Agricultural and Industrial Sectors and Nigeria's Economic Development

[1]EGBULONU, K.G (Ph.D) & [2]Athanasius NWOKORO (M.Sc.)

**[1]Department of Economics,
Imo State University, Owerri, Nigeria**

**[2]Department of Economics
Imo State University, Owerri, Nigeria**

ABSTRACT
This research work examines the effect of agricultural and industrial outputs on Nigeria's economic development. Data on real GDP, Agricultural output, interest rate, foreign exchange rate and inflation were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin. Ordinary Least regression (OLS) method was used to analyze the data. The results indicated that agricultural and industrial outputs contribute positively to Nigeria's economic growth. In order to enhance the contributions of Agricultural and industrial sectors to the economy, government should enact and maintain a more reliable policy on agricultural development plan and implementation and also provide funds to acquire modern farm tools and soft loans to aide small and medium scale farmers; encourage economic co-operation among regions and states, create markets for agricultural outputs and provide extension services to the rural farmers.
Keywords: Agricultural and Industrial Outputs, Economic development, Industrialization, Error Correction Model

INTRODUCTION
The role of Agriculture and Industrial sectors to the global economy cannot be over emphasized and Nigeria as a developing Nation based on her economic history needs a revolution and re-engagement of agriculture and agro-based industries for diversification and sustainability. By definitional analysis, agriculture is a source of food for consumption by man, food for animals and raw materials for our industries. In Nigeria before the independence, agriculture was the mainstay of the economy. The discovery, exploration and exploitation of oil in the late 1950s were the genesis of agricultural abandonment in Nigeria. Every attention was directed towards mining and exporting of crude oil.
In 1960, agriculture contributed up to 64% to the total GDP, but during the 1970s, the contribution of agriculture to the GDP declined to 48%. The decline continued in 1980 to 20% and 19% in 1985. The uncertainty associated with the oil glut of the 1980s, which has great adverse impact on the Nigerian economy, resulted in increased Federal and State government attention towards the development of agriculture. However, there was a little upward shift to the GDP during the 1990s due to the shift of emphasis to agricultural development but the increment was negligible (Obilor 2013).
Generally, according to Olajide (2012), the agricultural sector contributes a lot to the growth and development of an economy in four major ways namely; food for man, factor contribution, market contribution and foreign exchange earnings. These are major factors to the making of an economy. The role of agriculture is too paramount and would never be over emphasized as earlier stated. In spite of Nigeria's rich agricultural resource endowments, there has been a gradual decline in agriculture's contributions to the nation's economy (Manyong et al.., 2005).

Based on the current continuous fall in price in the international oil market and the present economic situation of the country' if this problem of negligence or little attention to agriculture is not addressed, Nigeria is bound to face more economic hardship in the nearest future.

On the other hand, the manufacturing sector plays a very strong and catalytic role in a modern economy and has many dynamic benefits crucial for economic transformation. In both developed and developing economies, the manufacturing sector is a leading sector in many respects. It is an avenue for increasing productivity related to import replacement and export expansion, creating foreign exchange earning capacity; and raising employment and per capita income which causes unique consumption patterns. Furthermore, it creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors. In terms of contribution to the Gross Domestic Product (GDP), the manufacturing sector is dominant and it has been overtaken by the services sector in a number of organizations (Anyanwu, 2003).

According to Ogar et al 2014, before independence, agricultural products dominated Nigeria's economy and accounted for the major share of its foreign exchange earnings. Initially, inadequate capital investment permitted only modest expansion of manufacturing activities. Early efforts in manufacturing sector were oriented towards the adoption of an import substitution strategy in which light industry and assembly related manufacturing ventures were embarked upon by the formal trading companies up to about 1970, the prime mover in manufacturing activities was the private sector which established some agro-based light manufacturing units such as vegetable oil extraction plants, turneries tobacco processing, textiles, beverages and petroleum products. The strategy of light and assemblage manufacturing shifted somewhat to heavy industries from the period of the Third National Development Plan (1975-1980) when government intervened to establish Core Industrial Plants to provide basic imports for the downstream industries. The import dependent industrialization strategy virtually came to a halt in the late 1970s and early 1980s when the liberal import policy expanded the imports of finished goods to the detriment of domestic production (Ariyo, 2005).

In this regard, industrialization constitutes a veritable channel of attaining the lofty and desirable conception and goals of improved quality of life for the populace.

Objective of Study

This study examines the relationship between agricultural and industrial outputs and Nigeria's economic development for the period 1985 to 2015.

CONCEPTUAL AND THEORETICAL LITERATURE

Several authors have given different definitions of agriculture in different perspectives but the most common factor is the production of food, fibre and other goods by a systematic planting (for crops), growing and harvesting of plants and animals. The three basic needs of man are: food, clothing and shelter. Amongst these three, the paramount is food and about 96% of food for man's consumption is from agriculture.

Akinboye (2008) in his own way defines agriculture as the science of making use of the land to raise plants and animals. This is a simplification of nature's food webs and the rechanneling of energy for human planting and consumption. Agriculture is the profession of majority of humans mostly people living in the developing countries. The United Nations Organization (2008) estimated that the world as a whole has over 50% of the world's population engaged in agriculture or dependent upon it for a living. Here, agriculture includes farming, fishing, animal husbandry and forestry.

Statistically, agriculture engages a larger percentage or greater chunk of the active labour force in Nigeria. Olajide et al (2013) wrote that agricultural sector is the largest sector in the Nigerian economy with its dominant share of the GDP, employment of more than 70% of the labour force and generation of about 88% of non-oil foreign exchange earnings. Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. The physiocrats laid more emphasis on agriculture in the development of an economy. In their views, the development of an economy depends on the growth of agricultural sector. The source of national wealth is agriculture. The physiocrats believe that the fate of the economy is regulated by productivity in agriculture and its surplus

is diffused throughout the system in a network of transactions. The agriculture to the physiocrats is the only genuinely productive sector of the economy and the generator of surplus upon which all depends.

In every economy, one or more sectors serve as a prime mover carrying the rest of the economy forward: the agricultural and industrials sectors fall in this category. The role as the engine of growth and development have often been played by the aforementioned sectors.

Against this background, industrialization involves extensive technology based development of the productive (manufacturing) system of an economy. Thus, the development of the industrial sector represents the deliberate and sustained application and combination of suitable technology, management techniques and other resources to move the economy from the traditional low level of production to a more automated and efficient system of mass production of goods and services. Arising from the foregoing affirmed centrality of industrialization as a pivot of economic growth and development, a meaningful industrialization and agricultural process seem to be the main hope of most developing countries such as Nigeria with a large population and a larger labour force. In spite of these aspiration which ought to have favoured effective industrialization process in an economically conducive manufacturing environment, most of these results as reflected in the performance of the manufacturing sector remain socio-economically undesirable. Against this back drop, current economic planning and policy instruments are diverted off the development of the key productive sectors, particularly manufacturing and agro based industry for the promotion of an increasing pace of industrialization in Nigeria.

According to Todaro and Smith (2003) on Lewis theory of development, the underdeveloped economies consist of two sectors: the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. The primary focus of the model is the labour transfer and the growth of output and employment in the modern sector. They argued that, if development is to take place and become self-sustaining, it will have to include rural areas in general and agriculture in particular.

Agricultural Development in Nigeria

A strong agricultural sector, as it is recognized is essential to economic development both in its own right and to stimulate and support the growth of industries. Economic growth has gone hand in hand with agricultural progress. Stagflation in agriculture is the principal explanation for poor economic performance, while rising agricultural productivity has been the most concomitant of successful industrialization (Ukeje 1999).

It has long been recognized that sustained agricultural development requires striking an appropriate balance between investments that are directly productive in agriculture and investment in infrastructures. Poor infrastructural services in developing countries lead to low productivity. Much of the high productivity of agriculture in the developed countries is as a result of massive form of investments' over many years in physical and institutional infrastructure.

Conversely, the low productivity of agriculture in many developing countries like Nigeria reflects among other things, limited investment in rural roads and electricity. This stems from the concentration of public investments in urban areas where the unit cost of providing services is seemed to be typically less and logistic problems fewer.

Agriculture is as old as mankind. During the pre-colonial and colonial era of Nigeria, the Northern protectorate was known with the massive production of some crops like wheat, tomatoes, beans and so on. The Southern Protectorate and the Colony of Lagos were known with the production of cash crops like cocoa and palm produce. The independence of 1960 ushered in another form of developmental strategy to the agriculture. Not quite long, the oil boom of the 1970s brought a shock and quick negligence to agriculture. In a way to give a solution to the rising economic challenge facing the sector; different policies, agents and parastatals were enacted and established to promote a speedy development of agriculture in Nigeria. Some really strived and made certain level of positive effects to the agricultural sector while many of them died as soon as they were established.

The Nigerian Agriculture and co-operative Bank (NACB): was established based on the fact that the agricultural sector lacked finance. The bank is charged with basically the responsibility of disbursing loans to agricultural projects. As a programme the bank faced some problems such as;
- Inadequate financial resources to meet with agriculture loans demand,
- Non-fulfillment of security of collateral requirements necessitated bad debt, which could not be recovered at the time of maturity.
- Lack of disposition of the bank to modern loan appraisal techniques which resulted in poor loan management,
- Diversion of fund by the bank for non-agricultural purposes, and
- Late disbursement of agricultural loan arising from bureaucratic impediment.

In 1973, the National Accelerated Food Production Programme (NAFPP) was established with The aim of distributing to those who involve themselves in packaging information and raw materials in order to improve the production of wheat, sorghum, millet, rice, maize and cassava.

Operation Feed the Nation (OFN) came on board in 1976 with the objective of self-sufficiency in food and to ensure that the objective was realized. Some of the products of this programme include; subsidized supplies of fertilizers, seeds, insecticides and pesticides. Everyone was encouraged by this programme to cultivate their back gardens intensively and to keep chickens, whose eggs and meat would provide an important source of protein and whose dropping could be used as fertilizer. However, the success of this programme was limited because about two-third of the entire funds were spent on student wages, living little for farmers. The programme also collapsed because of timing related inadequacies. In 1979 the Agricultural Credit Guarantee Scheme Fund (ACGSF) was established by the Federal Government of Nigeria as an inducement to commercial and merchant banks to increase credit purveyance on their part to actively engage in agricultural lending. The Fund was under the management of the Agricultural Credit Scheme Fund Board with the CBN acting as managing agent for its day-to-day administration. It is worthy to note that though ACGSF had limitations, its operation improved significantly in 1994.

Before the ACGSF was the River Basin Development Authorities (RBDA) in 1978. The authorities were established to provide all year round water through irrigation to farmers. This period also witnessed the establishment of various other programmes such as the Grain Boards and the World Bank Assisted Agricultural Development Projects (ADP). The effect of this wasn't really felt because of poor management and bad government.

The Green Revolution (GR) was established at the wake of the third republic after the Operation Feed the Nation (OFN) in 1983. This programme was managed by the National Council for the Green Revolution. It was operated on green revolution principles that is, the use of high yielding varieties of seed, high inputs of fertilizers, irrigation, and so on.

In 1990, the National Agricultural Land Development Authority (NALDA) was established for the purpose of making land available to those interested in farming. The Authority was intended to reduce the prevalence of subsistence agriculture in the country and in its place infuse large-scale commercial farming by assisting farmers with inputs and developing land for them to the point of planting at subsidized rates. On its establishment, the government allocated a take-off grant of N30 million in order to acquire 50,000 hectares of land in each state of the federation for agricultural activities.

Towards the end of Obasanjo's civilian administration in 2002, the Special Programme for Food Security (SPFS) was introduced by the Federal Government and the Federal Ministry of Agriculture and Rural Development was given the responsibility of its implementation through its project coordinating unit. The size of the programme, the general capital outlay channeled to it and the built in implementation and monitoring mechanism made this programme a potent weapon for heralding a meaningful agrarian revolution in the country within the shortest period of time. A critical look at the programme reveals that the success of this programme had been minimal because the government had failed to maintain consistency in its investment, implementation and monitoring the activities in the agricultural sector in general .

National Fadama Development Project (NFDP): The first National Fadama Development Project (NFDP-1) was designed in the early 1990s to promote simple low-cost improved irrigation technology under

World Bank financing. The main objective of NFDP- I was to sustainably increase the incomes of the Fadama users through expansion of farm and non-farm activities with high value-added output. The programme covered twelve states of Adamawa, Bauchi, Gombe, Imo, Kaduna, Kebbi, Lagos, Niger, Ogun, Oyo, Taraba including the Federal Capital Territory (FCT). NFDP adopted community driven development (CDD) approach with extensive participation of the stakeholders at early stage of the project. This approach is in line with the policies and development strategies for Nigeria which emphasize poverty reduction, private sector leadership and beneficiary participation. Overall appraisal of the first and second phases of the project show remarkable success, hence the invention of the current third phase. The problem associated with the project lies on the fact that unskilled handling of water application through irrigation can degrade and deplete the soil of its productive capacity while environmental impact assessment conducted on behalf of the NFDP showed that the progeamme does not pose serious threat to the environment (Agriscope, 2001).

More recently, the Youth for Agriculture was launched by the current administration to lure young graduates into agriculture. This has not really achieved its target because of the red tape involved in accessing funds and aids and also the unprofessional manner the management is being run.

Benefits and contributions of Agricultural and Industrial Sectors to Nigeria's economic growth and development

Agriculture is the basic source of food for man. When the food is being processed, the manufacturing sector is involved. This goes a long way in providing food for the teeming population of Nigeria. When output increases, the income of the farmer's increases thereby leading to an increase in the standard of living of the people. Similarly, agricultural development is of vital importance due to the fact that a rise in rural purchasing power as a result of the increase in the agricultural surplus is a great stimulus to industrial growth and speedy expansion in the size of the market. The market size for manufactured goods in Nigeria is very small because a large proportion of the population falls within the poverty range. However, the demand for such input like fertilizers, modern tools, farm implements, tractors, irrigational facilities in the agricultural sector will lead to the expansion of the industrial sector.

Agricultural and industrial sectors also aide the expansion of the international market. Though at a low and emerging level, Nigeria still specialize in the production of certain agricultural products like cocoa, palm produce etc for export.

In Nigeria, the manufacturing and the agricultural sectors create a quality employment opportunities within and outside the rural areas. As agricultural productivity and farm income increase, non-farm rural employment expands and diversifies. Nigeria needs large amount of capital to finance the cr4eation and expansion of infrastructure and for the development of basic and heavy industries. The rural welfare or welfare of the rural dwellers is enhanced through agriculture and small scale industries and this helps to tackle rural-urban migration.

METHODOLOGY
Data Collection and Analysis
This work made use of secondary data sourced from Central Bank of Nigeria's Statistical Bulletin. Ordinary Least Square (OLS) multiple regression method and Error Correction Mechanism were used to analyze the data with E-view 4.0 econometric software.
Model Specification
The Model we shall test in this study is stated below:
RGDP = F(INAO, IPRD, INRT, FEXR)
Where;
RGDP=Real GDP
INAO=Index of Agricultural Output
IPRD=Index of Industrial Production
INTR = Interest Rate
FEXR=Foreign Exchange Rate.

Putting the above equation in an econometric form:

$RGDP = a_o + a_1 INAO + a_2 IPRD + a_3 INTR + a_4 FEXR + U$

ESTIMATION AND INTERPRETATION OF RESULTS

Unit Root Test

The variables were verified for stationarity by subjecting them to unit root test using Augmented Dickey-Fuller test for stationarity:

Variables	ADF Statistic Test	5% Critical Value	Prob.	Order of Co-integration
RGDP	-3.604785	-2.9850	0.046351	I(1)
IPRD	-3.708914	-2.9850	0.000385	I(1)
INAO	-3.246696	-2.9850	0.042884	I(1)
INT	-5.111821	-2.9850	0.000000	I(1)
FEX	-3.324328	-2.9850	0.000437	I(1)

Author's computation and Eviews 3.1 Output.

In the table above, the first differenced series of all the variables showed stationarity, which means, that they are integrated of order one I(1).

Cointegration Test

In order to ascertain if there is a long run relationship existing among these variables, co-integration test was carried out using the Johansen cointegration test.

Eigen value	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.907253	118.7660	68.52	76.07	None**
0.608009	56.94124	47.21	54.46	At most 1**
0.473359	32.59183	29.68	35.65	At most 2*
0.345745	15.91969	15.41	20.04	At most 3*
0.171417	4.888990	3.76	6.65	At most 4*

The table above showed that the hypothesis of no cointegration among the variables can be rejected as five cointegrating equations were seen as their likelihood ratio was greater than the 5% critical value. We therefore conclude that there exists a long run equilibrium relationship among variables employed in the study.

Model Estimation

In estimating the model, ordinary least square method was used to identify the nature of relationship that exists between the variables employed.

Dependent Variable: RGDP				
Method: Least Squares				
Date: 08/17/16 Time: 13:24				
Sample: 1980 2014				
Included observations: 33				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-27958.32	41087.26	-0.680462	0.5030
IPRD	0.075296	0.481458	0.156391	0.8771
INAO	2.552751	0.159778	15.97684	0.0000
INTR	8.013134	1010.525	0.080187	0.9368
FEXR	-3.021068	192.2553	-4.961490	0.0320

R-squared	0.987832	Mean dependent var	460706.0
Adjusted R-Squared	0.985715	S.D. dependent var	182954.1
S.E. of regression	21866.35	Akaike info Criterion	22.98372
Sum squared resid	1.10E+10	Schwarz criterion	23.22161
Log likelihood	-316.7721	F-Statistic	46.70865
Durbin-Watson stat	1.707120	Prob(F-statistic)	0.000000

The interpretation of the model shows that the R^2 of 0.987832 indicates that approximately 99% of total variation in the dependent variable is explained by the explanatory variables.

The Durbin-Watson statistic of 1.707120 tends towards 2.0 indicating no serial autocorrelation. Nonetheless, the F-statistic has a value of 46.70865 with probability value of 0.000000, which means, it is statistically significant at 5% and the model is a good fit. Therefore, the explanatory variables have a joint significant effect in determining the movement in the sector.

In addition, the estimated coefficient of IPRD (0.075296) showed the right positive sign but not statistically significant, thus an increase in IPRD will lead to rise in GDP.

The coefficient of INAO (2.552751) did show the expected positive sign and is significant; meaning an increase in INAO will increase GDP.

INTR was not rightly signed and did not conform to expectations.

The foreign exchange rate coefficient (-3.021068) is rightly signed. It is negative and statistically significant showing that an increase in foreign exchange rate is detrimental to economic growth.

Error Correction Modeling

Short Run Estimates Dependent Variable: D (RGDP)				
Method: Least Squares				
Sample (adjusted): 1982 2014				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.046474	0.021537	2.157859	0.0404
D(IPRD(-1))	0.011252	0.028331	4.397181	0.0304
D(INAO(-1))	0.000944	0.037316	3.625301	0.0380
D(INT(-1))	0.031150	0.090873	3.342780	0.0345
D(FEX(-1))	-0.0014112	0.001848	-0.763994	0.4517
ECM(-1)	-0.194322	0.058639	-2.815765	0.0092
R-squared	0.551341	Mean dependent var		0.047890
Adjusted R-Square	0.426599	S.D. dependent var		0.049773
S.E. of regression	0.043772	Akaike info criterion		-3.252271
Sum square resid	0.049816	Schwarz criterion		-2.977446
Log likelihood	58.03634	Hannan-Quinn criter.		-3.161174
F-statistic	9.216541	Durbin-Watson stat		1.983027
Prob (F-statistic)	0.033668			

In line with economic theory, the variables are expected to be positively signed on a priori basis except interest rate and foreign exchange rate which are expected to be negative.

The result from the parsimonious model in the table above revealed that the coefficients of the variables IPRD, INAO and FEXR are rightly signed while INT is not. It further revealed that GDP has direct and significant relationship with IPRD and INAO at 5% level of significance with coefficients and prob. value in brackets 0.046474 (0.0404), 0.011252 (0.0304) respectively. Furthermore, the coefficient of the error correction term bears the required sign (-0.194322) and is significant with a prob value of 0.0092. The Durbin Watson value of 1.98 indicates no serial auto correction and its magnitude of -0.194322 implies

that approximately 19% of the previous year disequilibrium caused by previous year's shock is adjusted for in the following year.

The determinant of correlation (R-square) revealed that 55% variation in economic growth in Nigeria is explained by the explanatory variables in the model. The probability value of the f statistics (0.033668) also shows that the entire regression model is of good fit.

CONCLUSION AND RECOMMENDATIONS

This study has shown that agricultural and manufacturing sectors contribute significantly to Nigeria's economic development. The employment base of the Nigerian economy is largely dependent on these sectors. The findings here show that increase in these sectors also lead to increase in Nigeria's economic growth. A 1% increase in manufacturing sector will lead to 0.075% increase in GDP while a 1% increase in Agricultural sector will lead to 2.55% increase in GDP.

It is recommended that government should repeal, amend and maintain a more reliable policy on agricultural development and productive capacity plan and implementation.

Also, funds should be provided to acquire modern farm tools for small and medium scale farmers and soft loans for small and medium scale enterprises.

Finally, interest free loans, incentives and enhanced subsidies should be encouraged in no small measures to enhance productivity.

REFERENCES

Akimboyemi T.C. (2004): Agriculture, Industrial Growth and Economic Development. Hybrid Press Onitsha.

Amalu, U.C. (1998), *Agricultural Research and Extension Delivery Systems in Sub-Saharan Africa:* Calabar: University of Calabar Press.

Anyanwu, D.O. (2008): Agriculture, The Strength of Diversification in Nigeria. Lesson Note: University of Port Harcourt.

Asiabaka, C.C. (2002), *Agricultural Extension; A Handbook for Development Practitioners.* OOmoku, River State: Molsystem United Services.

Apere, T.O. (2004): Research Methodology for Management and Social Sciences, Port Harcourt: P.N. Davidson Publication.

Central Bank of Nigeria (2014): Annual Reports and Statements of Account. Abuja Nigeria; Government Printing Press.

Egbulonu K.G (2005): Basic Econometric Methods. Peace Publishers Owerri.

Edoumiekumo, S.G. (2005): Fundamentals of Econometrics I, Port Harcourt, Nigeria: Tower Gate Resources.

Federal Ministry of Finance (2011) Ministerial Publication; Abuja Nigeria. Government Printing Press.

Iyoha M.A and Itsede C.O. (2003): Nigerian Economic Structure, Growth and Development, New Delhi Mindex House.

Obilor, S.I. (2013). The impact of Commercial bank 'credit to agriculture on agriculture development in Nigeria: An Econometric Analysis. International Journal of Business, Humanities and Technology, Vol. 3 No. 1; 85-94.

Ogar S.E., et al (2014): Commercial Bank Credit and its contribution on Manufacturing Sector in Nigeria. Research Journal of Finance and Acounting Vol. 5, No. 22.

Olajide O.T. et al (2012): Agriculture Resource and Economic Growth in Nigeira. European Scienctific Journal Vol. 8, No 22.

Onuchukwu O. and Adoghor G. (1999):Econometrics: An Introduction to Ordinary Least Suare Regression Analysis. Springsfield Publishers Port Harcourt.

Rostow, W.W. (1960): The Stages of Economic Growth: A Non Communist Manifesto, London: Cambridge University Press;

Tamuno, S.O. (1996): Historical Dynamics of World Economies, Owerri: Springfield Publishers.

Todaro, M.P. and Smith, S.C. (2003): Economic Development, Elight Edition, Singapore: Pearson Education.

Ukeje R.O. (2003): Introduction to Macroeconomics, Port Harcourt: Davidson Publications.

www.cenbank.org: The official website of the Central Bank of Nigeria.