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Agricultural Exports and its Impact on Economic Growth in Nigeria

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ABSTRACT

This study examined the impact and relationship between agricultural exports and economic growth in Nigeria for the period of 1981 to 2017. The study was guided by two research questions and objectives. The Ordinary Least Square (OLS) and Johansen Co-Integration test were employed for the hypotheses of the study. Results from the OLS regression model shows that agricultural exports had a positive and significant relationship on economic growth therefore, provides evidence that agricultural sector contributes significantly to GDP growth in Nigeria. The findings also show that at 5 per cent critical level agricultural export increases economic growth by 5 per cent. The Co-integration test result indicated that there exists a long run relationship among the variables. The contribution of agricultural exports of 5 per cent is however low. To improve on the gains of agricultural exports for growth in the economy, the study therefore recommends that the government should provide funds to acquire sophisticated farm tools and increase the country's budgetary allocation to the agricultural sector in a consistent manner, initiate programmes and policies that will ensure adequate partnerships between research institutions and higher institutions of learning to breach the widening gap between theory and practice, among others were proffered.

INTRODUCTION

Resources of the entire world can be developed to the fullest extent and can progress only by the efficient and rational use of the natural resources. It is indeed no doubt that Nigeria is blessed with abundant natural resources. And that's where agriculture comes to play because; it constitutes one of the most important sectors of the Nigerian economy. This enormous resource base if well managed could support a vibrant agricultural sector capable of ensuring the supply of raw materials for the industrial sector as well as providing gainful employment for the teeming population, and as well eradicates poverty in the economy.

The importance of agriculture resources in bringing about economic growth and sustainable development of a nation like Nigeria cannot be underestimated. Oji-Okoro (2011) in his opinion stated that agriculture resource has been an important sector in the Nigerian economy in the past decades, and is still a major sector despite the oil boom; basically it provides employment opportunities for the teeming population, eradicates poverty and contributes to the growth of the economy. Olajide, Akinlabi, and Tijani (2012) opined that a strong and efficient agricultural sector would enable a country to feed its growing population, generate employment, earn foreign exchange and provide raw materials for industries. In the same view, Ahmed (2000) stated that agriculture is the mainstay of many economies and it is fundamental to the socio-economic development of a nation because it is a major element and factor in national development.

In the 1960s, with a retrospective look into the agricultural sector and its contributions to the development of the Nigerian economy, it reveals that agriculture accounted for well over 80 percent of the export earnings and employment; about 65 percent of the GDP (gross domestic product) and about 50 percent of the government revenue (FRN, 2000). However, over the years, agriculture contribution to the Nigerian economic growth has declined. Muhammad-Lawal and Atte (2006) stated that the contribution of agriculture to the GDP was about 50% in 1970 and 34% in 2003. They further pointed out that in the present times, agriculture no longer serves as the leading contributor to Nigeria's gross national product and leading foreign exchange earner due to phenomenal growth in the petroleum sector of the economy. Despite the neglect of the agriculture sector, agriculture is still the dominant economic activity in terms of employment and linkages with the rest of the economy (Nigeria National Planning Commission, 2004). Chigbu (2005) added that while accounting for one-third of the GDP, agriculture remains the leading employment sector of the vast majority of the Nigerian population as it employs two-third of the labour force.

According to Ukeje (2005), the principal constraint to the growth of the agricultural sector is the fact that the structure and method of production has remained the same since independence more than four decades ago. Despite the reliance of Nigerian peasant farmers on traditional tools and indigenous farming methods, these farmers produced 705 of Nigerian's exports and 95% of its food needs (Onunze, 2012). It is based on the above, that the study therefore intends to examine the relationship between the agricultural exports and economic growth in Nigeria.

During the period of the oil boom in Nigeria which coincided with the civil war from 1967 to 1970, there was an extensive exploration and exportation of petroleum products which resulted in neglecting the agricultural sector in favour of the high revenue gotten from oil. Ever since then, Nigeria has been witnessing extreme poverty and insufficiency of basic food items.

In relation to the growth of the economy, the contribution of the agriculture sector in terms of exports to the Gross Domestic Product (GDP) in Nigeria have not been encouraging, as evidence from CBN (2016) and NBS (2017) revealed that from the 1960s to the 1970s, the agricultural sector contribution to Nigeria's GDP was 48 percent and it continues in 1980 to 20percent and 19 percent in 1985 which was majorly as a result of oil glut of the 1980s (Ukeje, 2003). According to Onunze (2012), the agricultural sector contributions and its exports now account for less than 5% of Nigeria's GDP. From the 1990s to 2000, the agricultural sector contribution to Nigeria's GDP was 2.95 percent and kept on rising from 3.88 percent in 2001 to 4.25 percent in 2002, and up to 7.40 percent in 2006 (CBN, 2015). As at 2007, the agriculture contribution to the GDP declined slightly to 7.20 percent which further declined to 6.30 percent in 2008, 5.90 percent in 2009; from 2010 to 2012, it declined to 4 percent and 2.61 percent in 2013 (CBN, 2016). In 2017, the agricultural sector output stood at 4.23 percent from 3.06 percent in 2016 (NBS, 2017). With the above trend, it shows that agricultural exports have not trickled down to the growth of the Nigerian economy. Thus, there have been a declining contribution of the agricultural exports and its sector to economic growth in Nigeria.

The exportation of cocoa, groundnut, rubber and palm products reduced drastically because of the huge revenue gotten from oil production. The decline in agricultural production and exportation was largely due to the rise of oil shipments.

However, the dependence on oil is not only the cause of the under-development of the Nigerian agricultural sector. Other causes include poor storage facilities which have led to so much wastage and high cost of storage. This also hinders the availability of source of perishable agricultural produce; poor and unavailability of irrigation facilities for tackling weather conditions (i.e. the dry seasons). Because of this, during dry season farmers stop farming activities due to unavailability of water; inadequate financial assistance from the government and cooperate bodies. Farmers do not get credit easily from financial institutions, like commercial banks. And because of this, they find it

difficult to finance projects which are capital intensive; dependence on imported foods has also contributed to disincentive investment in local farming.

In the light of the above, it is quite clear that the agricultural sector has really got a lot to contribute to the economic growth of the country. Therefore, the study is hinged to examine the impact and relationship between the agricultural exports and economic growth in Nigeria. As a result, the following questions have been designed to guide the study: What is the impact of agricultural exports on economic growth in Nigeria? What is the long-run relationship between agricultural exports and economic growth in Nigeria? Objectively, the study basically examines the impact of agricultural exports on economic growth and the extent at which the sector has contributed to Nigeria's economic growth. Specifically, the study intends to examine the impact of agricultural exports on economic growth in Nigeria and to examine the long-run relationship between agricultural exports and economic growth in Nigeria. Based on the research questions that will be investigated, the research null hypotheses of the study include:

H_0: agricultural exports have no significant impact on economic growth in Nigeria.

H_0: there exists no significant relationship between agricultural exports and economic growth in Nigeria.

In support of its objectives, the study has its theoretical backing from the endogenous growth model which associates growth to endogenous factors, other than external forces. It represents a key component of the emerging development theory. The endogenous growth theory provides a theoretical framework for analyzing persistent Gross National Product (GNP) growth that is determined by the system governing the production process rather than by forces outside that system (Adofu, Taiga, and Tijani, 2015). According to Adofu *et al* (2015), the principal motivations of the endogenous growth theory are to explain both growth rate differentials across countries and a greater proportion of the growth observed.

The endogenous growth theory seeks to explain the existence of increasing returns to scale and the divergent long-term growth patterns among countries by assuming that public and private investments in human capital generate external economies and productivity improvements that offset the natural tendency for diminishing returns. Thus, the endogenous growth theory can be expressed in a simple Harrod-Domar growth model as:

$$Y=AK \quad [1]$$

where 'A' represents any factor that affects technology, and 'K' captures both physical and human capital (Ojeka, Effiong, and Eko, 2016).

In this formula, there are no diminishing returns to capital, so the possibility exists that investments in physical and human capital can generate external economies and productivity improvements that exceed private gains by an amount sufficient to offset diminishing returns. And the net result is sustained long-term growth (Adofu *et al*., 2015).

Empirically, Anyanwu, Offor, Adesope, and Ibekwe (2013) examined the structure and growth of the GDP over the 49 years of the nation's existence, using multiple regression analysis and discovered that agriculture was among the key significant determinant of Nigeria's GDP with clear dominance from 1960-1984. This dominance is attributed to the fact that agricultural and macroeconomic policies of various governments then were skewed towards massive crop production.

Ekpo and Umoh (2012) revealed that the contribution of agriculture to GDP, which was 63 percent in 1960, declined to 34 percent in 1988, not because the industrial sector increased its share but due to neglect of agriculture sector.

Muhammad-Lawal and Atte (2006) adopted the descriptive statistics and regression analysis to examine the growth of the agricultural sector of the Nigerian economy. The study showed that the overall agricultural production average growth rate was 5.4 percent and that GDP growth rate, population growth rate, and the Consumer Price Index were the main factors affecting domestic agricultural production.

Suleiman and Aminu (2010) conducted research on the contribution of agriculture, petroleum and manufacturing sector of the Nigerian economy and found out that agricultural sector is contributing higher than both petroleum and manufacturing sectors. Their study reveals that agriculture is contributing 1.7978 units to GDP while petroleum is contributing 1.14 units to GDP, which is less than the contribution of agriculture.

Oji-Okoro (2011) employed multiple regression analysis to examine the contribution of agricultural sector on the Nigerian economic development. They found that a positive relationship between Gross Domestic Product (GDP) vis-a-vis domestic saving, government expenditure on agriculture and foreign direct investment between the period of 1986-2007. It was also revealed in the study that 81% of the variation in GDP could be explained by Domestic Savings, Government Expenditure and Foreign Direct Investment.

In addition, Lawal (2011) using time series data, attempted to verify the amount of federal government expenditure on Agriculture in the thirty-year period 1979 – 2007. Significant statistical evidence obtained from the analysis showed that government spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is in direct relationship with government funding to the sector.

Iganiga and Unemhilin (2011) studied the effect of federal government agricultural expenditure and other determinants of agricultural output on the value of agricultural output in Nigeria. In their study, they

performed a comprehensive analysis of data and estimated the Vector Error Correction model. Their results showed that federal government capital expenditure was found to be positively related to agricultural output.

Olajide, Akinlabi, and Tijani (2012) analyzed the relationship between agricultural resources and economic growth in Nigeria from 1970 to 2010. The Ordinary Least Square regression method was used to analyze the data. The results revealed a positive cause and effect relationship between Gross Domestic Product and agricultural output in Nigeria. According to them, the agricultural sector is estimated to contribute 34.4% variation in Gross Domestic Product.

Virtually all the studies reviewed above revealed that the agricultural sector has a positive impact on the economic growth of Nigeria. However, none of the reviewed studies examined the impact of agricultural exports on the Nigerian economy. Ekpo and Umoh (2012) revealed that the contribution of agriculture to GDP decreased from 1960 by 63% to 34% in 1988. Anyanwu *et al* (2013) revealed similar analysis in their study that the agricultural sector had its dominance of contribution on economic growth from 1960-1984.

Iganiga and Unemhilin (2011) and Lawal (2011) performed an analysis on the effect of federal government agricultural expenditure and other determinants of agricultural output on the value of agricultural output in Nigeria, disregarding the relationship and effects of agricultural exports on economic growth (GDP).

Oji-Okoro (2011) and Olajide *et al* (2012) recorded a positive relationship between agricultural sector and economic growth using multiple regression analysis without capturing determinants like inflation rate and exchange rate which will examine the effect of institutional framework to check government commitment on the provision of infrastructures that will attract investors in the agriculture sector, which will in turn improve the agricultural sector in Nigeria.

Based on the gap in the empirical literatures revealed above, this study therefore conducted its analysis using multiple regression Technique-Ordinary Least Square (OLS) method to determine the relationship between agricultural exports and economic growth (GDP) in Nigeria, capturing inflation rate and exchange rate. And in other to ensure that the regression is not spurious and to determine the existence of long run relationship among the variables, the study was subjected to stationary test using Augmented Dickey-Fuller test and Co-integration test respectively.

MATERIALS AND METHODS

This work adapted the Ordinary Least Square (OLS) technique and the Augmented Dickey Fuller (ADF) test method. The model incorporates agricultural exports, inflation, exchange rate, and economic growth proxied by Gross Domestic Product (GDP) growth which covers the period of 36 years (1981 to 2017). The incorporation of inflation and exchange rates examines the effect of government policy framework to checkmate the commitment on the provision of infrastructures that will attract investors in the agriculture sector, which in turn will check the level of improvement of the overall agricultural sector.

Our multiple regression is structured as in Equation [2];

[2] GDP = $f(AEXP, INF, EXH,)$

Where *GDP* is Real Gross Domestic Product; *AEXP* is Agricultural exports (% of merchandise export); *INF* is Inflation Rate; and *INT* is Interest Rate.
Econometrically, the model is specified in Equation [3];

[3] Log$GDP = a_0 + a_1AEXP + a_2INF + a_3EXH + u$

Where a_0, a_1, a_2, and a_3, are coefficients; and u is the residual. The apriori expectation is thus: $a_1 > 0$, while; a_2, $a_3 < 0$.

This study utilizes the use of Ordinary Least Square (OLS) methodology in its analysis. This was facilitated through the use of E-view Econometric software version 7.0. And to ensure that the outcome of the regression is not spurious, the data set was subjected to a stationary test using the Augmented Dickey Fuller test. And to determine the existence of long run relationship among the variables in the model, Co-integration test was conducted.

RESULT AND DISCUSSION

Unit Root Test Result

The Augmented Dickey-Fuller unit root test is carried out on Appendix 2 to test for the existence of unit root in the time series data. The Augmented Dickey-Fuller unit root test result on Appendix 2 indicates that at 5% critical level, the time series data for all the variables except for agricultural export (AEXP) were non-stationary at levels. But at first difference all the variables were stationary, indicating the presence of unit root in all the time series data.

Co-Integration Test Result

The Johansen test of Co-integration is conducted on Appendix 3 to determine the existence of long run relationship among the variables. The co-integration rank test on Appendix 3 shows that the *trace* test indicates 2 co-integrating equations at the 5% level. However, the *max-eigen* value test indicates no co-integrating equation at 5% level. On the basis of the

trace test statistics, the conclusion that there exists a long run relationship among the variables is made.

Ordinary Least Square (OLS) Result

The results of the multiple regression analysis on Appendix 4 shows that at 5% critical level, agricultural export (AEXP) had a positive and significant impact on economic growth in Nigeria. Its coefficient value of 0.052610 states that a unit increase in agricultural export, holding other variables constant increases GDP by 5 per cent. With a probability value of 0 per cent which is significantly less than 5 per cent, the agricultural export was statistically significant.

The Inflation variable (INF) had a positive impact on growth, which is against *a priori* expectation, it was however not statistically significant. Its coefficient value of 0.000964 can be interpreted thus, that a unit increase in inflation rate holding other variables constant, economic growth increases by 0 per cent. It had a probability value of 55 per cent, making its coefficient insignificant at 5 per cent critical level.

Exchange rate (EXH) for the period under review had a positive and significant impact on economic growth. That a unit increase in exchange rate holding other variables constant increases economic growth by 0 per cent. Its probability value of 0.0000 was however found to be statistically significant at 5 per cent level.

The overall goodness of fit of the model as indicated by the R-Squared coefficient of determination is 0.914677; it shows that about 91 per cent of the variation experienced in GDP in Nigeria for the period being investigated may be explained by the independent variables included in the model.

The f-statistic which measures the joint statistical influence of the explanatory variables in explaining the dependent variable is statistically significant at 5 per cent level. The probability value of the f-statistic (110.7744) which is 0.000000 is less than 5 per cent; this shows that the explanatory variables have a significant impact on GDP.

The value of Durbin Watson statistic for the model is 1.71421 (a Durbin Watson statistic ≥ 2 is significant). Approximating this value to 2, it indicates the absence of serial autocorrelation in the model.

Hypotheses Testing

As shown on Appendix 4, with a 5% critical level, the agricultural export (AEXP) had a positive and significant impact on economic growth in Nigeria. Its coefficient value of 0.052610 states that a unit increase in agricultural export, holding other variables constant increases GDP by 5 per cent. With a probability value of 0 per cent which is significantly less than 5 per cent, the agricultural export was statistically significant. This supports the alternative hypothesis thus;

H_1: there exists a relationship between agricultural exports and economic growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The study concludes that agricultural export had a positive and significant relationship on economic growth therefore, provides evidence that agricultural sector contributes significantly to GDP growth in Nigeria. Empirical findings show that at 5 per cent critical level agricultural export increases economic growth by 5 per cent. The probability value of the t-statistics for the coefficient of agricultural export was 0 per cent which was highly statistically significant.

Therefore, based on the findings, the study recommends the followings:

1. Since agricultural exports have a positive relationship with the growth of the Nigerian economy, the government should see that a higher percentage of allocations are invested on agricultural sector so that the economy will keep on growing in an increasing rate.
2. Government through its agencies should seek to maintain a stable and favourable exchange rate since the variable has been found to possess a significant positive effect on agricultural output.
3. Government should provide funds to acquire sophisticated farm tools and increase the country's budgetary allocation to the agricultural sector in a consistent manner because of its importance to the national economy, hoping that with proper monitoring of fund, it would contribute more significantly to the economy of the country. An effective utilization of such funds is also advocated and all areas of wastage blocked.
4. Government should initiate programmes and policies that will ensure adequate partnerships between research institutions and higher institutions of learning to breach the widening gap between theory and practice. This will assist in effective implementation of new knowledge as well as expose the younger generation on the lofty potentials in agricultural sector.

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APPENDICES

Appendix 1: Data Presentation

YEAR	GDP (N' Billion)	AEXP (%)	INF (%)	EXH (%)
1981	15258	0.12	20.81	0.61
1982	14985.08	0.1	7.7	0.67
1983	13849.73	0.08	23.21	0.72
1984	13779.26	0.05	17.82	0.76
1985	14953.91	0.89	7.4	0.89
1986	15237.99	0.41	13.7	2.02
1987	15263.93	0.52	9.7	4.02
1988	16215.37	0.5	61.2	4.54
1989	17294.68	0.52	44.7	7.39
1990	19305.63	0.53	3.6	8.04
1991	19199.06	0.56	23	9.91
1992	19620.19	0.55	48.8	17.3
1993	19927.99	0.55	61.3	22.05
1994	19979.12	0.56	76.8	21.89
1995	20353.2	0.59	51.6	21.89
1996	21177.92	1.62	14.3	21.89
1997	21789.1	0.08	10.2	21.89
1998	22332.87	0.1	11.9	21.89
1999	22449.41	0.13	0.2	92.69
2000	23688.28	0.01	14.5	102.11
2001	25267.54	0.01	16.5	111.94
2002	28957.71	0.28	12.2	120.97
2003	31709.45	0.1	23.8	129.36
2004	35020.55	0.11	10	133.5
2005	37474.95	0.27	11.6	132.15
2006	39995.5	0.36	8.5	128.65
2007	42922.41	0.76	6.6	125.83
2008	46012.52	0.93	15.1	118.57
2009	49856.1	1.14	13.9	148.88
2010	54612.26	1.63	11.8	150.3
2011	57511.04	6.13	10.3	153.86
2012	59929.89	7.27	12	157.5
2013	63218.72	3.2	7.96	157.31
2014	67152.79	0.43	7.98	158.55
2015	69023.93	0.31	9.55	193.28
2016	67931.24	0.37	18.55	253.49
2017	65824.85	0.34	15.37	305.79

Source: *Annual CBN Bulletin, 2017*.

Appendix 2: Augmented Dickey-Fuller Unit Root Test Result

Variable	Order of Stationarity	ADF Calculated	ADF Critical Value	Order of Integration	Decision
LogGDP	At level	0.724408	-2.954021	1(0)	Not stationary
	1st difference	-3.378719	-2.954021	1(1)	Stationary
AEXP	At level	3.563047	-2.954021	1(0)	Stationary
	1st difference	-5.897101	-2.957110	1(1)	Stationary
INF	At level	-2.832956	-2.951125	1(0)	Not stationary
	1st difference	-4.890392	-2.963972	1(1)	Stationary
EXH	Level	0.331257	-2.951125	1(0)	Not stationary
	1st difference	-5.195233	-2.954021	1(1)	Stationary

Computed at 5% ADF critical value

Appendix 3: Johansen Co-Integration Test Result

No. of CE(S)	Trace stat.	0.05% CV	No. of CE(S)	Max-Eigen Stat.	0.05% CV
None *	52.63901	47.21	None	22.88460	27.07
At most 1 *	29.75440	29.68	At most 1	17.30519	20.97
At most 2	12.44922	15.41	At most 2	11.28182	14.07
At most 3	1.167394	3.76	At most 3	1.167394	3.76

**denotes rejection of the hypothesis at the 5%*

Appendix 4: Ordinary Least Square (OLS) Regression Results

Dependent Variable: LOG(GDP)
Method: Least Squares
Date: 01/12/17 Time: 21:39
Sample: 1981 2017
Included observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AEXP	0.052610	0.018758	2.804677	0.0086
INF	0.000964	0.001615	0.597263	0.5547
EXH	0.007026	0.000487	14.42825	0.0000
C	9.626083	0.060530	159.0297	0.0000

R-squared	0.914677	Mean dependent var	10.19444
Adjusted R-squared	0.906419	S.D. dependent var	0.519951
S.E. of regression	0.159058	Akaike info criterion	-0.731885
Sum squared resid	0.784283	Schwarz criterion	-0.554131
Log likelihood	16.80799	F-statistic	110.7744
Durbin-Watson stat	1.714210	Prob(F-statistic)	0.000000

Source: *E-view Econometric software version 7.0.*

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