



## **EFFECT OF AGRICULTURAL AND MANUFACTURING PRODUCTIVITY ON ECONOMIC GROWTH IN NIGERIA**

Abdul Raheem Olamide  
Email: [el.nilojr@gmail.com](mailto:el.nilojr@gmail.com)

### **ABSTRACT**

The contributions of Agricultural and Manufacturing Sectors to Economic Growth cannot be overemphasized. This study examined the effect of agricultural and manufacturing productivity on economic growth in Nigeria using data for the period 1980 to 2020. The tests for time series properties of the variables was carried out by Augmented Dickey-Fuller (ADF) test which suggested that the variables are integrated of order 1. Hence, the error correction model was used to estimate the short run coefficients of the model. The co-integration test indicated the presence of a long run relationship among the variables. The results reveal that agricultural output has a positive and significant effect on economic growth both in the short run and in the long run while manufacturing output only has a positive relationship with economic growth in the short run. In the long run, the relationship is negative but insignificant. The study suggested that investment in the agricultural and manufacturing sectors should be promoted to stimulate economic growth. Also, a stable exchange rate system should be encouraged and maintained to boost economic growth.

**Keywords:** Agricultural Sector, Manufacturing Sector, Economic Growth

### **INTRODUCTION**

Initially an agricultural dependent country, Nigeria shifted focus to oil exports in the 1970s and after decades of sluggish economic growth, the need to refocus on other sectors like the agricultural sector as it was in the 60s became evident. The relationship between agriculture and development, especially in Sub-Saharan Africa, cannot be overemphasized. The role of the agricultural sector in

Nigeria is very important given the available landmass and population. In Nigeria, thanks to the very fact that about 70% of the population is used within the agricultural sector, economic process are going to be almost impossible to realize without developing the world . Furthermore, the importance of agriculture to the Nigerian economy is clear within the nation's natural endowments in production factors - extensive arable land, water, human resources, and capital. Exploring the nation's productive advantage during this sector is that the fastest thanks to stimulate growth within the economy.

In spite of those opportunities, the state of agriculture in Nigeria remains poor and largely underdeveloped. The sector continues to believe primitive methods to sustain a growing population without efforts to feature value. This has affected the productivity of the sector, its contributions to economic growth as well as its ability to perform its traditional role of food production among others. Given the enormous resource endowment both in human capital and natural resources, the performance of the economy has been far below expectation (Otaha, 2012). The sector has several untapped potential for growth and development within the availability of land, water, labour and its large internal markets. It is estimated that about 84 million hectares of Nigeria's total land area has potential for agriculture; however, only about 40% of this is under cultivation. Productivity in the cultivated lands is also low due to small farm holdings and primitive farming methods. Nigeria has therefore become heavily hooked in to food imports. In Nigeria, as in many other developing countries, the word industry is employed essentially as a synonym for

manufacturing. This is because manufacturing is that the most dynamic component of the economic sector. Industrialization has come to be considered an important and powerful engine within the overall development process. In spite of the country's vast oil wealth, the National Bureau of Statistics (2020) revealed that majority of Nigerians are poor with about 40 per cent of the population living below the poverty line and it is expected to increase to about 45 per cent in 2022. The issue of poverty are often easily traced to mono-economic practice and underutilization of the nation's endowed resources, especially within the manufacturing sector, which could have provided a chance of job creation and economic development.

Although industrialization (with special emphasis on manufacturing) is significant within the process of economic development, its performance in Nigeria has not been quite impressive. In the past, two main strategies have been put in place to encourage industrialization and increase the contribution of this sector to economic growth. They are the import substitution strategy and the export promotion strategy. The current administration also inaugurated the Nigeria Industrial Policy and Competitiveness Advisory Council on May 30, 2017. The Council's terms of reference include driving an ambitious industrialization programme aimed at increasing the contribution of manufacturing to GDP by 250% over five years, making Nigeria a manufacturing hub in West Africa, and diversifying the economy from its over-dependence on oil. Other terms of reference for the Council include proposing targets for national industrial output and investments across major industrial sectors; and tracking the progress made on specific public and private sector

initiatives aimed at transforming the industrial sector and meeting industrialization targets (Ubi, 2018). The history of industrial development and agriculture in Nigeria is a typical illustration of how a nation could disregard a vital sector through policy inconsistencies and distractions attributable to the discovery of oil (Ogbu, 2012). It is in the light of the foregoing that this study seeks to examine the effect of the agricultural sector and the manufacturing sector on economic growth in Nigeria as well as to examine the direction of causality between these sectors and economic growth in Nigeria. The rest of this paper is structured as follows; section two contains the review of past literature as well as conceptual review; section three contains the methodology adopted for this study as well as the presentation of results and their interpretation. Section four contains the conclusion and recommendations based on the findings of this study.

## **LITERATURE REVIEW**

### **Conceptual Review**

#### **Manufacturing Sector**

The manufacturing industry can be described as the industry that is involved in the transformation of raw materials into new goods as well as those who engaged in assembling of component parts which can be done either by physical, mechanical or chemical and it can be process at home or in the factory. According to the National Bureau of Statistics (2019), the Nigerian manufacturing sector is dominated by the assembly of food, beverages and tobacco, with sugar and bread products generating the greatest value of output. To encourage more output in these and other sectors, the government has been making it cheaper for consumers to

get locally manufactured goods by making the smuggled foreign alternatives prohibitively expensive or totally unavailable through prohibitions (Afangideh, 2010). The manufacturing sector in Nigeria is an economic sector that contributes approximately 10 percent to total Gross Domestic Product each year. The Nigerian manufacturing sector is dominated by the assembly of cement and building materials, food and beverages, tobacco, chemicals and fertilizers, wood, and textiles. Out of all only 3 subsectors (food & beverage, cement, and textile) account for 77% of manufacturing output generating the greatest value. Among the challenges facing the manufacturing sector in Nigeria includes; lack of skilled labour, high rate of exchange which affects the prices of raw materials, infrastructural issues such as shortage of power supply, poor distribution channels, and lack of access to credit facilities which limits production and so on.

### **Agricultural Sector**

The agricultural sector refers to that sector of the economy that is concerned with crop production and livestock farming. It is usually the backbone of most developing countries as it provides these countries with a source of income and food. Nigeria features a total agricultural area of 70.8m hectares. In the third quarter of 2019, the world grew by 14.88% year-on-year in nominal terms with a decline of three .44% points from the third quarter of 2018. The largest driver of the world is crop production because it accounts for 91.6% of the world within the third quarter of 2019 with a quarterly growth which stood at 44.12%. The agriculture sector contributed 29.25% to overall real GDP during the third quarter of 2019 (NBS, 2019). Among the challenges facing

the manufacturing sector in Nigeria includes; lack of funds to purchase machinery and tools to increase productivity, the rural urban drift, pest invasion, poor quality of farm inputs such as seeds, small size of market for the final produce and so on.

**Economic Growth**  
Economic growth can be defined as an increase in the amount of goods and services produced by a country over time or as an increase in output or the real national product overtime. Economic growth differs from economic development in the sense that economic development means an increase in per capita income and an overall transformation an economy's various sectors. A country's economic growth can be measured by its Gross Domestic Product (GDP).

## **THEORETICAL REVIEW**

### **Endogenous Growth Theory**

The Endogenous Growth Theory states that economic process is generated internally within the economy, i.e., through endogenous forces, and not through exogenous ones. The theory contrasts with the neoclassical growth model, which claims that external factors like technological progress, etc. are the main sources of economic growth. According to this theory, governmental policies can raise an economy's growth rate if the policies are directed toward enforcing more market competition and helping stimulate innovation in products and processes and also, private sector investment is a vital source of technological progress for the economy.

### **Classical Growth Theory**

This theory was developed by economists during the Industrial revolution. It explains economic growth as a result

of capital accumulation and the reinvestment of profits derived from specialization, the division of labor, and the pursuit of comparative advantage. This theory supports the thought of trade among nations, individual market economy, and respect for the buildup of personal property. Classical economists argued that individual initiative, under freely competitive conditions to market individual ends, would produce beneficial results to society as an entire.

### **Empirical Review**

Imobighe (2015) examined the roles of the manufacturing sector on Nigeria's economic growth using Granger causality test and regression analysis. They discovered a one-way causality between GDP growth and manufacturing output and advised that government should encourage the development of manufacturing sector since it has a positive effect on economic growth.

Joshua et al (2015) used the ordinary least square technique to analyze the contribution of the manufacturing sector to the growth of the Nigeria economy from 1980 to 2007, the result showed that the Nigeria manufacturing sector has positively influenced economic process in Nigeria. Oyetade and Oluwatoyese (2014) carried out a study on the effect of the agricultural sector as the determinant of manufacturing sector, using a time series econometric model from 1980 to 2011. The study also discovered agricultural sector as the determinant for exportation, if given due attention in all aspects in terms of funding and enabling the environment to key actors in the sector. Eze, S.O. (2020) investigates a long-run relationship between agriculture and manufacturing industry output in Nigeria using annual time series data from 1982 to 2017. Empirical evidence from Granger causality test

shows a bidirectional relationship between agricultural productivity and manufacturing industry output. Although a positive and significant relationship exists within the short- and long-run estimates, a long-run divergence from the vector error correction model reveals that changes in agricultural productivity are not restored to equilibrium, as long as macroeconomic factors distort the linkage. Policy implications suggest that macroeconomic stability may be a necessary condition for agriculture and manufacturing industry output to foster economic process. Marshal et al (2015) examined agricultural financing in Nigeria and its implication on the growth of Nigeria economy using ordinary least square method and quantitative research design from 1972 to 2013. The study revealed that there is significant relationship between agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years negatively impacted significantly on the expansion of Nigerian economy. Newman et al (2016) examined the impact of manufacturing sector on economic growth in Nigeria using time series data from 1990 to 2013. They employed OLS methodology for the analysis. The results showed that manufacturing sector has a positive significant impact on gross domestic product of the country Ideba, Iniobong, Otu and Itoro (2014) investigated the connection between agricultural public cost and economic process in Nigeria over the amount 1961 to 2010. The results of the Johansen co-integration test showed that there exists an extended run relationship between all the explanatory variables and therefore the explained variable. The result of parsimonious error correction model showed that agricultural public capital expenditure had a positive impact on economic growth. Odetola and Etumnu (2013)



investigated the contribution of the agriculture sector to the process in Nigeria using the expansion accounting framework and statistic data from 1960 to 2011. The study found that the agricultural sector has contributed positively and consistently to the process in Nigeria, reaffirming the sector's importance within the economy. The study also found that the crop production subsector contributes the foremost to agricultural sector growth which growth within the agriculture sector is overly hooked in to growth of the crop production subsector.

## **METHODOLOGY**

### **Model Specification**

In order to examine the effect of agricultural and manufacturing productivity on economic growth in Nigeria, the model is specified as;

$$GDP = \beta_0 + \beta_1 AGR + \beta_2 MAN + \beta_3 GEX + \beta_4 EXR + \mu \dots \dots \dots (3.1)$$

In its log form, the model is specified as;

$$\ln GDP = \beta_0 + \beta_1 \ln AGR + \beta_2 \ln MAN + \beta_3 \ln GEX + \beta_4 \ln EXR + \mu \dots \dots \dots (3.2)$$

Where GDP= Gross Domestic product, AGR= Agricultural output, MAN= Manufacturing Output, GEX= Government Expenditure and EXR= Exchange Rate.

### **Data Source and Description of Variables**

Secondary data sourced from the World Bank Development indicators for the period 1981 to 2020 will be used for this study. The description of the variables used for this study are discussed below;

**Gross Domestic Product:** It is the total market value of the goods and services produced in a country at a particular period.

It is used throughout the world as the main measure of output and economic growth.

**Manufacturing Output:** This refers to the goods produced by the manufacturing sector, that is, by the industries. It is expected to have a positive relationship with economic growth.

**Agricultural output:** This refers to the goods produced by the agricultural sector. It is expected to have a positive relationship with economic growth.

**Government Expenditure:** This refers to expenditure by the government on economic activities which can boost agricultural and manufacturing productivity. It is expected to have a positive relationship with economic growth.

**Exchange Rate:** An exchange rate is the value of a country's currency in terms of that of another country or economic zone. It is expected to have a negative or positive relationship with balance of payment.

### Empirical Results

#### Stationary Test result

Variables	ADF Test Statistic at Level	Probability Value	ADF Test Statistic at First Diff	Probability Value	Remark
LNGDP	-0.185254	0.9971	-3.536047	0.0497	I(1)
LNAGR	-0.213663	0.9904	-4.339985	0.0074	I(1)
LNMAN	-1.199658	0.8967	-4.368759	0.0070	I(1)

LNGEX	- 0.339327	0.9864	- 7.840795	0.0000	I(1)
LNEXR	- 1.339293	0.8628	- 5.679604	0.0002	I(1)
<b>5% Critical Value</b>		-3.533083			

Source: Author's Computation from E views (2021)

From the table above, the ADF test result showed that all variables are not stationary at level but are all stationary at first difference i.e., I(1). The Johansen co-integration test as well as the error correction model will be used to estimate this model.

### Co-integration Test Result

Series: LNGDP LNAGR LNMAN LNGEX LNEXR				
Unrestricted Co-integration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.553505	90.02738	69.81889	0.0005
At most 1 *	0.499005	59.38697	47.85613	0.0029
At most 2 *	0.355312	33.12290	29.79707	0.0200
At most 3 *	0.241294	16.44133	15.49471	0.0359
At most 4 *	0.144891	5.947987	3.841466	0.0147
Trace test indicates 5 co-integrating eqn(s) at the 0.05 level				
Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.553505	30.64041	33.87687	0.1160
At most 1	0.499005	26.26407	27.58434	0.0730
At most 2	0.355312	16.68157	21.13162	0.1876
At most 3	0.241294	10.49334	14.26460	0.1815
At most 4 *	0.144891	5.947987	3.841466	0.0147
Max-eigenvalue test indicates no co-integration at the 0.05 level				

Source: Author's Computation from E views (2021)

From the outcome of co-integration test above, the Trace test shows the presence of five co-integrating equations while the Max-Eigenvalue test shows the presence of no co-integrating equations at the 5% level of significance. Following the recommendations of Juselius (1990) where the result of the Trace test is assumed to be superior to the Max Eigen test, it is concluded that co-integration exists in this model.

### Long Run Result

1 Cointegrating Equation(s):				
Normalized cointegrating coefficients (standard error in parentheses)				
LNGDP	LNAGR	LNMAN	LNGEX	LNEXR
1.000000	-3.329055	1.001081	-0.035994	0.867579
	(0.51703)	(0.67097)	(0.80119)	(0.33697)

**Source: Author's Computation from E views (2021)**

From the table above, the long run result shows that agricultural productivity has a positive and significant relationship with economic growth in Nigeria while manufacturing output has a negative but insignificant relationship with economic growth in Nigeria. This means that a one per cent increase in agricultural output will lead to an increase in economic growth by over 330 per cent. On the other hand, a one per cent increase in manufacturing output will cause economic growth to decline by about 100 per cent. This negative relationship is negligible given the insignificance of this result. The result also shows an increase in government expenditure will help stimulate economic growth and that exchange rate has a negative relationship with economic growth in Nigeria. This means that a fall in the value of the naira will cause a decline in economic growth.

**Short Run Result**

Dependent Variable: D(LNGDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007125	0.024399	0.292012	0.7729
D(LNGDP(-1))	0.784782	0.192430	4.078283	0.0005
D(LNGDP(-2))	-0.037777	0.117552	-0.321362	0.7508
D(LNAGR)	0.338997	0.050085	6.768362	0.0000
D(LNAGR(-1))	0.415025	0.049438	8.394783	0.0000
D(LNAGR(-2))	0.023004	0.075076	0.306411	0.7620
D(LNMAN)	0.422535	0.044748	9.442449	0.0000
D(LNMAN(-1))	0.002277	0.036450	0.062480	0.9507
D(LNGEX)	0.563705	0.191726	2.940151	0.0074
D(LNGEX(-1))	0.380738	0.056615	6.725032	0.0000
D(LNGEX(-2))	-0.010434	0.035678	-0.292440	0.7726
D(LNEXR)	-0.208678	0.088895	-2.347458	0.0279
LNEXR(-1)	-0.000965	0.004171	-0.231473	0.8190
ECM(-1)	-0.564224	0.192840	-2.925872	0.0076
R Squared	0.943979		F-statistic	29.81219

<b>Durbin-Watson stat</b>	1.966135	<b>Prob(F-statistic)</b>	0.000000
<b>Residual Tests</b>			
<b>Jarque Bera</b>	0.720586	<b>Jarque Bera Prob.</b>	0.697472
<b>Serial correlation test</b>	1.564878	<b>Serial correlation test Prob.</b>	0.2325
<b>Heteroskedasticity test</b>	0.638908	<b>Heteroskedasticity test Prob.</b>	0.7975
<b>Ramsey RESET Test</b>	2.657722	<b>Probability value</b>	0.1173

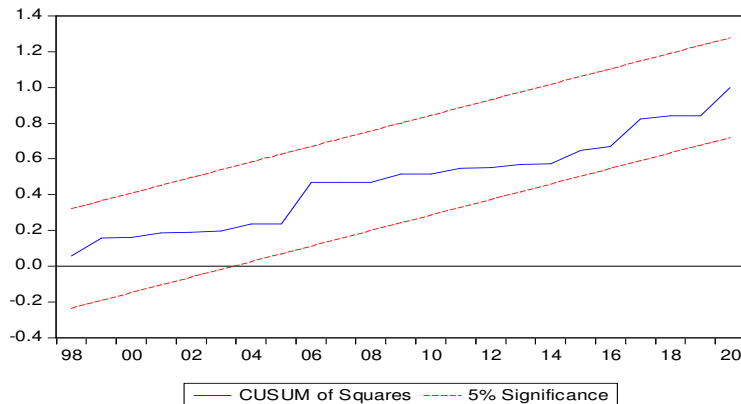
**Source: Author's Computation from Eviews (2021)**

From the table above, the  $R^2$  value of 0.943979 shows that the independent variables adopted for this study significantly explain changes in economic growth by about 94 per cent. Also, the value of the Durbin-Watson statistic given as 1.966135 reveals the absence of autocorrelation in the model. The probability value of the F statistic given as 0.000000 indicates that the independent variables are jointly significant in determining economic growth in Nigeria. The coefficient of the ECM is -0.564224 and is statistically significant at the 5 per cent significance level. This means the speed of adjustment of the variables to long run equilibrium as a result of distortions in the short run is fair (56 per cent).

The outcome of the short run result showed that the past value of GDP positively determines the current value of GDP. However in the second lag, the past value of GDP is a negative determinant of the current value of GDP in Nigeria. The result shows that agricultural productivity has a positive relationship with economic growth in Nigeria. This means that as agricultural output increases by one per cent, economic growth increases by 34 per cent, 42 per cent and 2 per cent in the present year, the first lag and the second lag respectively. This indicates that an increase in agricultural productivity is

beneficial to the Nigerian economy and investments in the agricultural sector should therefore increase so as to stimulate economic growth. Manufacturing output in the short run also has a positive relationship with economic growth in Nigeria. The result shows that a one per cent increase in manufacturing output will cause an increase in economic growth by 42 per cent and 0.2 per cent in the present period as well as the first lag respectively. This also indicates that investment in the manufacturing sector has the potential to stimulate economic growth in Nigeria. Government expenditure in the short run has a positive relationship with economic growth in Nigeria. This means that as the government increases expenditure on economic activities, economic growth improves. In the second lag however, this relationship is negative. Furthermore, the short run result showed that exchange rate has a negative relationship with economic growth implying that a depreciation of the naira will cause economic growth to decline and an appreciation of the naira against the dollar will lead to an increase in economic growth.

After testing the residuals, the result showed that the errors are normally distributed. It also showed there is an absence of heteroscedasticity and serial correlation among the residuals. In addition, there is no specification error in the model given the probability value of the Ramsey RESET test.



The CUSUM of squares result above indicates that the model is stable as the CUSUM of squares line falls in the acceptance region.

## CONCLUSION AND RECOMMENDATIONS

This study examined the effect of agricultural productivity and manufacturing productivity on economic growth in Nigeria. The findings of this study in the short run showed that both agricultural productivity and manufacturing productivity have a positive relationship with economic growth in Nigeria. This implies that as the output of the agricultural sector and the manufacturing sector increases, economic growth is stimulated. This can be as a result of the fact that more jobs are created and an increase in productivity also translates to more export which leads to increased revenue which is then used to stimulate economic growth. In the long run however, agricultural productivity has a positive relationship with economic growth while manufacturing output has a negative relationship with economic growth which is similar to the findings of Adofu et al (2015). The positive relationship between agricultural sector on economic growth in the long run and the short run further emphasizes the importance of the agricultural sector on economic growth in Nigeria. The negative



relationship between manufacturing output and economic growth in the long run leads to the recommendation that the large population in Nigeria should be taken advantage of by manufacturers. This is because more labour is available and less capital is available in the country. It is therefore economical to produce using labour-intensive methods which will reduce the amount of money that would have been borrowed to purchase machineries and then in the later years, capital intensive methods can be adopted to improve productivity. As a result of the positive relationship between manufacturing output and economic growth in the short run, investment in the manufacturing sector such as infrastructural development that will make production easy and also attract foreign manufacturers should be strongly adopted by the government. Investment in the agriculture sector such as the issuance of loans to farmers, the production of cheap insurance facilities to farmers in cases of losses, the provision of fertilizers and subsidized crops and so on should be provided so as to stimulate economic growth. This will also help reduce our reliance on imports and the importation of food items which can be produced locally. In addition, measures to ensure the exchange rate is stable should be implemented as it has been shown in this study that a fall in the value of the naira will lead to a decline in economic growth. Finally, government expenditure to the agriculture and the manufacturing sector should be effectively managed so that it boosts economic growth.

## REFERENCES

- Afodu, T. (2015). Manufacturing Sector and Economic Growth in Nigeria (1990-2013). *Donnish Journal of Economics and International Finance* , Vol 1(1) pp. 001-006.

- Afangideh, U. J. (2010). Financial development and agricultural investment in Nigeria: Historical Simulation Approach. *Journal of Economic and Monetary Integration*, 9(1)
- Ideba, E. E., Iniobong, E., Otu., W. and Itoro, N. (2014), 'Analysis of Agricultural Public Capital Expenditure and Agricultural Economic Growth in Nigeria,' *American Journal of Experimental Agriculture*, 4(4), 443-456.
- Imobighe, S.O (2015) Industrialization and trade globalization: What hope for Nigeria? *International Journal of Academic Research in Business and Social Sciences*, 2(6), 157-170
- Joshua, E.A and Tybout, J.A (2015). Manufacturing firms in developing countries: How well do they do, and why? *Journal of Economic Literature*, 11-44
- Marshal. M. A and Jonathan. A. E (2015). An Overview of the Current State of Nigerians Agricultural sector, A Paper Presented at The National Summit on SMIEIS Organized by the Bankers' Committee and Lagos Chambers of Commerce and Industry (LCCI), Lagos, 10th June, 2016
- Newman, C. O and Anyanwu, S.A (2016). Macroeconomic determinates of industrial development in Nigeria. *Nile Journal of Business and Economics*. 1:37-46
- Odetola, T. and Etumnu, C. (2013), 'Contribution of Agriculture to Economic Growth in Nigeria, International Food Policy Research Institute (IFPRI), Abuja, Nigeria,' *Proceedings of The 18th Annual African Econometric Society (AES), 2013*, at the session organized by the Association for the Advancement of African Women Economists (AAWE), Accra, Ghana

- Ogbu, O. (2012) Toward Inclusive Growth in Nigeria. The Brookings Institution's Global Economy and Development Policy Paper. No. 2012-03, June
- Otaha, J. (2012). Dutch Disease and Nigeria Oil Economy. African Research Review, 6 (1), 82 – 90
- Ubi, P. (2018). A Re-Examination of Trade Policy and Industrial Sector Performance in Nigeria. Journal of Economics and Sustainable Development, Vol 2, pp 90-102.