AGRICULTURE AND ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

The study examined the impact of agricultural output on economic growth in Nigeria. GDP being the dependent variable was used as a proxy for economic growth while crop, livestock, forestry, and fishery were the independent variables. Annual times series data of the variables covering the period between 1986-2020 were sourced from CBN and National Bureau for Statistics. The study carried out pre-diagnostic tests including the Unit root test to test the stationarity of the data and the cointegration test to confirm the long-run relationship between variables. Error correction model (ECM) was used in the data analysis. Findings from the study revealed that there exists a long-run relationship between the variables. The results of the error correction model (ECM) revealed that the coefficient of livestock and fishery production were both positive with values of 5.0526 and 67.26 respectively and significant at a 5% level with the p-value 0.0432 and 0.0292. Crop production and forestry had a negative and insignificant impact on Nigeria's economic growth with the coefficient of -4.593964, and -2.625762 and p-value of 0.6432, and 0.6432, respectively. The study, therefore, recommended that the Nigerian government should review its policies on forestry and crop production so that they can have an impact on Nigeria's economic growth, and encourage more production of livestock and fisheries to have more input., Government should establish and fund more research institutes to improve seedlings to increase the productivity of crops.

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INTRODUCTION

Agriculture is the bedrock of economic growth and development among nations of the world. Thus, most nations all over the world make it a priority by developing and exploiting this sector for the feeding and earning of revenue for development purposes. A study by World Bank, (2016) revealed that about 65% of poor working adults rely on agriculture to make a living. The sector accounted for one-third of the global Gross Domestic Product (GDP) and employs over 1.3 billion people throughout the world or close to forty (40) % of the global workforce (World Bank Group, 2017). Othman and Iyiola-Tunji (2017) pointed out that the sector is the main source of income and employment for 70 % of the world's poor living in rural areas and accounts for 10 % of the Gross Domestic Product (GDP) in low and middle-income countries. In Africa specifically, the sector's share of GDP was 12.7 % and provided employment to more than 60 % of the labour force (African Fact Sheet, 2016)

In Nigeria, the agricultural sector comprises forestry, livestock, fishing, food, and cash crops production such as yams, cassava, maize, cocoa, groundnut,, and oil palm among others. The country is largely endowed with natural resources that are necessary for the development of agriculture; such resources include abundant land supply, and human and forestry resources. Nigeria has a total land area of about 98.3 million hectares out of which 71.2 million hectares (72.4%) are cultivated but only 34.2 million hectares representing (34.8%) are used (Oluwatoyese & Applanaidu, 2021). At the on-set of the oil boom in the late 1970s, the Nigerian economy became a mono-cultural one with oil being the major source of income which led to the neglect of all other sectors including the agricultural sector (Ogunjimi, 2021). This led to the production hurdles in the agricultural sector which have significantly stifled the performance of the sector. Over the past 20 years, value-added per capita in agriculture has risen by less than 1% annually. Successive governments of Nigeria have implemented various

agricultural and rural development programmes and policies to boost the agricultural sector to bring growth on the country's economy. However, despite all the effort of the government, the contribution of the sector to the GDP continue to decline (Nwankpa, 2017).

The continuous decline of the agricultural sector's contribution to the Gross Domestic Product (GDP) from 24% in 2010 and 23% in 2011, made the government to embark on different agricultural programmes and policies after years of being neglected to begin to reform the sector. The government implemented long-term plans to last from 2011 to 2017 which was the Agricultural transformation agenda (ATA); the aim was to rebuild a sector whose relevance had shrunk dramatically (Onuoha, Kromtit & Abimiku, 2015). Within this period, the federal government expenditure in agriculture increase from 22.28 billion in 2010 to 41.20 billion in 2011. The money allocated to the Agricultural Credit and Guarantee Scheme increased from N7.84million to N1.00billion approximately, Commercial Banks loans to the agricultural sector increased from N1284 billion to N2552 billion which result to a continuous rise of the impact of the agricultural sector to the Gross Domestic Product yearly from 23.86% in 2014 to 24.18% in 2015 and from 24.43% to 25.23% in 2016 (Federal Ministry of Agriculture and Rural Development 2016). The present government as a way of boosting agricultural output increased budget allocation to the agricultural sector from N92 billion in 2017 to N118 billion in 2018. (National Bureau of Statistics, 2018). From 2010 to 2020, the agricultural sector contributed N13,048.99b, N13,429.30b, N14,329.71b, N14,750.52billion, N15,380.39billion, N15,952.22billion, N16,607.34billion, N17,179.50billion, N18, 454billion, N18,785billion and N18, 983billion respectively (Peter, Tarila and Oghenefejiro, 2020)

The trend of government expenditure in agriculture has been erratic and fluctuating over the past three decades. Between 1981 and 1990, average capital expenditure by the federal government on agriculture was N0.938 billion. This trend increased to N6.103 billion between 1991 to 2000. The Average capital expenditure on agriculture for the period 2001 to 2010 was N71.14 billion while the figure for average capital expenditure for the period 2011 to 2018 was N72.06

billion (CBN Annual Reports, 2018). A look at these average figures depicts an increasing trend when one looks at it from decade to decade. However, when the figures are viewed on annual basis, the trend becomes erratic and fluctuating. This same trend is also observable when examining the trend of recurrent expenditure during the period under study. For example, annual recurrent expenditure on agriculture between 1981 and 1998 was below N2 billion. However, the incoming civilian administration increased the figure for recurrent expenditure on agriculture to N59.32 billion in the year 1999. By the next three years of 2000, 2001 and 2002, recurrent expenditure on agriculture fell to N6.34 billion, N7.06 billion, and N9.99 billion respectively. Between 2004 and 2011, average annual recurrent spending on agriculture rose to N29.40. Afterward, the trend began to decline by 2012 and began rising again to N36.30, N50.26 and N53.99billion for by 2016, 2017 and 2018 respectively (CBN Annual Reports, 2018).

In order to achieve the objectives of the study, the following questions are raised: what is the relationship between agriculture and economic growth in Nigeria? What is the impact of agriculture on economic growth in Nigeria? This study thus aims at determining the relationship between agriculture and economic growth in Nigeria and also ascertains the impact of agriculture on economic growth in Nigeria.

The variables used are: Gross Domestic Product (GDP) growth rate as dependent variable, whereas, Output of crop production, livestock, forestry and fishery are considered as independent variables. The data for this research are sourced from CBN statistical bulletin. The period 1986 to 2020.

CONCEPTUAL FRAMEWORK

Concept of Agriculture

The concept of agriculture is very broad such that different individuals, scholars and organizations defined it in different ways with emphasis on crop production as well as animal production. Forestry and fishing and aquaculture are embedded in crop and animal production respectively. Umaru and Zubairu, (2019) defined *agriculture as the systematic way of raising useful plants and livestock under the*

management and control of man. A similar view was presented by Nwankpa, (2017) *who defined* agriculture as a *deliberate effort to modify a portion of earth's surface through the cultivation of crops and the raising of livestock for sustenance or economic gains.* This definition saw agriculture as a means of livelihood as it laid emphasis on the sustenance of man and economic gains. Agriculture can also be defined as the growing of both plants and animals for human needs (Oni, 2018). Emeh, (2017) stated that *agriculture is the science of cultivating the soil, harvesting crops, and raising livestock and also as the science or art of the production of plants and animals useful to man and in varying degrees the preparation of such products for man's use and their disposal.* Dim and Ezenekwe (2013) defined agriculture as the practice of producing food and other human needs such as clothing, shelter, medicines, weapons, tools, ornaments, and indefinitely many more. The production of food here refers to production of plants and animals for consumption as well as for business or economic gains. Elsewhere, Ahungun, Ugural and Bekun (2019) viewed agriculture in the sense of land cultivation, raising and rearing of animals for the purpose of food production for man, feed for animals and raw materials for industries.

Harmonizing the above definitions, the study generated a working definition of agriculture to be a deliberate act by an individual, group of individuals, organizations or government to modify a portion of the earth's surface through the cultivation of crops, livestock, forestry or fishery for personal sustenance or economic gain.

Concept of Economic Growth

Etuk, (2014) defined economic growth as the increase in an economy's potential output or productivity capacity which is the level of output realized when all factors of production (capital, labour, land, natural resources and technical expertise) are fully utilized. Emphasis here was made on the quantity and quality of the factor inputs as major sources of economic growth.

Netshidzivhani, and Mamokhere, (2021) posited that, economic growth arises when a country's Gross National Product (GNP) increases tenfold in half a century and where personal consumption

expenditure per capita doubles in real terms in less than thirty (30) years. Here, emphasis was laid on production capacity and the percentage of utilization of this capacity; implying that a fall in unemployment will lead to increase in national income (NI). They further stated that constant value of money is essential to measuring growth because a fall or rise in prices as the case may be affects output in either way. This is true of Less Developed Countries (LDCs) because of prices volatility and the fact that GDP is usually measured in monetary terms. The fallen output that led to recession in Nigeria despite rising prices is an extreme situation which the researcher attributed to high demand arising from high population.

According to Nwankpa (2017), economic growth is the increase in an economy's potential output or productivity capacity which is the level of output realized when all factors of production (capital, labour, land, natural resources and technical expertise) are fully utilized. He laid emphasis on the quantity and quality of the factor inputs as major sources of economic growth. Umaru, & Zubairu, (2019) defined and measured growth in two ways: first, an increase in real GDP occurring over time and second, increases in per capita income over time. Umaru, & Zubairu, (2019) agreed with Makim (1975) on the significance of the quantity and quality of factors of production in realizing economic growth and further affirmed that, full employment of the expanding supply of resources (demand factor), as well as the full production of such resources (efficiency factor), are also pertinent in realizing economic growth. Economic growth occurs when a nation's production possibility frontier (PPF) shifts outward. Economic growth, being the growth in output per capita, is an important objective of government since it is associated with rising average real incomes and living standard. The Robert Solow neo-classical growth model posits that growth depends on capital accumulation – increasing the stock of capital goods to expand productive capacity, and the need for sufficient saving to finance increased allocation of resources towards investment (Umaru, & Zubairu, (2019))

The study adopted the definition giving by Jhingan (2007) who viewed growth in the sense of quantitative sustained increase in per

capita output or income accompanied by expansion in labour force, consumption, capital and volume of trade.

THEORETICAL REVIEW

The Physiocrats Theory of Economic Growth

Physiocracy is an economic theory developed by a group of 18th-century enlightenment French economists dominated by Francois Quesnay and Anne-Robert-Jacques Turgot. Physiocracy is an economic theory of wealth that stated that the growth of an economy of a nation is entirely derived from agriculture (Quesnay, 1759). The physiocrats believe that the development of a nation's economy depends largely on the growth of the country's agricultural sector. The physiocrats argue that a country's agricultural sector has a lasting contribution to economic growth and the sales of surplus yield is the only source from which a nation generate its revenue. They believe that a nation's wealth does not depend on its stock of gold and silver but rather its net product from agricultural sector. To them, the wealth of a nation is largely from value of agricultural produce which tends to be highly priced and its input bring about increase in output at an increasing rate, because the output in the sector is more than the corresponding input.

The theory divides the society into the productive class of farmers and tenants, land owners, and the sterile class comprised of shopkeepers and artisans. These classes are based on the belief that the wealth of the society relies on the labor of the productive class where each man can increase productivity. The labor of the productive class is managed by the proprietors and landowners while the sterile class is involved in the production of non-agricultural products but consume agricultural output. Physiocracy is characterized by five distinct features, namely including individualism and laissez-faire minimal regulation of commerce, private property ownership, diminishing returns, and the need for working capital and reinvestment of the same (Batia, 1978). However, this study adopted this theory because of its emphasis on productive work (especially agriculture as the source of a nation's wealth. The theory is criticized for overemphasizing on agriculture and ignoring the role of manufacturing in the economy as

well as perfectionism whereby they sought a perfect economic system or the absence of one

Lewis Theory of Impacting Economic Growth

Lewis theory link economic growth with agricultural sector, he assumes that surplus labour transfer from the agricultural sector to another sector promote economic growth (Lewis, 1979). He argued that underdeveloped economies consist of two sectors, the traditional sector characterized by zero marginal productivity of labour and the modern industrial sector which is typical of the Nigerian economy where they exist a backward rural sector and a well-developed capitalist sector (Onuoha, Kromtit and Abimiku, 2015). The primary focus of the model is the labour transfer and the growth of output and employment in the modern sector. In developing countries like Nigeria, the elasticity of labour supply is infinite in the backward sector that is unskilled labour is, available; in abundance. If development is to take place and become self- sustained, it will have to include the rural areas in general and agricultural sector in particular (Todaro and Smith, 2003). A major criticism of the Lewis model concerns his notion of "surplus labour". It was interpreted often as zero marginal productivity of agricultural labour. This situation is highly unlikely and was prone to vigorous attack by T. Schultz (1964). He did this by making available; evidence introduced from India which showed that withdrawal of large agricultural population did not result to agricultural output declining (Ranis, 2004).

Therefore, it is on the basis of this theories that this study seeks to analyze the impact of the agricultural sector on the Nigerian economic growth measured by the Gross Domestic Product (GDP). However, this study adopts the Physiocrate theory of economic growth because the Physiocrates believe that the agricultural sector is the bedrock for meaningful growth in an economy

EMPIRICAL REVIEW

A study carried out by Oluwatoyese and Applanaidu (2019) on the effect of the agricultural sector as the determinant of economic

growth, using a time series econometric model from 1980 to 2011 covering the period of 30 years. The study modeled several agriculture sector variables namely food/crop production, fishery, forestry, as the explanatory variables against the dependent variable, gross domestic product (GDP). Using Ordinarily Least Square) techniques, the study revealed a positive relationship between the agricultural sector and economic growth. The study also discovered agricultural sector as the determinant for exports, if given due attention in all ramification in terms of funding and the enabling environment for main actors in the sector to flourish.

Sunday, Samuel, and Inimfon, (2021) examined the Agricultural Sub Sectors' Outputs and Economic Growth in Nigeria. This research was carried out to provide empirical information on the relationship between agricultural sub sector's production and the growth of Nigerian economy (proxy by the per capita GDP). Time series data were employed in this research and the analyses of the data were done using descriptive tests, unit root tests, multivariate regression based on the autoregressive regressive distributed lag (ARDL) testing bound model approach to cointegration. The result of the data analysis indicated that the agricultural sub sector's production significantly influences the movement of the per capita GDP of Nigeria in both short and long-run periods. The implication of the finding justifies the need for agricultural production intensification as a panacea for sustainable economic growth in the country. The prioritization of the agricultural sector and intensifying agricultural production as means of accelerating economic growth in the country were strongly recommended.

Ahungwa, Ugural and Bekun (2017) examined trend analysis of the impact of agriculture to GDP for a period of 53 years, precisely between 1960 and 2012 using time series data. The finding from their work revealed that the agricultural sectors share of GDP experiences a decline, regardless of the retrogression. The agricultural sector still had a superior lead over other sectors, from 1960 to 1975.The study also depicts a fluctuation between the industrial sector around 1967 to 1989.The regression results, show that there exist a positive and significant relationship between the agricultural sector with GDP

accounting for 66.4 percent of the variation in the economy, and also displays the dominance of the agricultural sector relative to other sectors of the economy.

Nwankpa, (2017) in his study on the economic impact of livestock production on the economy, with special interest in Ikare-Akoko of Ondo State Nigeria, identified employment and income generation as the major benefits of livestock production, using data sources primarily from questionnaire, the objectives of the study were to assess the impact of livestock production. Data collected in assessing the impact of the livestock included piggery, fishery, poultry and snail. Descriptive statistics was used to analyze the data. The result of the study signified that employment and income generation are the major benefit of livestock production.

Olajide, (2019) in his studies of agricultural resources and economic growth in Nigeria also discovered a positive causality between GDP and agricultural output, where he used OLS econometrics techniques, precisely between 1970 and 2010. From his studies, it was revealed that agricultural sector accounted for about 35 percent of the variation in GDP. Even though the agricultural sector suffered a high level of setback, immediately after the discovery of oil in commercial quantity.

A research conducted by Emeh, (2017) covering a time span of 30 years within the period of 1981 to 2012, where he investigated the role of agriculture in economic growth and development. He examined the role that the agricultural sector played in the advancement of the Nigeria economy, considering the years of neglect by government and decision makers. Emeh's research use of econometrics to validate his hypothesis where he used the Solow growth model that included gross capital formation (GCF) as the proxy for capital, labor proxy by post-secondary enrollment, while agricultural output and economic growth and development was proxy by real gross domestic product (RGDP). The restricted Error Correction Approach was employed for the long-run relationship. The study revealed that agriculture plays a remarkable role in economic growth and development of Nigeria. From his findings, it was shown that agricultural sector still contributed to gross

domestic product, though, there has been a decline since the 1990's explained by the arrival of the new bride (oil discovery) in the late 1970's.

Onunze (2016) in his empirical work examined the impact of agricultural development on Nigerian growth within (1980 to 2014) period of 34 years. Over several decades, there have been many debates amid development economists, about whether agricultural sector holds the key to national development and industrialization. The study employs the use of OLS technique, by using agricultural development, capital formation, inflation rate and interest rate to investigate the question if the agricultural sector serves as an engine room to drive growth and development. The study revealed empirically that, there exist a positive relationship between the agricultural sector and economic growth.

Edeh, Ogbodo, Onyekwelu, (2020) carried out a study on the impact of Government Expenditure on Agriculture on Agricultural Sector Output in Nigeria. The present study evaluated the impact of government expenditure on agriculture on agricultural sector output in Nigeria for the period 1981-2018with time series data obtained from the Central Bank of Nigeria Statistical Bulletin and Annual Reports. Agricultural value added was specified as a function of labour force, capital expenditure, recurrent expenditure, agricultural loans, average annual rainfall, interest rate and economic reforms. The Augmented Dickey-Fuller unit root test used to test for stationarity of the data reveals that the time series data were stationary at I(0) and I(1). Bound test cointegration indicates a long run relationship in the model. The result of the ARDL model technique analysis reveals that capital expenditure is positively related to agricultural output and it is also statistically significant at 5 % in the current year (*P(t) = 0.0080*). It was understood that the impact of capital expenditure on agricultural output begins to weaken after one year (*P(t) = 0.0815*). However, recurrent expenditure has a negative and insignificant impact on agricultural output (*P(t) = 0.6657*). The study recommends that governments at all levels should intensify and increase expenditure on capital items in agriculture sector.

Peter, Tarila and Oghenefejiro, (2020), carried out a study on agricultural funding-based contributions and performance of Nigerian agricultural from 1986 to 2018, following the prescription of financial intermediation theory. It relies on ex-post facto research design, employs and makes use of data from the statistical bulletin of the Central Bank of Nigeria, 2018 and Work Bank Economic Outlook 2019. Total government expenditure (TGE), agricultural credits (ACG) and foreign direct investment (FDI) serve as the independent variables; while crop production (CRP), livestock production (LSP), forestry production (FRP) and fishing production (FSP) represent the dependent variables. The study utilizes Jarque-Bera, Breush-Godfrey, Breush Pagan Godfrey, and Ramsey reset for normality tests, Augmented Dickey-Fuller (ADF) technique for stationarity test, Fully Modified Ordinary Least Square (FMOLS) and Engle-Granger Single Equation Co-integration Tests for the search of possible link between the sets of variables. From the analyses, the results of the study reveal that TGE and AGS are significantly and positively related to CRP, LSP and FSP while FDI maintains a negative relationship with them. On another hand, TGE and FDI have negative relationship with FRP, but AGS is positively related to FRP. The Co-integration analysis reveals that there is a long run relationship between all the variables used in the four models. On this basis, the study concludes that agricultural funding-based contributions have significant and long run relationship with the performance of the Nigerian agricultural sector. The paper recommends that government should strengthen agricultural credit guarantee scheme and increase expenditures on the sector.

DEVELOPMENT CHALLENGES IN NIGERIAN AGRICULTURAL SECTOR

The Nigerian Agricultural sector is faced with a plethora of challenges.

The lack of adequate storage and processing facilities accounts for divergence between national food security and household food security. Even if the total production of food seems adequate at the aggregate level, it will not lead to significant improvement in food security unless the food is available for consumption at the right time

and in the right form. Whereas food must be consumed on a daily basis, production has a different specific time profile. Storage and processing are critical in ensuring that the commodities produced at a particular period are available for consumption whenever and wherever they are required.

Physical infrastructure, such as roads and railway system, educational and health facilities, social services such as potable water and electricity and communication system are grossly inadequate. According to Olomola, (2007), agricultural performance in Nigeria is greatly impaired by the low level of development of infrastructure. In the rural areas where majority of the smallholders operate, inadequate infrastructure constitutes a major constraint to agricultural investment, production and trade. In many parts of the country physical and marketing infrastructure is poorly developed, storage facilities are rudimentary and access to information and markets is highly restricted. The situation represents the urban bias in the pattern of development in the country. Infrastructure inadequacy is mirrored by restricted access to the markets, which limit the availability of agricultural products in many areas, and reduces farmers' income. The Infrastructure constraint has persisted due to government neglect, poor governance, poor political leadership, poor maintenance culture and poor funding.

Generally, a major problem inhibiting investment in agriculture is the escalating cost of major farm inputs. Average prices of major farm inputs such as hoe, hatchet, sprayer, tractor, and agrochemicals have been rising over the years. The rising prices of inputs are the results of instability in the factor markets arising from instability in macroeconomic policy actions leading to inflationary pressures, high interest rates, and volatile exchange rate. Invariably, the deficiency in macroeconomic policy environment constituted a major constraint to the growth of investment in production of agricultural products (Chemonics, 2003).

Technical constraint in Nigeria affects both the upstream and the downstream segments of agriculture. The constraint manifests in poor technology, poor quality of raw materials and inadequate supply of modern inputs. The main causes of the constraint include low support

from government, poor government policy, poverty, low level of awareness, lack of adequate research and increases in the prices of inputs.

This is a major setback as far as agricultural production is concerned in Nigeria because it affects both national food security and household food security. In a situation of bountiful harvest, inefficient utilization and wastages become inevitable due to poor storage system. Harvested produce are either sold at low prices (law of demand) or used up by households within a short time. This situation tends to create scarcity when the agricultural products are most needed for consumption. Good storage and processing are therefore required to ensure that food is available in good condition whenever it's required. Simple and effective method for storing perishable food like tubers, fruits and vegetables are not really developed and well known in Nigeria when compare to that of grains (Oni, 2013).

Nigeria's agricultural research system, the largest in sub-Saharan Africa, has stagnated and become disconnected from the priorities of Nigerian farmers. The system has been starved of federal funding and become overly reliant on foreign donor funds (Downie, 2017)

MODEL SPECIFICATION

Over the years, economic growth models developed by Barro (1990); Mankiw, Romer and Weil (1992) have been used by many researchers and this provided the theoretical framework for this study. To analyze the impact of each agricultural subsector on the Nigerian economy's growth, four (4) variables which are the four agricultural components are considered as the explanatory or independent variables while GDP growth rate, proxy for Economic growth is the explained or dependent variable. The functional form of the model is expressed as:

GDP = f (CROPS, LIVESTOCK, FOREST, FISHERY) …… (1)

Where:

GDP = Gross Domestic Product (GDP)

Crops = Crop production

Livestock = Livestock production

Forest = Forestry
Fishery = Fishery
While the econometric model is represented as follows:

$$GDP = B_o + B_1CROPS + B_2LIVESTOCK + B_3FOREST + B_4FISHERY + \mu \quad \ldots\ldots\ldots (2)$$

μ=Error term
β_0, β_1, β_2, β_3, are the coefficients of the model
A priori Expectations: β_1, β_2, $\beta_3 > 0$,

RESULT AND DISCUSSION OF FINDINGS

Testing for Stationarity

Unit Root Test for Stationarity

The unit root test provided the order of integration at which the variables can be stationary. The tests were performed on all series (GDP growth rate, Crop production, Livestock, Forestry and Fishery) using the Augmented Dickey-Fuller Unit root test. The results of the Augmented Dickey fuller (ADF) unit root test have presented in table 1 below:

Table 1:
Augmented Dickey Fuller (ADF) Unit Root Test Result

Variables	ADF Statistics	Critical Values	Order of integration	Remark
GDP	-4.613745	-2.957110	[0]	Stationary
Crop	3.817702	-2.986225	[0]	Stationary
Livestock	4.234033	-2.986225	[0]	Stationary
Fishery	3.601884	-2.991878	[0]	Stationary
Forestry	7.363094	-2.960411	[0]	Stationary

Source: Author's Computation from Eviews, 10

The Augmented Dickey-Fuller (ADF) unit root test results reported in table 1 above revealed that, all the variables were stationary at level at 5% level of significance.

Test for Co-Integration

Having ascertained the unit root properties of series and that the variables are not stationary, it is therefore imperative to use Co-Integration analysis to estimate the long run relationship between the variables. To analyze this long-run relationship or convergence among the variables used in the model, the Johansen Co-Integration was employed. The Co-Integration test (Johansen) for a long run relationship can be carried out by comparing the null hypothesis (H_0) with its trace statistic estimated value and the related critical values. If the trace statistics is greater than the critical value, the null hypothesis is rejected meaning the series are Co-Integrated; otherwise it is accepted. The Co-Integration test result is presented in table 2 below:

Table 2:
Co-Integration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.997588	269.4738	69.81889	0.0000
At most 1 *	0.803814	82.62930	47.85613	0.0000
At most 2 *	0.409663	32.13979	29.79707	0.0264
At most 3 *	0.386786	15.80086	15.49471	0.0450
At most 4	0.020451	0.640559	3.841466	0.4235

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

Source: Author's computation using Eviews 10

From Table 2, the Trace test indicated 4 Co-Integrating equation(s) at the 0.05 level of significance as revealed by the critical values of 69.81889, 47.85613,29.79707 and 15.49471 which are less than the trace statistics of 269.4738, 82.62930, 32.13979 and 15.80086. The Co-Integrating equations are also reflected in the MacKinnon-Haug-Michelis probability values of 0.0000, 0.0000, 0,0264 and 0.0450 falling

below 5 % level of significance. The Maximum Eigen Values on the other hand revealed 2 Co-Integrating equation also at 5 % levels.

Error Correction Mechanism (ECM)

Table 3: Correction Mechanism (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16455.52	152839.1	0.107666	0.9151
D(FORESTRY)	-4.593964	9800.998	-0.468724	0.6432
D(FISHERY)	67.26323	375.7124	0.179029	0.0293
D(CROP)	-2.625762	52.92557	-0.049612	0.9608
D(LIVESTOCK)	5.052652	1526.171	0.331067	0.0432
ECM(-1)	-0.893862	0.194443	-4.597034	0.0001
R-squared	0.449126			
Adjusted R-squared	0.343188			
S.E. of regression	728439.0			
F-statistic	98.34812			
Durbin-Watson stat	2.035920			

Source: Author's computation using Eviews 10

Table 3 showed the result of the Error Correction Model. The coefficient of the Error Correction Term is negative (-0.893862) and highly significant at 5 % level of significance. This fulfilled the conditionality for ECM that it must lie between zero and one and must be significant as well. The implication of the ECM result is that it will rightly act to correct any shocks from the long-run equilibrium up to the tune of 89% representing the speed of adjustment. This significant value of the ECM explained the existence of long-run equilibrium relationship between GDP growth rate and the four agricultural subsectors (crops, livestock, forestry and fishery). The coefficients of forestry and crops are negative (-4.593984 & -2.625762) which is a negation to apriori

expectation and statistically insignificant with P-value 0.64 and 0.96 respectively which is greater than 0.005 level of significance. This implied that 1% increase in forestry and crop production decreased economic growth by 4% and 2% respectively.

The coefficients of livestock and fisheries are positive which agree with appriori expectation and statistically significance with the P-value of 0.0432 and 0.0293 respectively. This implies that a 1% increase in livestock and fishery production will lead to an increase in economic growth by 6% and 9% respectively. The results of the entire model in the short run revealed that the exogenous variables did not all have the expected signs with forestry and crop having the wrong sign (that is, negative instead of positive). An improvement in R-squared was recorded after adjustment; that is 44% against 27% before adjustment. The coefficient of determinant R-square shows a 44% change in economic growth which was as a result of changes in the various sectors of the agriculture (crop production, fishery, forestry and livestock production). F-statistic also revealed that the overall model was significant after adjustment. This established a long-run equilibrium relationship among the variables. The result reveals that the findings can be used for forecasting and policy recommendations. The Durbin-Watson Statistics is 2.035920 which shows the absent of Autocorrelation among the variables.

CONCLUSION AND RECOMMENDATIONS

This study investigates the impact of the agricultural sector in Nigeria economy. The research findings revealed that there is a positive and significant relationship between economic growth and two of the four independent variables employed (livestock production and fishery production) while a negative relationship existed between crop production and forestry. Forestry in itself has numerous benefits if attention is focused on it. It helps in provision of food and water, shelter and clothing as well as energy and medicine. crop on the other hand if developed can increase household's income by marketing the products, broaden the revenue base of government and contribute to economic growth.

This study therefore concludes that livestock and fishery subsectors have positive impacts on the economic growth of Nigeria with fishery subsector taking the lead. Crop and forestry on the other hand have impacted negatively on economic growth of Nigeria as revealed by the study. The study therefore recommended that:

1. The Nigerian government should review its policies and programs on forestry and crop sub-sector by making more stringent regulations against deforestation and also by spending more subsidies on agricultural inputs since the result of the study revealed that they do not have a positive impact on Nigerian economic growth.
2. The Nigerian government should encourage farmers to increase productivity of fishery and livestock by granting them loan to enable them produce on large scale with the objectives of increasing Nigerian economic growth, since the study revealed that they have positive impact on the economic growth.

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