria given that Agriculture is seasonal, where labour is heavily required throughout planting and harvesting seasons, it is key to understand and characterize the temporal impacts of COVID-19 in areas where production occurs. More so, in this paper, we lay out what Nigeria could do to take advantage of such global liquidity and position itself favourably in a global post-pandemic environment in which most of the green shoots will be financial, as trade flows that were frozen by the pandemic will take a while to thaw. By taking the measures we suggest, Nigeria (and indeed Africa) could finally reduce its reliance on exports for the external liquidity inflows required for sustainable economic growth and stability and depend more on available global capital flows.

Methodology

This section would dwell on the ways and methods for data collection and analyses to achieve the outlined objective of the study. It should be noted that despite the high attention in the incidence of COVID-19 amongst the agricultural labour force, outside the

thin media accounts, there is currently no methodological and systematic reporting of such data. Thus, the purpose of this paper is to determine the impact of COVID-19 on the maize market (price and quantity) in the Kano State.

Sampling Technique and Sample Size

The multi-stage sampling technique was used for this study. The multistage technique involves dividing the population into groups (or clusters) for the conduct of research. Sometimes it is regarded as a complex form of cluster sampling. However, during sampling, significant clusters of the selected people are split into sub-groups at various stages to make it simpler for primary data collection. This method has advantage especially when dealing with population that is too vast and researching every individual is impossible.

Kano was among the 12 states created in May 1967 out of the former Northern Region. The state remained intact until August 27, 1991 when Jigawa State was carved out of it. It is located in the northwest geo-political zone of Nigeria. Hausa and Fulani, who are predominantly Muslims, inhabit Kano State.

Kano State is one of the largest states in Nigeria in terms of population, having a population of about 9, 383, 682 in the 2006 census. It has 44 local governments, with an area of 20,479.6 square kilometer. The population density is about 458 persons per square kilometer. The walled city of Kano, which serves as the state capital, is the commercial nerve centre of Kano State and indeed the whole of northern Nigeria. Many immigrants, mainly Yoruba and Igbo, live in Kano City. Six local government areas (Fagge, Gwale, Tarauni, Kano Muncipal, Nassarawa and Dala) have virtually merged into what a visitor would call Kano metropolis.

Historically, Kano State has been a commercial and agricultural state, which is known for the production of groundnuts. The state has over 18, 684 square kilometers of cultivable land and it is the most extensively irrigated state in Nigeria. Kano State is noted for its famous markets and it is the most leading industrial centre in the north. Trading articles in the Kano City include leather goods, local crafts, dyed textile materials as well as camels. Giant industrial plants include textile, oil, motor assembly, bicycle assembly and many agro -based industries. Kano City is linked by rail, road, and air to all parts of the country and internationally.

In the first stage four (4) Local Government Areas were purposively selected out of the forty four (44) Local Government Areas in the state. Out of which one (1) ward was purposively selected from each of the four (4) selected Local Government Areas, making a total of four wards. Finally, four (4) communities (Albasu, Bichi, Gabasawa and Takai) were selected so that a total of four (4) communities were studied. These communities were selected based on the fact that they were most affected by the Covid19 lock. This is because most inhabitants were mostly low-income earners.

A random sampling technique was adopted in selecting respondents for this study. The estimated population of the selected communities is as follow

To determine the sample size required for this research, the Taro Yamane (1967) sampling procedure was adopted. This is because it does not only give each element in the population an equal chance of being included in the sample but also makes the selection equally likely.

It is mathematically stated as:

Where n = the desired sample size

N = population size under study

e = error limit given as 0.06 or 00036

Total population size used = 70,775

n = 277 sample size.

The sample size of 277 is 0.3929022% of the total population of 70,775. This was sizeable enough to provide the required information needed in the study area.

Instrument of data collection

The questionnaire is a major instrument used in obtaining primary data. The questionnaires were designed to collect information from the respondents who are mostly farmers, and interviews were also conducted to augment and authenticate the information gathered from the questionnaire. The choice of primary data was guided by the nature of the research which is the impact of the Covid19 lockdown on the price and quantity of Maize in Kano state. Hence the primary data is more suitable for the research.

Data Analysis

This section presents the results of the data obtained through the questionnaires administered to respondents. A total of 277 questionnaires were distributed to the respondents. Information from the returned questionnaires was processed using SPSS 17.0. The output is summarized and presented.

Table 1 Result of Descriptive statistics

Descriptive Statistics

	Mean	Std. Deviation	N
Market prices of Maize	2.5740	.73162	277
Covid19 lockdown	2.5235	.69963	277

Source: Computed by the Researcher using SPSS 17.0 (2020)

Table 1 shows that the market price of Maize in the study area is ₦25,740 which is the average price of a bag of Maize (that is 2.574 x N10,000) whereas the average number of days of market lockdown due to covid19 in the study area was 2.5 which is approximately 3 days.

Table 2 Result of correlation analysis

Correlations

		Market prices of Maize	Convid19 lockdown
Pearson Correlation	Market prices of Maize	1.000	.904
	Covid19 lockdown	.904	1.000
Sig. (1-tailed)	Market prices of Maize	.	.000
	Covid19 lockdown	.000	.
N	Market prices of Maize	277	277
	Covid19 lockdown	277	277

Source: Computed by the Researcher using SPSS 17.0 (2020)

The above correlation Table 2 shows that covid19 lockdown is an input factor that affect the market prices of Maize positively ($r = 0.904$, $n = 277$, $p < 0.000$ one tail). In other words, on average, an increase in the number of lockdown days is likely to be increasing the price of maize.

Table 3 Result of Market prices of Maize

A single regression model was carried out to determine the magnitude of the impact of lockdown on the prices of maize. The model is given as;

Dependent variable;

Independent variable	Coefficient value	t- statistic	Prob. Value
Constant	0.187	2.661	0.008
Covid19 lockdown	0.946	35.151	0.000
$R^2 = 0.818$ Adjusted $R^2 = 0.817$			
D.W = 2.057 F statistics= 1235.568			

Source: Computed by the Researcher using SPSS 17.0 (2020)

The result of the estimated regression result presented in Table 3 reveals that to some extent, the covid lockdown had a positive and significant effect on the price of maize in Kano State. This result has met the apriori expectations which indicate that if there is a covid19 lockdown in the study area, the market prices of Maize may increase as the lockdown might have reduced the quantity of maize which must have influence the price. The reverse would be the case if there are no covid19 lockdown all things been equal. This is to say the market prices of Maize would decrease.

The R^2 value of 0.818 indicates that 81.8% of the variation in market prices of Maize is explained by the Covid19 lockdown. Since the value of Durbin-Watson statistics is greater than 2(2.057). The F statistics measure the adequacy of the model and it is supposed to be statistically significant at either1%, 5% or 10% while the Durbin-Watson indicates the existence of autocorrelation among the dependent and independent variables.

Table 4 Result of Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
Market quantity of Maize	1.1913	.39406	277
Covid19 lockdown	2.5235	.69963	277

Source: Computed by the Researcher using SPSS 17.0 (2020)

Table 4 shows that the market quantity of Maize in the study area ranges from 0 to 100 (1.1) whereas the average number of days shutdown due to covid19 lockdown in the study area is 2.5

Table 5 Result of correlation analysis

Correlations

		Market quantity of Maize	Covid19 lockdown
Pearson Correlation	Market quantity of Maize	1.000	-.181
	Covid19 lockdown	-.181	1.000
Sig. (1-tailed)	Market quantity of Maize	.	.001
	Covid19 lockdown	.001	.
N	Market quantity of Maize	277	277
	Covid19 lockdown	277	277

Source: Computed by the Researcher using SPSS 17.0 (2020)

The correlation table 5 shows that Covid19 lockdown is an input factor that affect the market quantity of Maize negatively ($r = -0.181$, $n = 277$, $p < 0.001$ one tail)

Again a regression analysis was carried to determine the supply side of the market where the impact of the Covid-19 lockdown was seen on the supply of maize. The regression model is given as;

The result of the regression result as presented in Table 6 indicates a negative and si

Table 6 Result of the Market quantity of Maize
Dependent variable

Independent variable	Coefficient value	t- statistic	Prob. Value
Constant	1.448	16.555	0.000
Covid19 lockdown	- 0.102	-3.045	0.003
$R^2 = 0.033$ Adjusted $R^2 = 0.029$			
D.W = 2.236 F statistics= 9.274			

Source: Computed by the Researcher using SPSS 17.0 (2020)

Table 6 shows that the R^2 value 0.033 indicate that 3.3% of the variation in the market quantity of Maize is explained by the Covid19 lockdown. And the value of F statistics of 9.274 is statistically significant at 1%. Furthermore, the model is free from the problem of autocorrelation. Since the value of Durbin-Watson statistics is greater than 2(2.236). The F statistics measure the adequacy of the model and it is supposed to be statistically significant at either1%, 5% or 10% while the Durbin-Watson indicates the existence of autocorrelation among the dependent and independent variables.

The results of the regression indicate that there is a negative relationship between covid19 lockdown and market quantity of Maize, revealing that the lockdown must have constricted the supply of maize due to restrictions on the movement of the chain. Furthermore, this tends to reduce the market quantity of Maize. This result has met the apriori expectations which indicate that if there is a covid19 lockdown in the study area, the market quantity of Maize will decrease. The reverse would be the case if there are no covid19 lockdown.

Discussion of Findings

Findings from the study reveal that the covid19 lockdown in Kano State affects the market prices of Maize and the market quantity of Maize. This is evident from the results which show that covid19 lockdown has led to an increase in the market prices of Maize and a decrease in the market quantity of Maize supply in Table 3 and 6respectively. This further shows that there may be a likelihood of an increase in the cost of living as the data from the national level also reveals a significant increase food price component of the headline inflation. This effect will be most endured more by the low-income group who were not also excluded from the lockdown. Consequently, increase in the poverty rate. The study further reveals that given a sample study of maize as an essential food item, the Covid19 may have had a negative effect on the food market by negatively influencing the quantity supplied and positive effect on the price of maize in Kano State.

Conclusion and Recommendations

The study reveals that market prices of Maize and market quantity of Maize in the Study area are affected by the number of day's shutdowns as a result of covid19 lockdown in the state. The result shows that Covid19 had led to an increase in the market prices of Maize and also a decrease in the market quantity of Maize in the study area as the lockdown may have significantly inhibited the ability of the farmers to sell their outcome. Based on the outcome of the study, the study recommends that; First, rather than enforcing strict restriction of movement, the government can practice a controlled and monitored movement especially for the suppliers of the essential food items such as Maize to ensure the availability of the item. Secondly, the Government could support the farmers with incentives to boost their production to curtail the prices from rising further given that most of these farmers in the study are subsistent farmers.

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