

Boko Haram Insurgency and Maize Production in Northeastern Nigeria, 2008-2023

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Abstract- The work investigate the Boko Haram Insurgency and maize production in Northeastern Nigeria from 2008-2023. The objectives of the study was to look at the trend of the maize production in the study areas from 2000- 2023 and to investigate the effect of Boko Haram insurgency on the maize production in the entire Northeastern Nigeria. The data was mainly secondary data and was gotten from Central Bank of Nigeria bulletin, Nigerian Bureau of Statistic, Nigerian newspapers, Media television and radio. The technique used to analyse the Trend was graph and Random Effect was used to analyse the Panel data. The finding of the study was that the maize production was fluctuating in the study area within range of data and the Boko Haram insurgency has great effect on the maize production and the mode of their operation was different in the study area. The study recommended that both the Federal government and the state to be proactive in curbing the crisis that may affect the farmers.

I. INTRODUCTION

Since it provides raw materials, income, and a means of consumption for individuals, businesses, and the government, farming is regarded as the most important sector of any country's economy. For a number of years, the activities of Boko Haram had a negative impact on the agricultural output of both the entire country and the Northeastern region of Nigeria. Many farmers have lost their lives as a result of Boko Haram's actions, which include frequent attacks on farmers, murders, kidnappings, destruction, and confiscation of farm goods and properties. Due to the destruction of their properties, some of them had fallen into poverty.

Additionally, a large number of farmers have been uprooted from their communities. Since many of these farmers struggle to send their kids to school and even

to eat three square meals a day, many of them are no longer able to handle life.

However, agriculture provided employment for nearly 90% of the population, food for the country, and foreign exchange for the Nigerian economy before petroleum was discovered in early 1956 (Towobola, Luqman, Kolade, Ogunwale and Olakojo, 2014). Northeastern Nigeria's economy is largely based on agriculture, and the region's climate is ideal for growing cereal crops because most of them don't need a lot of rainfall. Maize, millet, rice, wheat, sugarcane, and sorghum are the most widely grown cereals in northeastern Nigeria. Therefore, the primary source of income for the people in northeastern Nigeria is farming (Ajayi, 2009). There have been numerous violent conflicts in the northeastern region of Nigeria for many years, which have claimed many lives, uprooted many people from their homes, and destroyed property valued at billions of naira (Awortu, 2015).

Furthermore, the Boko Haram crisis in Nigeria is seen as a dangerous phenomenon that has devastated properties and lives in the country's northeast. According to the law, using force and violence against people and causing property damage in an attempt to frighten society can be considered a criminal offense as well as a violation of moral principles and human rights (Osewa, 2019). The peace, security, and stability of Nigeria and its neighbors, including Chad, Niger Republic, and Cameroon, have been hampered for over a decade by the Boko Haram crisis. The group hasn't stopped releasing terror attacks on the Nigerian government since. In the northeastern region of Nigeria, the group had destroyed homes and villages, killed a large number of people, and paralyzed the economy.

According to the United Nations High Commissioner for Refugees (2018), there were approximately 1.8

million internally displaced people and 5.8 million people who were reportedly in dire need of humanitarian aid. Additionally, more than 60% of internally displaced people (IDPs) lived in communities outside of their homes, placing additional strain on the already overburdened resources of Borno State, the crisis' epicenter, where more than 80% of IDPs were located. Due to their inability to return to their communities, the number of internally displaced people has been steadily rising since 2014 (Sydney & Onwuemele, 2019).

Statement of the Problem

In Northeastern Nigeria, maize is a vital commodity since it is a major source of consumption, income, and calories in the area. Due to the sect's actions for nearly ten years, maize production is one of the farming enterprises in Borno Southern Senatorial District that is most threatened and impacted. In Northern Nigeria, maize is not only a staple food but also a significant source of raw materials for industries that produce custard, golden morn, cornflakes, and chicken feed, among other products. Consequently, the Boko Haram crisis's threat to maize production has disastrous knock-on effects and negative value chain effects throughout the state, the surrounding area, and Nigeria as a whole.

In recent years, Boko Haram's activities have forced over a million five hundred thousand (1,500,000) people—mostly farmers—from their homes, affecting the production and supply of maize and other crops. This has resulted in extreme poverty and hunger among the affected people in the region, according to a report by the CARNEGIE Endowment for International Peace (CEIP, 2019). Nigeria's efforts to accomplish the Sustainable Development Goals (SDGs), particularly SDGs 1 and 2, which call for achieving zero poverty and zero hunger by 2030, have been weakened and impeded by this circumstance.

According to Abakpa (2022), millions of farmers, fishermen, and pastoralists faced numerous difficulties in their livelihoods due to insecurity issues, specifically in the six Northeastern states of Borno, Adamawa, Taraba, Bauchi, Gombe, and Yobe. Due to the crisis, farmers are not receiving enough staple foods to support themselves, and many have fled to safer areas, forcing some to abandon farming

altogether. And as a result, the amount of farm produce in the area is low, and its price has gone up.

The study area experienced a shortage of staple foods as a result of this disaster, and vulnerable groups like women and children suffered from malnutrition due to their low calorie intake. This demonstrates how the Boko Haram terrorists' actions have crippled the area's farming industry and resulted in a significant decline in farm productivity (FAO, 2017). Additionally, among the residents of the impacted area, it led to a rise in unemployment, poverty, famine, disease outbreaks, and a high death rate.

Research on the Effect of Boko Haram Insurgency on Livestock Production in the Mubi Region of Adamawa State, Nigeria, was conducted by Augustine, Daniel, Abdulrahman, Lubele, Katsala, and Ardo in 2019. Adebisi, Azeez, and Oyedeji (2017) evaluated how the Boko Haram insurgency affected Nigeria's business environment's agricultural sector. In Gujba Local Government Area, Yobe State, Nigeria, Babagana, Ismail, Mohammed, Dilala, Hussaini, and Zangama (2018) conducted a study on the effects of the Boko Haram insurgency on agricultural activities.

The effects of the Boko Haram insurgency on crop production in Northern Adamawa State, Nigeria, were studied by Jare and Bunu in 2021. Since maize is the primary food consumed in all of Nigeria's northern states, none of these studies have examined the impact of the Boko Haram crisis on the agricultural sector in Nigeria overall or in specific states. Additionally, none of them have measured the Boko Haram crisis as a variable. In light of this, this research project is being conducted.

Research Questions

In order to examine the impact of Boko Haram crisis on maize production in Borno Southern Senatorial District, the study intends to provide answers to the following questions:

- i. What was the trend of maize production in Northeastern Nigeria?
- ii. How did Boko Haram insurgency affect the output of maize production in Northeastern Nigeria?

Objectives of the study

The broad objective of the study was to examine the effect of Boko Haram insurgency on maize production in Northeastern Nigeria, while the specific objectives were to:

- i. determine the trend of maize production in Northeastern Nigeria.
- ii. assess the effect of Boko Haram insurgency on the output of maize production in Northeastern Nigeria

Justification of the Study

The impact of the Boko Haram insurgency on maize production in northeastern Nigeria was examined in this study. The significance of this staple food to the residents of Nigeria's northern states is what prompted the researcher to look into this topic. In addition to providing calories for many families in the region and the Northern states generally, this staple food also serves as a source of income for many farmers. For this study, input and output were the variables that were being examined. Land, labor, capital, and the Boko Haram situation in the region are input factors; the dependent variable is the total number of bags of maize produced by each farmer, expressed in 50 kg per bag.

The Boko Haram insurgency is being used as an independent variable to determine maize production because it is crucial because, in the absence of peace, the environment is tense, which will cause all activity in that area to halt. Because the researcher wants to examine maize production prior to the Boko Haram sect's massive attacks in 2014, when they captured villages and raised their settlements, and in 2015, when the Nigerian military returned some towns in a local government in the study area to the former settlers until 2023, the years 2008 to 2023 were chosen.

Linear Production Function

Adam Smith proposed the linear production function prior to World War II, but it was implemented following the war due to the harm done to Europe, especially England (Cob and Douglas, 1928). The capitalists were then faced with a dilemma, and while trying to solve it, they recalled Adam Smith's theory of the production function, which holds that massive production of any product can be achieved by employing more labor with less capital and managing that labor.

Since many of them died in the war, there was a shortage of labor, which led to the problem of hiring more people to work on farms or in factories. These workers for the capitalists were paid subsistence wages, which are the wages needed to survive.

According to this theory, workers should be mobile, and labor productivity as a result of capital improvements was not taken into account. Additionally, it is based on labor-intensive rather than capital-intensive methods, and the issue of capital and labor elasticity-that is, the distribution of the capitalist or entrepreneur's share of the income-was not taken into consideration.

The mathematical model of the Linear production function is presented thus:

$Qty = f(L, K, R, E)$, Where,

Qty = Quantity produce or output

L = Labour, K = Capital, R = Land, E = Entrepreneur,

f = Function

The aforementioned model views all production inputs as under the entrepreneur's control, with the exception of labor, which is used to manipulate capital and land or raw materials in order to produce the desired product. In this case, the above production function failed to take into consideration the advancements in labor and capital, which are the productivity engine, which is knowledge or technology.

Impact of Boko Haram crisis on Agricultural activities in Northeastern part of Nigeria

In their study "The Impact of Boko Haram Insurgency on Agricultural Activities in Gujba Local Government Area of Yobe State, Nigeria," Babagana, Ismail, Mohammed, Dilala, Hussaini, and Zangoma (2018). Six towns were chosen to serve as the study sites: Buni Yadi, Gujba, Goniri, Katarko, Mutai, and Wagir. The local government's principal agricultural strongholds were these towns. A mixed-methods descriptive survey design was employed, and 394 respondents in all took part. The tools used to collect the data were structured interviews and closed-ended questionnaires. The majority of respondents were crop farmers, according to the demographics of the respondents, and many returnees still rely on food aid that is provided by various non-governmental organizations. Their research also showed that the

terrorism of Boko Haram had severely impacted all of the regular human activities in the region, including farming, to the point where crop and animal production essentially stopped, many farmers fled, and the region's ability to produce food was adversely impacted. They suggested that governments at all levels take a more active approach to fighting insurgency in these and other regions, as well as providing the fundamental infrastructure that the populace needs to be encouraged to return to farming and resume regular agricultural operations.

In their paper "The Impact of Insurgency on Agricultural Value Chains in North East Nigeria," Eunice, Sarah, and Marvelous (2019). The study used focus groups and structured questionnaires as its primary data collection methods. All of Nigeria's northeastern states, including Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe, as well as their local government areas, were included in the study area. States and Local Government Areas make up the study's population stratification. There are six (6) States and one hundred and twelve (112) Local Government Areas in the study area. The questionnaires were administered to 400 respondents (sample size), drawn from the selected Every state in northeastern Nigeria has a local government area. However, only 360 of the 400 surveys that were distributed were correctly completed and returned by the respondents. Using tables, charts, graphs, and simple percentages, the study used descriptive analysis. To analyze the gathered data, they used the logit model. They discovered that the availability of agricultural products and inputs in the region has decreased, and that insurgency has a detrimental effect on agricultural value chains in Nigeria's northeastern states. They suggested that in order to promote agricultural investment in the Northeast, the government should implement intentional policies and initiatives to improve property and life security.

Salihu and Kwajafa (2017) conducted research on "The Effect of Boko Haram Insurgency on the Productivity of Local Farmers in Adamawa State," according to Abubakar. Three hundred and thirty-three (333) questionnaires were given to the target population as part of their sample size. The study employed both descriptive and inferential analysis. The productivity of nearby farmers in the study area

was ascertained using the logit model. According to the results, every coefficient between 1 and 10 percent is statistically significant. Their main conclusions are that in the impacted areas, peasant farmers see a decline in both their income and productivity. Women make up the majority of farmers in the impacted areas, and they are no longer able to obtain credit facilities. They suggested that the government should not be deterred from offering farmers credit facilities and farm input subsidies.

"The effects of Boko Haram terrorism on crop production in Northern Adamawa State" is the title of a study by Jara and Bunu (2021). They generated their data using primary data, which includes interviews and questionnaires. 278 respondents were chosen for the study using a combination of simple and multistage random sampling techniques. Descriptive statistics were used to analyze the data, and the results showed that, prior to the start of Boko Haram terrorism, 80, 125, 20, 27, and 30 farmers, respectively, produced between 1100 and 2000 kg of maize, sorghum, groundnuts, cowpeas, and rice during the height of terrorist activity.

Their findings also revealed that, during the period of relative peace in the area, 115, 138, 135, 80, and 76 farmers, respectively, received farm output for maize, sorghum, groundnuts, cowpeas, and rice that fell between 100 and 1000 kg. When compared to the output that was attained prior to the terrorist attack in the study area, a significantly larger number of farmers are currently producing fewer kilograms of crops, which ultimately leads to lower output. They advocated for the provision of favorable conditions for conducting business in the northeast and throughout Nigeria, as well as the affordability and accessibility of farm inputs such as fertilizer, agrochemicals, machinery, and improved seeds. It is necessary to raise awareness among farmers and community members about the significance of being security conscious. Farmers who have been attacked by insurgents and are now back at home should receive financial support of any kind in order to increase their productivity.

Bello (2024) in his work title "assessment of the impact of Boko Haram crisis on livelihoods of maize farmers in Northeastern Nigeria" using the Panel data and Random Effect to analyse the data found that

Boko Haram crisis has great impact on the livelihoods of maize farmers in the study area as many of their major means of survival had been affected by the crisis.

Methodology

Description of the study area

Given its size, population, and abundance of natural resources, the North East Region of Nigeria has enormous potential for economic growth. The six states that comprise the region are Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe. Its area is roughly 284,646 square kilometers, or 30.8 percent of the country's total land area (Dlakwa, 2004). The region is home to just over 26 million people, making up around 12% of the nation's total population, according to the National Bureau of Statistics (NBS, 2019). The region is home to 14.47% of the 774 Local Government Areas in the country.

However, because it is still one of Nigeria's less developed regions, this potential has not raised the area to the necessary level of development (RPCA, 2016). The multidimensional poverty incidence was 0.47, and 71.9% of the population lives in income poverty (NBS, 2019). Additionally, the region's average Human Development Index (HDI) score for quality of life was 0.38, below the national average of 0.521 (UNDP, 2018).

Sampling technique

The sampling technique for this study is basically on secondary data for all the six states comprises of the Northeastern Nigeria from 2008 to 2023. The reason for this years selected was that the Boko Haram started in 2008 in Maiduguri before spread across all the remaining states in the Northeast from 2009 till 2023. The sources of the data are as follows: Central Bank of Nigeria bulletin, Nigerian Bureau of Statistic, Nigerian newspapers, Media television and radio.

Data analysis technique

Ordinary Least Squares and a graph were used in this study to analyze the panel data. The objective one was analyzed using the graph. On the other hand, the Ordinary Lease Square was utilized to address the second objective. Maize production output as a function of land, labor, capital, and the Boko Haram insurgency is the variable being considered for the

OLS. The Random Effect Model (REM) is the method utilized in this study to analyze the panel data. The REM was used because the data was panel data, and the researcher preferred it to the fixed effect model (FEM) and the pooled Ordinary Lease Square (OLS) model because the latter was biased to the OLS assumption, while the former assumed that the intercepts were the same for every cross section and that there were no differences in their time of occurrence. REM made the assumption that the cross section's intercept and slope, including time, differed.

Model Specification

This study adopt the Linear Production function which stated that output is a function of the input. Quantity = f (Land, Labour, Capital). Input the technology in to the model, the model become Quantity = fA (Land, Labour, Capital).

$$Qty = fA (R, L, K).$$

“A” being the technology or knowledge is coming in to the model just to signify the knowledge of improving any of this input in order to maximize the output which is maize production (Gujarati, 2004).

The model specification for this work is given below:

$$Qty = fA (R, L, K, BH).$$

$$MP_t = f (\beta_0 + \beta_1 R_t + \beta_2 L_t + \beta_3 K_t + \beta_4 BH_t + \varepsilon)$$

Where;

MP_t = Total number of bag(s) of maize (50kg) produce in a year per farmer

R_t = Hectares of Land cultivated by the farmer

L_t = Total number of labour employed by the farmer in hundred per year

K_t = Total number of capital or money spent in thousand or used during the year by the farmer

BH_t = Boko Haram Insurgency as affected by the farmer

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ are the parameters to be estimated

ε is the error term

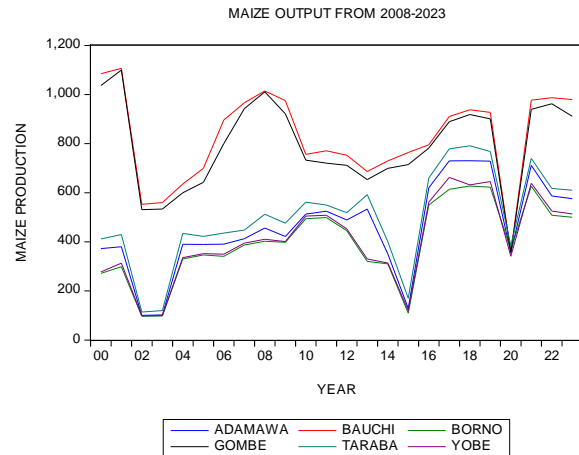
t is the year

Boko Haram (BH) is included in the model as an input because it is the primary factor influencing maize production in the study area. All other variables are available, but the Boko Haram crisis is the main variable that worries the researcher because the availability of other inputs depends on how the Boko Haram crisis is used. It uses the dummy variables 0 and 1 to measure. A score of 0 indicates the absence of a Boko Haram crisis, while a score of 1 indicates one. The a priori for all the variables are to be positive

except Boko Haram insurgency to be negative R, L, K > 0 while BH < 0. The model above could be used to analyse second objective.

Analysis

TREND ANALYSIS



Dependent Variable: MP_?
 Method: Pooled EGLS (Cross-section random effects)
 Date: 11/23/24 Time: 02:14
 Sample: 2008 2023
 Included observations: 16
 Cross-sections included: 6
 Total pool (balanced) observations: 96
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.19103	64.30607	-0.189578	0.8501
LND_?	5.179291	0.466880	11.09341	0.0000
LBR_?	0.537243	0.817507	0.657172	0.5127
KAP_?	0.124478	0.270727	0.459792	0.6468
IBH_?	-27.61946	30.57832	-0.903237	0.3688
Random Effects (Cross)				
ADA—C	154.5867			
BAU—C	30.41839			
BOR—C	-54.91324			
GME—C	-33.61080			
TRB—C	-36.97747			
YBE—C	-59.50355			
Effects Specification				
		S.D.	Rho	
Cross-section random		88.66017	0.3464	
Idiosyncratic random		121.7915	0.6536	

It was evident that maize production had begun to decline between 2000 and 2003, then had increased once more before declining once more between 2013 and 2015 and again in 2020. The first decline was brought on by the military government's handover of power to the civilian one. Since many people were granted political positions and were freed from the military regime's enslavement to the democratic government, many people were discouraged from cultivating large tracts of land. The decline in 2012–2015 was caused by the Boko Haram insurgency, and the decline in 2020 was brought on by the COVID-19 pandemic.

Weighted Statistics			
R-squared	0.704306	Mean dependent var	153.7285
Adjusted R-squared	0.691308	S.D. dependent var	219.2824
S.E. of regression	121.8334	Sum squared resid	1350747.
F-statistic	54.18758	Durbin-Watson stat	0.548768
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.775252	Mean dependent var	473.2981
Sum squared resid	1956678.	Durbin-Watson stat	0.378829

From the table above, it was observed that the Adamawa maize production is different from other states by 154.59tons. The reason for this was that the effect of Boko Haram was not to the entire state rather to only five local government areas in the state and the reason why these Local government areas were affected were their closeness to Borno State the epic centre of Boko Haram. People from Borno state fled more to Adamawa state compare to other neighbouring states and those that came farmed maize so as to cater for their family.

Bauchi state also differ in maize production compare to other state by 30.42tons. This was so as a result of not been hit much by Boko Haram insurgency except on the internal vices.

However, in the case of Borno, Gombe, Taraba and Yobe decreased differs in their maize production by - 54.91, -33,61, -37.00 and -59.50tons respectively. The reason for the Borno and Yobe states decrease in their maize production were that these are two states most hit by Boko Haram activities while on the case of Gombe and Taraba states were as a result of herdsmen clash with the farmers.

The major findings from this work was that Boko Haram insurgency has a great effect on the maize production as well as the input variables used in the production in the entire Northeastern states of Nigeria. And this finding is in line with the work of Bello (2024) which observed that Boko Haram crisis has impact on the livelihoods of maize farmers in Northeastern Nigeria as many of them have no food to feed and their source of income also decreased.

CONCLUSION

The work conclude that the Boko Haram insurgency has negative effect on the maize production in the Northeastern Nigeria and this has skyrocket the price of staple goods in the entire country and caused decrease in the livelihoods of the citizens. The research recommended that the Nigerian government and the states in question should a proactive measure to curb any crisis that may affect the farmers as they are the engine of any country’s growth and development.

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