FDI Trade and Its Effects on Agricultural Development in Nigeria: Evidence From Time Series Analysis

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Abstract: Agricultural sector is seen as an engine that contributes to the growth of the overall economy of Nigeria, despite several government efforts the sector is still characterized with low yields and limited areas under cultivation due to government dependence on mono-agricultural economy based on oil. This study attempts to evaluate the impacts of FDI, trade and its effects on agricultural sector development in Nigeria between the periods of 1980-2009, in analyzing the variables (VAR) model was used employing a three-step procedure. The Unit root test was conducted using the Augmented Dickey Fuller (ADF) and Philips-Parron (PP). Johansen and Juselius multivariate Cointregration test indicate that there is a present of cointregration. Granger causality test result shows that the variables employed have a bidirectional relationship, unidirectional relationship and no casual relationship. It is recommended that in order to boost agricultural output and develop the sector as a whole, more FDI should not only be sourced, there is a need for the government to provide legal and administrative quality framework and encourage more exportation of agricultural output that will enhance foreign exchange earnings and improve the competitiveness of Nigeria agricultural produce in the international market.

Key words: Agriculture, FDI, GDP, Economic Development and Nigeria.

1. Introduction

The Nigeria economic land scape have developed over the last few years as outcome of rapid phase of industrialization, therefore the economy of the country has improved tremendously due to foreign investment aided by privatization of state owned enterprise.

As a resource-rich country, Nigeria's economic performance has been unfortunately driven by the oil and gas sector to the extent that even the progress recorded towards genuine economic development prior to the discovery of oil in commercial quantity has been virtually eroded. In 2000-2005 the GDP growth of Nigeria was 5.7% and the growth in the non-oil sector, which contributed about 5.9% of the GDP. However, the oil sector provides significant role in revenue sources and foreign exchange to the country.

The decline of the agricultural sector performance was due to the fact that the Federal Government shifted its focus to oil exploration, therefore the sustainable development of the Nigerian economy should be diversified away from oil and gas to non-oil sector and it should be based on the country's abundant resource and comparative advantage. However China-Nigeria relations in recent development has presented Nigeria with both opportunities and challenges. Opportunities that could be derive from the Sino-Nigeria bilateral trade relationship could be described in many forms; prominent among them is the infrastructural development that China offers in returns for mineral resource exploration. Similarly it's expected to gain management and technical know-how, transfer of technology and boosting agricultural production of the country.

The objective of this paper is to assess the agriculture status of the country by looking at the overall development in agriculture relative to the agricultural potential of the nation and the economic cooperation between Nigeria and China in the form of FDI and trade in agricultural sector.

The paper is divided into six sections starting with review of some literatures in section 2; section 3 contains Nigerian Agricultural sector overview and performance while section 4 and 5 where the methodology employed, empirical result and discussion and thereafter it was summed up with conclusion and recommendation in section 6.

2. Literature review

In Nigeria the agricultural sector still remains the most important sector of the economy despite it neglect, it is however no news before oil, the sector was the pillar of the Nigeria's economy providing employment and source of livelihood for the increasing population and accounting for over half of the GDP of the country. Fasminrin and Braga (2009) ascertained that the main reason for the slow of agricultural development in Nigeria despite the volumes of scientific information to engender improvement is due to poor policy formulation and implementation by the federal government, which implies that the should be a strategy to guide the formulation of polices and the implementation of activities that will lead to a set goal.

However, development economists have focused on how agriculture can best contribute to overall economic growth and modernization. Todaro and Smith (2003) looked at Lewis theory of development, reporting that the underdeveloped economy consists of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. Rostow's (1960) leading sector growth stage approach, identifies five stages in the transition from primitive to a modern economy they are; (a) the traditional society, (b) the preconditions for take off, (c) the take off, (d) the drive to maturity and (e) the age of high mass consumption. Rostow's objective in identifying the five stages of growth and the dynamic theory of production, was primarily concerned with the process by which a society moves from one stage to another and providing policy guidance to the leaders of developing countries. Rostow's system is however the only one which clearly specifies a dynamic role of the agricultural sector in the transition process, stating that in an open economy, primary sector industries may act as leading sector and at a particular time carry the burden of accelerating growth, in addition agriculture must (a) provide food for a rapidly increasing population, (b) provide a mass market for the products of the emerging industrial sectors and (c) generate the capital investment for new leading sector outside of agriculture.

One of the most sought after ways to improve agricultural production especially in developing economies like Nigeria is to source for funds through FDI. Furtan and Holzman (2004) defined it as the most spectacular manifestation of globalization that occurred since 1990. Ogbanje et al (2010) also defined it as a major component of international capital flows, been investment by multinational companies with headquarters in developed countries. This investment ranges from transfer of funds to whole package of physical capital, techniques of production, managerial and marketing expertise, products, advertising and business practices

for the maximization of global profits. However, Omankhanlen (2011) in his study of the impact of FDI on Nigeria's economy found no empirical strong evidence to support the notion that FDI has been pivotal to economic growth in Nigeria, which could have justified the effort of successive governments in the country at using FDI as a tool for economic growth even though he recognized its importance. According to Alfaro et al (2009) there is a widespread belief within policy circles that FDI enhances the productivity of host countries and promotes economic development. This implies that FDI may not only provide direct capital financing but also creates positive externality via the adoption of foreign technology and know-how.

3. Nigeria's agriculture sector overview and performance

Nigeria is one of the largest countries in Africa with a geographical total area of 923,770 square kilometer/ 356,700 square miles and a total land area of 910,770 square kilometers is boarded by the Gulf of Guinea, Benin, Cameroon and Chad, the topography ranges from mangrove swampland along the coast to tropical rain forest and savannah to the north, the country is between the equator and tropic of cancer. The diversity of climate conditions, the richness of soil and water sources has provided it with the potentials for crop, animal and tree production which it major crops includes, beans, cashew nuts, cassava, groundnuts, maize (corn), palm kernels, plantains, palm oil, rubber, sorghum, soybeans, yam, etc.

The country has a highly diversified agro ecological condition, which has made it possible for her to produce agricultural products that falls into food crops produced for home consumption and for commercial (exportation), despite its richness in human and natural resources, it has the potential to become the Africa largest economy and also a major player in the global economy.

The performance of the Nigeria agricultural sector has been impressive recently; there is a trend in the indices of production that generally in the agricultural sector, there is a positive growth rate in staple crops, livestock, forestry, fishery and the sector aggregate production. Table 3-1 shows the growth in the agricultural sectors contribution to GDP in percentage from 2000 to 2009 increased by 5.02%. Although there was positive growth contribution to the GDP over the years, much more financial effort is needed to enhance the production of livestock, forestry and fishery sub-sectors, as the bulk of the production of the sector comes from only crop production. From the list of several economic indicators and their measurement indices, such as share of agriculture in the real GDP percentage, annual growth rate of agriculture's real GDP percentage, agriculture share of total value of export percentage, Average per caput calorie intake from cereals and tuber daily and Average per caput protein intake from animal and fish source daily.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Crop Production	22.00	28.50	29.2	29.06	30.48	29.02	28.50	29.55	27.45	33.20
Livestock Production	2.60	3.30	3.40	2.04	2.14	2.15	2.04	2.10	2.02	2.44
Forestry Production	0.50	0.60	0.60	0.14	0.45	0.42	0.40	0.40	0.40	0.44
Fishery Production	1.20	1.60	1.70	1.09	1.44	1.17	1.06	1.09	1.00	1.20
Total/Agriculture	26.30	34.00	34.90	32.60	34.21	32.76	32.00,	33.15	30.87	37.87

Table 3-1 Growth in the agricultural sectors contribution to GDP in Percentage (2000-2009)

Source: CBN statistical Bulletin (2010)

4. Methodology

In other to achieve the stated objective we used annual data for the period 1980 to 2009. The annual variables of Gross Domestic Product, Labour Force and China FDI Inflow to Nigeria data were sourced from UNCTAD, while variables like Agricultural Output, Government Expenditure and Exchange Rate data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the last variable Total China Trade Volume to Nigeria data was sourced from National Bureau of Statistics China.

4.1 Model specification

This paper uses a Vector Auto Regression (VAR) to identify the relationship between FDI, Trade inflow from China and Agricultural Development in Nigeria. The hypotheses are tested according to seven macroeconomic variables.

AG_t = f (GE, LF, GDP, FDI, TV, ER)---(1)

Where

AG_t is Agricultural output

GE_t is Government Expenditure

LF_t is Labour Force

GDP_t is Gross Domestic Product

FDI_t is China Foreign Direct Investment inflow to Nigeria

TV_t is Total China Trade Volume in Nigeria

ER_t is Exchange Rate

μ_t is the stochastic random term

In a more explicit and econometric form, equation (1) can be stated as

$AG_t = \alpha_0 + \alpha_1 GE_t + \alpha_2 LF_t + \alpha_3 GDP_t + \alpha_4 FDI_t + \alpha_5 TV_t + \alpha_6 ER_t + \mu_t$ --------------------(2)

4.2 Estimation techniques

The study employs a three-step procedure in order to determine the relationship between Gross domestic Product (GDP), Government Expenditure, Labour Force, Agricultural Output, China FDI inflow into Nigeria, Total China Trade Volume in Nigeria and Exchange rate. These procedures are:

4.2.1 Granger causality test

Granger Causality test was conducted to identify causal relationship between the variables Gross domestic Product (GDP), Government Expenditure, Labour Force, Agricultural Output, China FDI inflow into Nigeria, Total China Trade Volume in Nigeria and Exchange rate, and to determine whether the current

lagged values of one variable affect another. According to Granger (1969), a variable X is caused by another variable X if Y can be predicted well from past values of Y and X than from past values of Y alone. Two regressions must be performed to test for causality between them. These regressions provide an F statistic with which the statistical significance of the coefficients of past values of a variable can be tested. The Granger test may be explained with the help of the following equations:

$$X_t = a_0 + \sum_{j=1}^{m} a_j x_{t-j} + \sum_{j=1}^{n} b_j y_{t-j} + e_t$$

---(3)

$$Y_t = c_0 + \sum_{j=1}^{m} c_j x_{t-j} + \sum_{j=1}^{n} d_j x_{t-j} + w_t$$

---(4)

Where X and Y are two stationery time series, a_0, c_0, a_j, c_j b_j and d_j are coefficients, e_t and w_t are uncorrelated white noise series. The definition of causality given above implies that if Y_t is to cause X_t, then some b_j are non-zero. If both the events occur simultaneously, there is said to be a feedback between X_t and Y_t. In other words, the null hypothesis Y_t does not strictly Granger-cause X_t is rejected if the coefficients on the lag values of Y_t in equation (1) are jointly significantly different from zero. Bidirectional causality exists if the null hypothesis, that X_t does not strictly Granger-cause Y_t, is also rejected.

4.2.2 Unit root test

We applied the Augmented Dickey-fuller (ADF) test and the Philips-Perron test to check whether each data series is integrated and has a unit root, thereby testing the stationarity of the seven (7) time series. A variable that has a unit root is non-stationary in the level form but becomes stationary after being differenced once such a variable is also called integrated of order one and it is usually denoted by 1(1). hatemi-j and Hacker (2004) pointed out that it is crucial to test for unit root because in the presence of the unit roots the standard distribution of test statistics are not correct and there is a risk of having spurious regression results. In this study, the ADF tests and PP test were conducted on first and second differenced observations by estimating the following three models of (1) no intercept no trend (2) intercept no trend and (3) intercept and trend model;

$$\Delta y_t = \gamma y_{t-1} + \sum_{t=1}^{k} \beta_i \Delta y_{t-i} + \varepsilon_t$$

---(5)

$$\Delta y_t = \infty_0 + \gamma y_{t-1} + \sum_{t=1}^{k} \beta_i \Delta y_{t-i} + \varepsilon_t$$

---(6)

$$\Delta y_t = \infty_0 + \infty_{2t} + \gamma y_{t-1} + \sum_{t=1}^{k} \beta_i \Delta y_{t-i} + \varepsilon_t$$

---(7)

Where $\Delta y_t = y_t - y_{t-1}$ is the first difference of the series y_t; $\Delta y_{t-i} = (y_{t-1} - y_{t-2})$ is the first difference of y_{t-1}, etc, ∞, γ and β_i are parameters to be estimated and ε_t is a stochastic disturbance term.

The three equations differ in the inclusion or exclusion of the deterministic elements x_{10} and x_{2t}. Having established the non-stationarity of the six variables, the next step is to test for the presence or absence of a long-run equilibrium among the variables.

4.2.3 Cointegration test

We use the Cointegration test, which is an econometric property of time series variables. If two or more time series are themselves non-stationary, but their linear combination is stationary, then the series are said to be co-integrated. In practice, cointegration is a means for correctly testing those hypotheses concerning the relationship between two series with unit roots. The cointegration test is based on the maximum likelihood estimators of a vector autoregressive (VAR) process. The likelihood ratio-test statistic for the hypothesis of the at most r co-integrated relationship and the at least $m = n - r$ common trend is given by:

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \ln\left(1 - \hat{\lambda}_i\right)$$ ---(8)

$$\lambda_{max} = -T \ln\left(1 - \hat{\lambda}_{r+1}\right)$$ ---(9)

Where :

λ_{trace} is the trace statistic,

λ_{max} is the eigen-max statistic,

$\hat{\lambda}_i$ denotes the smallest estimated eigen-values,

T is the sample size.

The null hypothesis tested in λ_{trace} is no cointegration. In fact, for bivariate cointegration tests, up to two null hypotheses can be tested. If the null that $r = 0$ is rejected, at least one cointegrating vector may exist, and the second hypothesis that $r \leq 1$ is subsequently tested.

5. Empirical analysis

5.1 Unit root test result

First, we test if the relevant variables are stationary and to determine their orders of integration. We use both the Augmented Dickey Fuller (ADF) and Phillips – Perron (PP) tests to find the existence of unit root in each of the time series. The results of both the ADF and PP tests are reported in Table below 5-1 and 5-2.

Variables	ADF None	ADF Intercept	ADF Trend &Intercept	PP None	PP Intercept	PP Trend and Intercept
GDP	-2.319 (-1.953)*	-2.134	-3.438 (-3.233)***	-3.664 (-2.650)*	-3.572 (-2.971)**	-4.030 (-3.580)**
GE	-3.814 (-2.650)*	-3.760 (-3.689)*	-4.624 (-4.323)*	-3.791 (-2.650)*	-3.735 (-3.689)*	-4.607 (-4.323)*
LF	-2.483 (-2.650)*	-1.003	-3.323 (-3.243)***	-2.664 (-2.650)*	-3.246 (-2.971)*	-3.087
AG	-5.114 (-2.650)*	0.111	-1.986	-5.114 (-2.650)*	-5.023 (-3.689)*	-5.489 (-4.323)*
FDI	-5.624 (-2.650)*	-5.519 (-3.689)*	-5.691 (-4.323)*	-5.620 (-2.650)*	5.516 (-3.689)*	-5.691 (-4.323)*
TV	4.121	4.007	3.488	-4.195 (-2.650)*	-4.613 (-3.689)*	-5.889 (-4.323)*
ER	-4.130 (-2.650)*	-4.617 (-3.689)*	-4.700 (-4.323)*	-4.162 (-2.650)*	-4.617 (-3.689)*	-4.700 (-4.323)*

Table 5-1 Unit Root Test Stationarity at First difference

Source: Author's Estimation using Eviews 5.

Note: *, **and *** denote significance at 1%, 5% and 10% level. Figures within parenthesis indicate critical values.

Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

The result in table 5-1 above shows that all the variables were stationary in the First difference. This can be seen by comparing the observed values (in absolute terms) of both the ADF and PP test statistics with the critical values (also in absolute terms) of the test statistics at the 1%, 5% and 10% level of significance. Result from table 5-1 provides strong evidence of stationarity. Therefore, the null hypothesis is rejected and it is sufficient to conclude that there is a presence of unit root in the variables at the first difference, following from the above result, all the variables were differenced once and both the ADF and PP test were conducted on them, the result as shown in table 5-2.

The table below reveals that all the variables were stationary at second difference, on the basis of this, the null hypothesis of non-stationary is rejected and it is safe to conclude that the variables are stationary. This implies that the variables are integrated of order one, i.e. 1(1)

Variables	ADF None	ADF Intercept	ADF Trend &Intercept	PP None	PP Intercept	PP Trend and Intercept
GDP	-6.675 (-2.653)*	-6.479 (-3.699)*	-6.223 (-4.339)*	-6.651 (-2.653)*	-6.442 (-3.699)*	-6.086 (-4.339)*
GE	-6.155 (-2.656)*	-3.413 (-3.020)*	-3.202	-17.463 (-2.653)*	-17.203 (-3.699)*	-16.64 (-4.339)*
LF	-4.682 (-2.664)*	-6.173 (-3.769)*	-4.501 (-4.394)*	--4.288 (-2.653)*	-4.256 (-3.699)*	-4.223 (-3.587)*
AG	-4.134 (-2.674)*	-3.977 (-3.769)*	-4.288 (-3.632)*	-9.334 (-2.653)*	-9.272 (-3.699)*	-9.744 (-4.339)*
FDI	-2.799 (-2.685)*	-2.574	-3.101	-10.901 (-2.653)*	-10.848 (-3.699)*	-11.27 (-4.339)*
TV	1.986	1.456	0.057	-7.643 (-2.653)*	-7.745 (-3.694)*	-12.50 (-4.339)*
ER	-8.052 (-2.653)*	-7.904 (-3.699)*	-7.727 (-4.339)*	-14.813 (-2.653)*	-15.045 (-3.699)*	-13.99 (-4.339)*

Table 5-2 Unit Root Test Stationarity at Second difference

Source: Author's Estimation using Eviews 5.1

Note: *** and**** denote significance at 1%, 5% and 10% level. Figures within parenthesis indicate critical values.

Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

5.2 Cointegration test result

Having confirmed the stationarity of the variables, we proceed to examine the presence or non-presence of cointegration among the variables. When a coinegration relationship is present, it means that all the seven (7) variables employed, share a common trend and long-run equilibrium as suggested theoretically. We did the cointegration analysis by employing the Johansen and Juselius multivariate cointegration test. Table 5-3 and 5-4 below shows the result of the cointegration test. In the table both trace and maximum Eigenvalue statistic indicates that there is a present of cointegration at 5 percent level significance, suggesting that there is cointegration or long-run relations between the variables so tested.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.926935	213.9422	125.6154	0.0000
At most 1*	0.914192	140.6826	95.75366	0.0000
At most 2*	0.630911	71.92473	69.81889	0.0336
At most 3	0.472495	44.01666	47.85613	0.1096
At most 4	0.411684	26.10795	29.79707	0.1255
At most 5	0.274576	11.25420	15.49471	0.1963
At most 6	0.077749	2.266250	3.841466	0.1322

Table 5-3 Unrestricted Cointegration Rank Test (Trace)

Trace test indicates 3 cointegration egn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.926935	73.25954	125.6154	0.0000
At most 1*	0.914192	68.75791	95.75366	0.0000
At most 2*	0.630911	27.90807	69.81889	0.2178
At most 3	0.472495	17.90870	47.85613	0.5028
At most 4	0.411684	14.85375	29.79707	0.2993
At most 5	0.274576	8.987954	15.49471	0.2872
At most 6	0.077749	2.266250	3.841466	0.1322

Table 5-4 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Trace test indicates 2 cointegration egn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

5.3 Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Probability
AG does not Granger Cause GDP	28	20.8773	6.8E-06
GDP does not Granger Cause AG		7.32654	0.00345
AG does not Granger Cause GE		2.45770	0.10781
GE does not Granger Cause AG		5.14443	0.01424
AG does not Granger Cause LF		0.46913	0.63140
LF does not Granger Cause AG		1.76485	0.19362
FDI does not Granger Cause AG		2.04451	0.15232
AG does not Granger Cause FDI		1.97416	0.16172
TV does not Granger Cause AG		6.48120	0.00586
AG does not Granger Cause TV		9.65576	0.00090
ER does not Granger Cause AG		0.49772	0.61431
AG does not Granger Cause ER		3.40974	0.05048

Table 5-5 Pair-wise Granger Causality Test

The estimated result obtained from Granger Causality test in the table above shows that variable like Gross Domestic Product (GDP) and Nigeria-China bilateral trade volume (TV) has a bidirectional relationship with Agricultural output (AG) which shows that they are statistically significant in explaining changes in agricultural output in the country.

The result indicate a unidirectional relationship as causality runs from Agricultural output (AG) and Government Expenditure (GE). Government expenditure in the agricultural sector happened to be significant in explaining agricultural development in Nigeria. For instance the current expenditure on agriculture stands at ₦78 billion which is 2.7 percent of the total budget for the year 2012 with the objective to secure food and feed needs of the nation, enhance generation of national and social wealth through greater export and import substitution and enhance capacity for value addition leading to industrialization and employment opportunity. On the other hand agriculture does not contribute to government expenditure due to the fact that revenue realized from the sector is not properly channel back to the sector to generate more revenue rather it is used for importation of fertilizers and some major food crops like rice. For instance the consumption of rice in Nigeria has risen tremendously at about 10 percent annum due to changing consumer preferences, therefore the importation of rice into the country today stands at about 1million metric tons yearly, resulting that Nigeria is spending annually over US$300 million on rice importation alone and $4.2 billion on fertilizer making the country the second importer of rice in the world.

However, The result shows that there is no any casual relationship between Labour Force (LF) and agricultural output (AG), which shows that Labour Force is statistically insignificant in explaining changes in agricultural development in Nigeria due to the fact that urbanization holds back production. This indicates that neglect on rural infrastructure affects the profitability of agricultural production and also lack of roads impedes of marketing of agricultural commodities has prevented farmers from selling their produce at reasonable prices and has lead to spoilage, which has resulted to large migration of young able men and women from the rural areas to urban centers in search for white collar jobs instead of embarking on agriculture which has lead to shortage of skilled manpower in the sector.

Furtherance to the result above, it indicates that there is no causal relationship between China foreign direct investment inflow to Nigeria (FDI) and Agricultural output (AG) which has resulted to low level of private investment and low level investment in research and development in the sector, therefore the FDI inflow from China is not focusing on agriculture which can be an excellent source of boosting local economic growth but rather on oil and other sector of the economy which is more profitable. In order to attract FDI and improve the R&D investment in the agricultural sector to boost agricultural production in Nigeria, farmers need access to new technologies. However due to neglect in the sector and the government over dependence on oil, agricultural sector lacks adequate investment influx, recently China has sent about five hundred (500) agricultural experts to assist in teaching the rural farmers, beside that there is also collaboration at state and provincial level among which are the Hubei province, Osun state and Bauchi state government.

Finally the result indicates that Exchange rate (ER) does not Granger cause Agricultural output (AG) and on the other hand agricultural output (AG) Granger cause Exchange rate (ER). Therefore the result shows that there is a unidirectional relationship between the two variables, this means that Agriculture output is statistically significant in explaining changes in Exchange rate of the country. However, it generally indicates that despite the neglect of the sector it still contributes to the country's economy growth. Moreover exchange rate does not Granger cause agricultural output mainly to the fact that there is volatility in exchange rate of the country which has lower the income earnings of farmers and has subsequently lead to decline in output production and reduction in export production which has resulted to poor performance and lack of competitiveness in the country's agricultural produce in the international market.

6. Conclusions

Agricultural sector is the mainstay of Nigerian economy, ensuring food security, rural development, being a major source of raw materials and foreign exchange, employing over 70 percent of the Nigeria labour force and serving as a potential vehicle for diversifying the Nigeria economy. Nevertheless, the sector has the potential to be seen as spring board from which the country's development can take off. Indeed more often than not agricultural activities are usually concentrated in less-developed rural areas where there is urgent need for rural transformation, redistribution, poverty alleviation and socio-economic development. Similarly there is a need to say that evidence from the contribution that the sector has made, it indicate that agricultural sector in Nigeria has been the engine that contributes to the growth of the overall economy.

Despite these laudable efforts by the government, Nigeria's agricultural sector still is characterized by low yields, attributable to low level of technology, low level of inputs and limited areas under cultivation, low productivity, low private sector investment, lack of competitiveness, shortage of skilled manpower, poor development of value chain and low value addition, low investment in research and development, poor policy instability and discontinuity. The research finding reveals that using the Augmented Dickey Fuller (ADF) and

Philips-Parron (PP), the result indicate that there is a strong evidence of stationarity between the variables employed. Johansen and Juselius multivariate cointregration test indicate that there is a present of cointregration, suggesting that there is a long-run relationship between the seven (7) variables. Granger causality test result shows that Gross Domestic Product (GDP) and Nigeria-China bilateral trade volume (TV) has a bidirectional relationship with Agricultural Output (AG) while Government expenditure (GE) and Exchange Rate (ER) has a unidirectional relationship with Agricultural output (AG) also the result shows that Labour Force (LF) and China foreign direct investment inflow into Nigeria (FDI) has no causal relationship with agricultural output.

However, based on the empirical findings it is recommended that there is a need for the government to provide legal and administrative quality framework for effective commercialization that will encourage more exportation of agricultural output as this in turn will enhance external foreign exchange earnings and improve the competitiveness of Nigeria agricultural produce in the international market, help in the liberalization of regulated backbone services, which provide opportunities for private investment and management that were hitherto unavailable and strengthen FDI-related institution in Nigeria Such as the NIPC, BPE and NEPZA at administration, policy and promotion level and also provide more funding for agricultural universities in the country to carry out more research on all aspects of agricultural output, such as livestock, crops, fishing and forestry, crop preservation.

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