International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

The Impact of Agricultural Productivity on Economic Growth in Nigeria (1990-2023)

NELSON CHRISTOPHER
Department of Economics Bingham University, Karu.Nasarawa State, Nigeria

ISAAC TERHEMEN NUNGUL, PhD
Planning Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria.

MODUPE OMOTAYO AIGBA
Department of Economics Bingham University, Karu.Nasarawa State, Nigeria

Date of Submission: 01-11-2024 Date of Acceptance: 11-11-2024

Abstract
This study investigates the impact of agricultural productivity on economic growth in Nigeria, focusing on the relationship between key agricultural sub-sectors and real gross domestic product (RGDP). production to GDP (FSGDP). The results demonstrate a significant positive relationship between both CGDP and FSGDP with RGDP, indicating that increases in agricultural productivity contribute substantially to economic growth. However, the analysis also reveals that the magnitude of impact varies across sub-sectors, with fishery production showing a stronger effect on RGDP than crop production. Despite numerous governmental interventions aimed at enhancing agricultural output and reducing poverty, the study identifies persistent challenges within the sector that undermine its potential to drive economic growth. These findings highlight the need for more effective policy frameworks that not only support agricultural productivity but also address the structural inefficiencies impeding the sector's development. The Nigerian government should prioritize investments in fishery and crop production to boost economic growth and GDP. Fishery production, with a higher coefficient for FSGDP, requires modern equipment, aquaculture facilities, and sustainable practices. Crop production, a critical component of Nigeria's agricultural output, requires modern farming techniques, high-quality seeds, and irrigation infrastructure.Utilizing an ex-post facto research design, the study analyzes time series data from the Central Bank of Nigeria's statistical bulletins, employing the Fully Modified Ordinary Least Squares (FMOLS) method to examine the dynamics between RGDP, the ratio of crop production to GDP (CGDP), and the ratio of fishery

Keywords: Agricultural Productivity, Economic Growth, Fully Modified Ordinary Least Squares (FMOLS)
Jel Code: Q3, O4, C13

I. INTRODUCTION

Gross domestic product (GDP) increases as a result of heightened production of goods and services, which is often driven by a reduction in corporate income tax rates and the provision of various incentives. Proponents of this theory introduced the concept of a subsistence level to explain their perspective. According to this concept, when real GDP surpasses the subsistence level, individuals perceive themselves as having more than enough resources, leading to an increase in population. This population growth subsequently causes real GDP to decline back to the subsistence level.

Prior to the Great Depression of the 1930s, economic management by governments was predominantly characterized by a laissez-faire approach, which strongly opposed government intervention in the market. However, during the Second World War, the Keynesian economic model gained prominence, marking a paradigm shift away from the reliance on the invisible hand of the market towards a more active government role in economic management. Through legal frameworks, regulatory actions, and the application of fiscal policy measures, governments began to intervene to stabilize economic cycles. The Keynesian philosophy became widely accepted as a means of maintaining steady economic growth, achieving full employment, and ensuring price stability. Additionally, it aimed to reposition the private sector as a key driver of economic growth by providing incentives to attract private investment in

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

specific sectors.In Nigeria, government expenditure has consistently increased, driven by substantial revenues from the production and sale of crude oil and the growing demand for public goods and utilities, such as roads, communication, power, education, and health services. Furthermore, there has been a rising need to enhance both internal and external security for the populace and the nation. Statistical data indicates that total government expenditure, encompassing both capital and recurrent spending, has shown a steady upward trend over the past three decades. For example, total recurrent expenditure rose from N3,819.20 million in 1977 to N4,805.20 million in 1980, and further increased to N36,219.60 million in 1990. By 2000, recurrent expenditure had reached N461,600.00 million and continued to rise to N1,589,270.00 million by 2007. Similarly, the breakdown of recurrent expenditure reveals increased spending on defense, internal security, education, health, agriculture, construction, and transport and communication over the period under review (NBS, 2010). Government capital expenditure followed a similar trend, growing from N5,004.60 million in 1977 to N10,163.40 million in 1980, and further to N24,048.60 million in 1990. The value of capital expenditure reached N239,450.90 million in 2000 and N759,323.00 million in 2007, reflecting increased investment in various sectors such as defense, agriculture, transport and communication, education, and health (Abu and Abdullahi, 2010).

Despite the substantial increase in government efforts to foster economic growth in Nigeria have so far been largely unsuccessful. According to Onumadu and Inyang (2015), every attempt by successive governments and international donor agencies to and stimulate growth has not yielded the desired results. The majority of Nigeria's poor population resides in rural areas, and a significant proportion of these individuals are small-scale farmers (Eboh et al., 2012).

To aid agricultural value chain development in Nigeria, several interventions have been introduced by different administrations. Among these interventions is the Fadamaprogramme, which began in 1990 with the implementation of Fadama I by the World Bank. Following the perceived success of Fadama I, the World Bank launched Fadama II, and, subsequently, the third phase, Fadama III, or the Third National Fadama Development Project, became disbursement-effective on March 23, 2009. The initial phase, Fadama I, focused exclusively on irrigation farming, while Fadama II and Fadama III were geared towards agricultural diversification, providing financial support for a range of livelihood activities identified and designed by the beneficiaries themselves, with appropriate facilitation support (Ukaa, 2015).

In addition to the Fadamaprogramme, the National Economic Empowerment and Development Strategy (NEEDS) I and II (2001-2007) led to the creation of the Food Security Strategy Document in 2009, which emphasized the need for a value chain approach to agricultural development. The National Policy on Integrated Rural Development was also formulated to integrate the rural economy into the broader national development process. These initiatives aimed to reduce rural-urban migration, address the historical neglect of the agricultural sector through infrastructure provision, and empower the rural population to generate wealth and alleviate poverty. Notable programs implemented in this regard spanned various areas of agricultural development, including production, marketing, storage, and financing.

These interventions aligned with Nigeria's Vision 20:2020 implementation plan, which included specific programs for developing the agricultural sector, such as large-scale processing of cassava and rice, and increasing local fish seed production from 5 million to about 20 million annually. In 2010, the Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) was established by the Central Bank of Nigeria to address weaknesses in existing agricultural financing schemes, aiming to meet the financial needs of smallholder farmers, agro-processors, and agribusinesses involved in the agricultural value chain. The Agricultural Transformation Agenda (ATA), launched in 2012, was designed to make the agricultural sector the driver of development and position Nigeria as a key player in the global food market. According to Africa Lead-IFPRI (2012), the ATA improved bank lending to agriculture from 0.1% in 2011 to 5% in 2014, reduced the food import bill by N466 billion in 2014, and boosted agricultural output by 11% between 2011 and 2014. More recently, the Agricultural Promotion Policy (APP) aimed to enhance food supply and output quality, while the Economic Recovery and Growth Plan (ERGP) focused on achieving self-sufficiency in tomato paste, rice, and wheat by 2020 (FRN, 2017).

Despite these numerous efforts, the agricultural sector in Nigeria continues to face significant challenges that hinder its potential to contribute to economic growth effectively. This study seeks to examine the impact of agriculture

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

productivity on economic growth in Nigeria, identifying the key factors influencing this relationship and exploring potential strategies for improving the effectiveness of government expenditure in promoting agricultural development and overall economic growth.

II. LITERATURE REVIEW

Conceptual Review

Agricultural production

Chrispeels and Sadava (2014) conceptualized agricultural production as the production of any growing grass or crop attached to the surface of the land, whether or not the grass or crop is to be sold commercially, and the production of farm animals whether or not the animals are to be sold commercially. Acquaah (2012) was more elaborate by conceptualizing agricultural production as commercial aquaculture and algaculture, meaning the farming of algae, apiculture, animal husbandry or poultry husbandry; the production for a commercial purpose of timber, field crops, tobacco, fruits, vegetables, nursery stock, ornamental shrubs, ornamental trees, flowers, or sod; the growth of timber for a non-commercial purpose if the land on which the timber is grown is contiguous to or part of a parcel of land under common ownership that is otherwise devoted exclusively to agricultural use; or any combination of such husbandry, production or growth; and includes the processing, drying, storage, and marketing of agricultural products when those activities are conducted in conjunction with such husbandry, production, or growth.

The workable definition of agricultural production as synchronized from the previous definition is the production for commercial purposes of crops, livestock and livestock products, and includes the processing or retail sales by the producer of crops, livestock or livestock products. Simply put, it is the production of plants and animals useful to humans, including the preparation, planting, cultivating of these products or any other practice necessary to accomplish production. The main components of agricultural production according to Hubert and Quist (2010) are livestock production, crop production, poultry, fishery and forestry.

Crop production

James Lind Institute (2019) defines crop production as the system of agriculture that is concerned with the production of crops for food and fiber. Production is a common agricultural practice followed by worldwide farmers to grow and produce crops to use as food and fibre. This practice includes all the feed sources that are required to maintain and produce crops. Some of the practices used during crop production include preparation of the soil, sowing of seeds, irrigation, and application of manure, pesticides, and fertilizers to the crops, protecting and harvesting crops, storage and preserving the produced crops (James Lind Institute, 2019).

In the case of small-scale cultivation, farmers use the harvested crop for themselves while large-scale production is mainly for marketing. Thus the cultivators have to store the grains. For this, proper storage space has to be arranged. Inadequate storage space and improper storage methods can lead to a huge grain loss. In addition to pest and rodents, microbes like bacteria, fungi, and environmental conditions such as moisture and temperature might attack the stored grains. Therefore, proper treatment is required before the grains are stored (Acquaah, 2012).

Fishery production

Fish are a very high source of proteins and have great nutritional value. About half the fish consumed globally is raised through fish farming. Some of the common fish species that are farmed particularly in the Northern hemisphere include tuna, salmon, halibut, cod, and trout. Commercial fisheries include wild fisheries and fish farms, both in freshwater bodies (about 10% of all catch) and the oceans (about 90%). About 500 million people worldwide are economically dependent on fisheries (Abbas & Ahmed, 2016).

Fish production was initially dependent on fish capturing. However, most of the captured fish were used for industrial purposes and were hardly consumed by man. Therefore, an alternative method to increase fish production for used as food for man was devised that includes farming and husbandry of economically important aquatic organisms, this is known as aquaculture. The aqua-farms can be in the form of mesh cages submerged in water or concrete enclosures built on land. However, the fish farms can damage the ecosystem by introducing diseases, pollutants and invasive species.

Economic growth

Economic growth, according to Fadare (2022), has long been regarded as an important goal of economic policy, with a large body of study devoted to explaining how it may be achieved. Scholars have paid a lot of attention to economic growth. According to Khorravi and Karimi (2022), economic growth is largely tied to labour and capital

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

as forces of production in their study. The rise of endogenous growth theory has prompted experts to challenge the significance of other factors in understanding the phenomena of economic growth (Bogdanov, 2021). The expansion of a country's potential GDP or output is defined as economic growth. For example, if the social rate of return on investment is higher than the private rate, tax measures that support it can boost growth and utility levels.

In growth models that incorporate public services, the optimal tax policy lingers on the characteristics of services (Olopade&Olopade, 2010). Economic growth is defined by Arthur and Sheffrin (2003) as the number of products and services produced. Productivity improvements, which include creating goods and services with fewer inputs of labour, capital, energy, and materials per unit of production, are the primary drivers. Its scope includes the process and policies by which a nation improves the economic, political and social well-being of its people. Muritala and Taiwo (2011) defined a country's economic growth as a long-term rise in capacity to supply increasingly diverse economic goods to its population, this growth capacity is based on advancing technology and the institutional and ideological adjustment that is demanded. In other words, economic growth refers to an increase in a country's potential Gross Domestic Product (GDP), although this differs depending on how the national product has been measured.

Onunze (2012) defined economic growth as an increase in potential output arising from changes in factor supplies or the productivity of factors. However, Lewis (2004) defined the economic growth of a country as a long-term rise in capacity to supply increasingly diverse economic goods to its population. This growing capacity is based on advancing technology and the institutional and ideological adjustments that it demands. All three components of the definition are important. The sustained rise in the supply of goods is the result of economic growth, by which it is identified. Some small countries can provide increasing income to their population because they happen to possess a resource (minerals, location, etc.) exploitable by more developed nations that yield a large and increasing rent. Advancing technology is a permissive source of economic growth, but it is only a potential, a necessary condition, in itself not sufficient (Koutsoyiannis, 2006).

National Agricultural Technology and Innovation Policy (NATIP) of 2022

The FGN recently launched the national Agricultural Technology and Innovation Policy (NATIP), which will be implemented from 2022 through 2027. The policy is a deliberate government effort to deploy knowledge and good agricultural practices to accelerate agricultural development. It prioritizes the rapid development of knowledge and technology to boost productivity and create at least 12 million jobs. Specifically, NATIP adopts some of the previous policies' strategies, such as private sector participation and fertilizer subsidies to mitigate the impact of the COVID-19 pandemic. Ensuring long-term food production would be achieved through sustained collaborative efforts with relevant stakeholders to implement fertilizer and seed policies, which are critical to regulating and easing access to high quality inputs and improving the international competitiveness of Nigeria's agricultural commodities. The NATIP effectively rebrands the PFI and implements the National Fertilizer Quality Control Act No 2019; the regulations stipulate the development of organic fertilizer and formulation of crop/soil specific fertilizer. The NATIP focuses on gradual deregulation of fertilizer blending plant imports to incentivize private sector investments in local fertilizer production and distribution. At the same time, the NATIP intensifies local sourcing of blending materials under the supervision of the ministry of Mines. Over 200,000 jobs are expected to be created across the country as a result of improved production and distribution of quality inputs (FMARD, 2022).

Theoretical Review

Peacock-Wiseman (1961)

The Peacock-Wiseman thesis (1961), developed by Peacock and Wiseman in their study of public expenditure in the UK, offers a socio-political explanation for the increase in public expenditure. The thesis posits that government expenditure rises with increases in national income. However, to secure re-election, political leaders often feel compelled to provide additional infrastructure, thereby convincing the electorate that their needs are being met. Despite this, citizens are generally reluctant to pay higher taxes. This resistance to taxation results in lower state revenues, forcing the government to bear the cost of providing more public facilities, which leads to a rapid increase in government expenditure and an expansion of the public sector. Thus, economic growth is seen as a determinant of government size.

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

The theory further suggests that the increase in public goods is driven by heightened demand from organized industrial workers, which comes at the expense of private sector growth (Wagner, 1958). It argues that the government sector tends to grow more rapidly than the overall economy. In contrast, Bureau Voting Theory dismisses the role of industrialization and urbanization, arguing instead that public sector expansion is primarily driven by an artificial demand for government services created by self-interested government employees (Niskanen, 1971). Fiscal Illusion Theory attempts to explain the growth of government by linking the complexity of tax systems to the concealment of the true costs of public goods, suggesting that such systems can obscure these costs and thus encourage their expansion (Goetz, 1977). However, empirical support for these theories has been mixed, leading to a decline in their influence over time.

The conservation model

The conservation model of agricultural development was formulated by economists Vernon Ruttan and Yujiro Hayami in their 1971 work on strategies for agricultural development. This model evolved from the advancements in crop and livestock management associated with the English Agricultural Revolution and the concept of soil exhaustion. The conservation model emphasizes the development of increasingly complex land and labor-intensive cropping systems, the production and utilization of organic manures, and labor-intensive capital formation, particularly in terms of physical infrastructure to optimize the use of land and water resources.

According to the Food and Agriculture Organization (FAO, 2022), conservation agriculture is a farming system designed to prevent the loss of arable land while also regenerating degraded lands. It advocates for maintaining a permanent soil cover, minimizing soil disturbance, and diversifying plant species. This approach enhances biodiversity and natural biological processes both above and below the ground, contributing to improved water and nutrient use efficiency, as well as sustained crop production. The principles of conservation agriculture are universally applicable to all agricultural landscapes and land uses, though they must be adapted to local conditions. Soil interventions, such as mechanical disturbance, are minimized or avoided entirely, while external inputs—such as agrochemicals and mineral or organic plant nutrients—are used optimally and in quantities that do not disrupt biological processes.

Udemezue and Osogbue (2018) state that the conservation model was the only approach to agricultural intensification available to most farmers globally. Agricultural development within this model has, in many regions, been capable of sustaining an annual growth rate in agricultural production of approximately 1.0% over extended periods. However, this rate is not aligned with modern growth rates in the demand for agricultural output, which typically range between 3-5% in developing countries. Within the conservation model, variations in agricultural development are primarily attributed to environmental factors, contrasting sharply with models that explain geographical differences in economic development levels and rates mainly through urban-industrial development.

The conservation model is pertinent to the present study as it aims to enhance agricultural production by promoting practices such as maintaining a permanent soil cover, minimizing soil disturbance, and diversifying plant species. These practices align with the agricultural strategies advocated by Nigeria's Federal Ministry of Agriculture and Rural Development.

Empirical Review

Olajide et al. (2012) analyze the relationship between agricultural resources and economic growth in Nigeria using the Ordinary Least Squares (OLS) regression method. The results demonstrate a positive cause-and-effect relationship between agricultural output and gross domestic product (GDP) in Nigeria. The study estimates that the agricultural sector accounted for a 34.4 percent variation in GDP between 1970 and 2010. The findings also highlight that the agricultural sector experienced significant neglect during the oil boom of the 1970s. To enhance agricultural productivity, the study recommends that the government provide special incentives to farmers, ensure adequate funding, and invest in infrastructural facilities such as good roads, potable water, and electricity.

Tolulope and Chinonso (2013) examined the contribution of the agriculture sector to economic growth in Nigeria using a growth accounting framework and time series data from 1960 to 2011. The findings indicate that the agriculture sector has consistently and positively contributed to economic growth in Nigeria, underscoring its crucial role in the economy. The significance of agriculture's contribution to economic growth is further supported by a causality test, which reveals that agricultural growth Granger-causes GDP growth, with no evidence of a reverse

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

relationship. The sector's resilience is demonstrated by its ability to recover more quickly from shocks compared to other sectors, such as those experienced during the civil war (1967-1970) and the economic recession (1981-1985). The analysis also shows that the crop production subsector is the primary driver of growth within the agriculture sector, suggesting that the sector's overall growth is heavily reliant on this subsector. This highlights the need for greater investment and attention to other subsectors, such as livestock, fisheries, and forestry, to enhance the agriculture sector's contributions to the Nigerian economy.

Bridget, Simeon, and Joseph (2021) examined the association between government agricultural spending and agricultural productivity in Nigeria using annual time series data from 1981 to 2019. Descriptive statistics, the ADF test, the VEC Granger Causality/Block Exogeneity Wald test, the Johansen co-integration test, the vector error correction test, impulse response, and variance decomposition were some of the techniques employed in the study. None of the variables were stationary at the research level, but after the first difference, they all started to become stationary. The study also found that government agricultural expenditures in Nigeria increased agricultural productivity, but only in the long run. The study also found that there is a positive response of agricultural output to shocks in government agricultural spending over the projection period and that there is a bidirectional relationship between government agricultural spending and agricultural output in the nation with a 10% level of significance.

Nelson et al (2023) studied Impact of Government Spending on Agricultural Output in Nigeria: (1990-2022) the study utilized data spanning from 1990 to 2022 to investigate the impact of government expenditure on agricultural output in Nigeria. Employing the Autoregressive Distributive Lag (ARDL) methods, the study revealed a negative relationship between both government credit to agriculture and government expenditure on agriculture with agricultural output. The paper further recommended that Effective management of allocated resources in the agricultural sector is crucial, as merely increasing the budgetary allocation to the sector does not guarantee improved performance. To enhance the sector's functioning, consistent implementation of government policies and programs is essential also Many farmers are hesitant to seek loans from financial institutions due to concerns about collateral security and high interest rates. Therefore, the government should enact legislation that fosters a favorable lending environment for agricultural investments. Additionally, significant funding should be directed towards banks specializing in agriculture, such as Agricultural Development Banks (ADBs) and similar institutions, to support farming operations.

III. METHODOLOGY

This study employed an ex-post facto research design, involving the collection and analysis of existing data. Variables such as Real Gross Domestic Product, Ratio of Crop Production to GDP, Ratio of Fishery Production to GDP were utilized, with data sourced from the Central Bank of Nigeria statistical bulletins, providing reliable time series data. The data analysis employed the Fully Modified Ordinary Least Squares (FMOLS) test, allowing for the examination of relationships and dynamics among the variables under investigation. The study adopted the Basic Needs Theory as a theoretical frame work which identified immediate basic needs as food (including water), shelter and clothing, sanitation, education, and healthcare. According to the theory, the inability of the individual to satisfy these needs.

As proxy, the implicit function is

RGDP = CGDP, FSGDP

Where:

RGDP= Real Domestic Product GDP (%)

CGDP = Ratio of Crop Production to GDP (%)

FSGDP = Ratio of Fishery Production to GDP (%)

It is expressed explicitly as

$RGDP_t = \alpha_0 + \beta_1 CGDP_t + \beta_2 FSGDP_t$

Where:

t = Time Trend

α_0 , = Intercept or Constant Parameter

$\beta_1 - \beta_2$ = parameter estimates of the regressors

μ_t = Error Term or white noise.

IV. RESULTS AND DISCUSSION

Table 1: Descriptive Statistics

	RGDP	FSGDP	CGDP
Mean	45262.92	123.9788	79.92529
Median	42044.78	110.9550	79.21000

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

Std. Dev.	20541.57	43.63402	20.59991
Skewness	0.167130	0.394705	0.058094
Kurtosis	1.396003	1.570479	1.853812
Jarque-Bera	3.803094	3.777822	1.880266
Probability	0.149337	0.151236	0.390576
Observations	34	34	34

Source: Author's Computation, using E- views 12, 2024

The table provides summary statistics for three variables: RGDP, FSGDP, and CGDP. These variables represent different economic measures, Real Gross Domestic Product (RGDP),Ratio of Fishery Production to GDP (FSGDP), and Ratio of Crop Production to GDP (CGDP).

The mean values for RGDP, FSGDP, and CGDP are 45,262.92, 123.9788, and 79.92529, respectively. This indicates that, on average, RGDP has the highest value among the three variables, suggesting it is the largest economic measure in absolute terms. The median values for RGDP, FSGDP, and CGDP are 42,044.78, 110.9550, and 79.2100, respectively. The medians are close to the means, indicating a relatively symmetric distribution of these variables.

The standard deviations are 20,541.57 for RGDP, 43.63402 for FSGDP, and 20.59991 for CGDP. RGDP has the largest standard deviation, suggesting that it has the greatest variability among the three variables. The skewness values for RGDP, FSGDP, and CGDP are 0.167130, 0.394705, and 0.058094, respectively. All three variables have skewness values close to zero, indicating that their distributions are approximately symmetric and are positively skewed.

The kurtosis values are 1.396003 for RGDP, 1.570479 for FSGDP, and 1.853812 for CGDP. These values are below 3, which suggests that the distributions of these variables are platykurtic, meaning they have lighter tails than a normal distribution.

The Jarque-Bera statistics for RGDP, FSGDP, and CGDP are 3.803094, 3.777822, and 1.880266, respectively. This test assesses whether the data follows a normal distribution. The probability values associated with the Jarque-Bera test are 0.149337 for RGDP, 0.151236 for FSGDP, and 0.390576 for CGDP. Given that these values are greater than the common significance levels (e.g., 0.05 or 0.01), we fail to reject the null hypothesis of normality. This suggests that the distributions of RGDP, FSGDP, and CGDP do not significantly deviate from a normal distribution.

The table's statistics indicate that RGDP, FSGDP, and CGDP have distributions that are approximately symmetric and do not deviate significantly from normality. The variability of RGDP is notably higher than that of FSGDP and CGDP, which may reflect differing economic dynamics captured by each measure. Further analysis could explore the relationships between these variables and their implications in the context of the study.

Unit Root Test Results

This section presents the results of the Augmented Dickey-Fuller (ADF) test conducted to assess the stationarity of the variables: RGDP, FSGDP, and CGDP. Stationarity is a crucial property in time series analysis, as non-stationary data can lead to spurious regression results and unreliable statistical inferences. The ADF test helps determine whether a variable is stationary or if it has a unit root, indicating non-stationarity.

Table 1: Summary of Unit Root Test Result

Variables	ADF test statistics	Critical values	Order of integration	Prob value
RGDP	-3.082960	-2.957110**	I(1)	0.0380
FSGDP	-4.580759	-4.273277*	I(1)	0.0314
CGDP	-8.707854	-3.653730*	I(1)	0.0000

Note: The tests include intercept and trend; ** significant at 1%; ** significant at 5%*

Source: Author's Computation, using E- views 12, 2024

The ADF test results indicate that the variables RGDP, FSGDP, and CGDP are non-stationary in their levels but become stationary after the first difference, as denoted by their order of integration I(1). The rejection of the null hypothesis for all three variables at the 5% significance level

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

(and at the 1% level for FSGDP and CGDP) suggests that these economic time series do not contain a unit root when differenced once. This finding implies that the data can be used in further econometric modeling and analysis, provided that the stationarity requirement is met after differencing.

Fully modified ordinary least square (FMOLS)

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FSGDP	411.2343	63.09102	6.518111	0.0000
CGDP	109.259	137.2526	0.796043	0.0323
C	-15302.64	4658.462	-3.28491	0.0026
R-squared	0.974363	Mean dependent var		45984.14
Adjusted R-squared	0.972654	S.D. dependent var		20418.24
S.E. of regression	3376.491	Sum squared resid		3.42E+08
Long-run variance	28006452			
F-statistic	138.5397			
Prob(F-statistic)	0.0000			

Source: Author's Computation, using E- views 12, 2024

The table provides the results of a regression analysis, which appears to model the relationship between an endogenous variable RGDP (dependent variable) and two exogenous variables (independent variables), FSGDP and CGDP, with an intercept term (C). The table includes key regression outputs such as coefficients, standard errors, t-statistics, and probability values, as well as overall model fit statistics The coefficients represent the estimated change in the dependent variable for a one-unit change in the respective independent variable, holding other variables constant. FSGDP coefficient is 411.2343, indicating that for every one-unit increase in FSGDP, the dependent variable increases by approximately 411.23 units, ceteris paribus. The coefficient is 109.259, suggesting that for every one-unit increase in CGDP, the dependent variable increases by approximately 109.26 units, ceteris paribus. Finally C (Constant) intercept coefficient is -15,302.64, representing the estimated value of the dependent variable when all independent variables are zero.

The standard error is 63.09102, indicating moderate precision of the FSGDP coefficient estimate while the standard error is 137.2526, suggesting less precision in estimating the effect of CGDP. And the standard error of the intercept is 4,658.462, reflecting variability in estimating the intercept.

The probability values (p-values) associated with each t-statistic indicate the likelihood of observing the estimated effect if the null hypothesis were true. The p-value of FSGDP and FSGDP are 0.0000 and 0.0323 respectively suggesting a highly significant effect at all conventional significance levels 5%, level of significance.

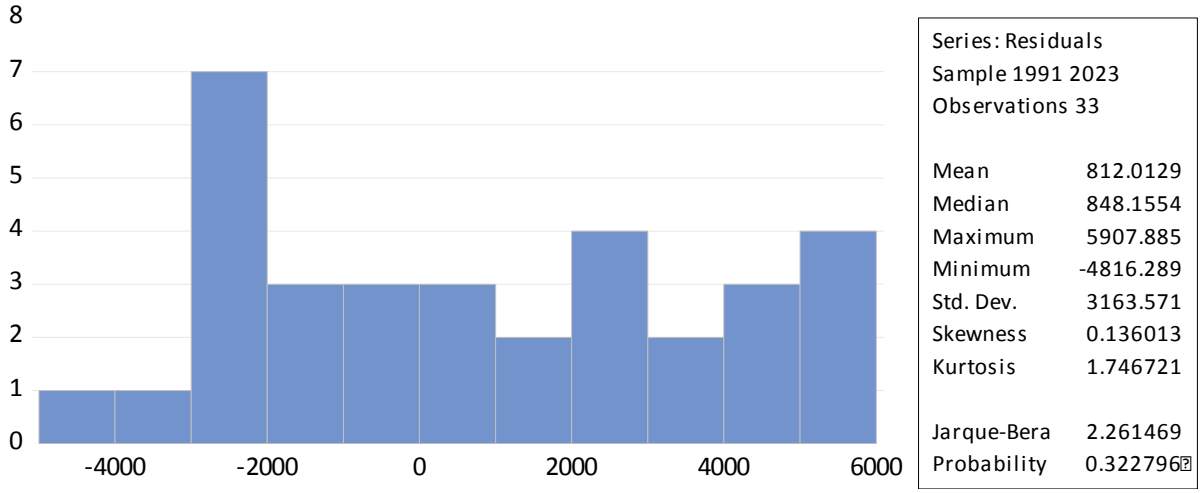
The R-squared value is 0.974363, indicating that approximately 97.44% of the variance in the dependent variable is explained by the independent variables in the model. This suggests a very good fit. The adjusted R-squared value is 0.972654, which adjusts for the number of predictors in the model and indicates that 97.27% of the variance is explained, showing a slight penalty for additional variables that do not significantly improve the model.

The standard error of regression is 3,376.491, which measures the average distance that the observed values fall from the regression line. This value provides an indication of the typical size of the residuals or prediction errors. The sum squared residuals value is 3.42E+08, indicating the total squared deviations of the observed values from the predicted values. It reflects the model's overall goodness of fit. The long-run variance is 28,006,452, which provides an estimate of the variance of the error term over a long period. This is useful for understanding the long-term behavior of the residuals.

The F-statistic is 138.5397, which tests the joint hypothesis that all regression coefficients are equal to zero. A high F-statistic value suggests that the model fits the data well. The probability value associated with the F-statistic is 0.0000 indicating that the model as a whole is statistically significant and the null hypothesis that all coefficients are equal to zero is rejected.

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

Post Estimation Diagnostic Test
Normality Test



The figure above shows the normality test of the impact of selected agriculture output on economic growth in Nigeria andthe Jarque-Bera test of normality shows that the error term in the specified model is normally distributed. This is evidenced by the respective insignificant Jarque-Bera statistics of 2.261469 and the probability value of 0.322796. This implies that the model and the variables used in the model which are normally distributed.

V. Discussion of Findings

The regression analysis presented provides insights into the relationship between real gross domestic product (RGDP), Fishery Production to GDP (FSGDP), and Ratio of Crop Production to GDP (CGDP). The results indicate a strong positive association between the dependent variable (RGDP) and the independent variables (FSGDP and CGDP), with all coefficients being statistically significant at conventional levels of significance.

The coefficient for FSGDP is 411.2343, which suggests that for every one-unit increase in FSGDP, RGDP increases by approximately 411.23 units, holding all other variables constant. This indicates a substantial and direct relationship between FSGDP and RGDP, suggesting that changes in federal state economic output have a significant impact on the overall economic performance as measured by RGDP. The coefficient for CGDP is 109.259, implying that a one-unit increase in CGDP is associated with an increase in RGDP by about 109.26 units, ceteris paribus. This also points to a positive relationship between central government economic activities and the national economic output, though the magnitude of this effect is smaller than that of FSGDP.

The intercept term (C) has a coefficient of -15,302.64, which represents the estimated value of RGDP when both FSGDP and CGDP are zero. This negative intercept suggests that in the absence of economic output from both federal states and the central government, the RGDP would be significantly negative, which is theoretically implausible and may indicate omitted variable bias or the need for a non-linear model specification.

VI. CONCLUSION AND RECOMMENDATION

The study investigated the impact of agricultural productivity on economic growth in Nigeria by analyzing the relationship between real gross domestic product (RGDP) and the ratios of crop production to GDP (CGDP) and fishery production to GDP (FSGDP). The findings reveal a significant positive association between RGDP and both CGDP and FSGDP, indicating that increases in agricultural productivity—both in crop and fishery production—contribute to economic growth in Nigeria. The stronger coefficient for FSGDP compared to CGDP suggests that fishery production plays a more substantial role in driving economic growth than crop production, although both sectors are vital contributors to the overall economy. The negative intercept term in the regression model implies that, in the absence of economic contributions from crop and fishery production, the RGDP would be negative, indicating a heavy reliance on these sectors for economic stability and growth. This result may also reflect potential issues of omitted variables or the need for a more nuanced,

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 6, Nov.-Dec., 2024, pp: 153-163 ISSN: 3048-6874
www.ijhssm.org

non-linear model specification to capture the complexities of the relationship fully.

Despite various government interventions aimed at boosting agricultural productivity and overall economic growth, such as the Fadamaprogramme, the Agricultural Transformation Agenda (ATA), and the Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL), the agricultural sector still faces significant challenges that limit its potential to contribute more effectively to economic growth. These challenges include inadequate infrastructure, limited access to credit, and policy inconsistencies that undermine sustained growth and development in the agricultural sector.

The following recommendations are proposed

i. Given the significant impact of fishery production on economic growth, as evidenced by the higher coefficient for FSGDP, the government through the ministry of agriculture should prioritize investments in the fishery sector. This includes improving access to modern fishing equipment, expanding aquaculture facilities, and ensuring sustainable fishing practices to boost production and increase its contribution to GDP.

ii. While fishery production shows a stronger effect, crop production remains a critical component of Nigeria's agricultural output. To enhance the impact of crop production on economic growth, the government should implement policies that support the adoption of modern farming techniques, improve access to high-quality seeds and fertilizers, and invest in irrigation infrastructure to mitigate the effects of climate variability on crop yields.

References

[1]. Abbas, A. M & Ahmed, B. (2016).Poverty reduction potential of fish farming in Ondo State, Nigeria. Scientia, 14(3), 306-13.

[2]. Acquaah, G. (2012). Principles of crop production: theory, techniques, and technology. Prenticehall. ISBN 978-0-13-022133-9.

[3]. Bogdanov, B. (2010). Cyclicality of Fiscal Policy over Business Cycle: An Empirical Study on Developed and Developing Countries. Agency for Economic Analysis and Forecasting, Working paper Series.

[4]. Chrispeels, M. J., Sadava, D. E. (2014). Plants, genes, and agriculture. Boston, Massachusetts: Jones and Bartlett. ISBN 978-0-86720-871-9.

[5]. Eboh, E. C., Oduh, M., &Ujah, O. (2012).Drivers and sustainability of agricultural growth in Nigeria. African Institute for Applied Economics.

[6]. Fadare, O., Srinivasan, C., &Zanello, G. (2024). Livestock diversification mitigates the impact of farmer-herder conflicts on animal-source foods consumption in Nigeria. Food Policy, 122, 102586.

[7]. Goetz, C. J., & Scott, R. E. (1977). Liquidated damages, penalties and the just compensationprinciple: Some notes on an enforcement model and a theory of efficient breach. Columbia Law Review, 77(4), 554-594.

[8]. Hubert, W. Quist, M. (2020). Inland fisheries management in North America (Third ed.).Bethesda, MD: American Fisheries Society. 736. ISBN 978-1-934874-16-5.

[9]. James Lind Institute. (2019). Types of crop production system. Retrieved fromhttps://www.jliedu.com/blog/types-crop-production- on 27-01 - 2022.

[10]. Khan, M., Sarwar, K., and Niazi, G. R. (2023). The impact of education system on economicgrowth: An Empirical Evidence from developing economy. Administrative and Management Sciences Journal, 1(2), 94-102

[11]. Lewis, W. A. (2004). Development planning. Routledge.

[12]. Muritala, T. (2011). Investment, inflation and economic growth: empirical evidence from Nigeria. Research journal of finance and Accounting, 2(5), 68-76.

[13]. Nelson C, Shagi Z Abdu &Usman I.B (2023). Impact of Government Spending on Agricultural Output in Nigeria: (1990-2022). International Journal of Advanced Research in Accounting, Economics and Business Perspectives 2636-6894

[14]. Niskanen, W. A. (1979). Competition among government bureaus. American Behavioral Scientist, 22(5), 517-524.

[15]. Nurudeen, A., &Usman, A. (2010). Government expenditure and economic growth in Nigeria, 1970-2008: A disaggregated analysis. Business and economics journal, 4(1), 1-11.

[16]. Olajide, O. T., Akinlabi, B. H., &Tijani, A. A. (2012).Agriculture resource and economic growth in Nigeria.European scientific journal, 8(22).

[17]. Olopade, B.C &Olopade, D.O. (2010). The Impact of Government Expenditure on Economic Growth and Development in

Developing Countries: Nigeria as a Case Study.

[18]. Onumadu, F. N., &Inyang, N. U. (2015).Analysis of effect of integrated farmers' scheme project on beneficiaries' income in AkwaIbom state Nigeria.International Journal of Scientific and Technology Research, 4(3), 2277-8616.

[19]. Onunze, M. T. (2012). The impact of agricultural development on Nigeria economic growth. Department of Economics, Faculty of Management and Social Sciences.

[20]. O'sullivan, A., Sheffrin, S. M., & Swan, K. (2003). Economics: Principles in action.

[21]. Tolulope and Chinonso C. (2013, Contribution of agriculture to economic growth in Nigeria. In Proceeding: the 18th Annual Conference of the African Econometric Society (AES), Accra, Ghana 22nd and (pp. 1-28).

[22]. Udemezue, J. C., &Osegbue, E. G. (2018).Theories and models of agricultural development. Annals of Reviews and Research, 1(5), 555574.

[23]. Ukaa, E. I. (2024). Impact of Fadama III Development Programmes on the Income and Agricultural Outputs of Farmers in Benue State.Scholar J Food and Environment, 1(6).