



## **Assessing the Contribution of Agricultural Subsectors to Economic Growth in Nigeria**

<sup>1</sup> Danlami Dauda, <sup>2</sup> Nuradeen A. Yusuf, & <sup>3</sup> Hafsat Muhammad

<sup>1-3</sup>Department of Economics, Niger State College of Education, Minna – Nigeria

<sup>5</sup> Centre for Entrepreneurship and Skills Development, Hussaini Adamu Federal Polytechnic,  
Kazaure, Kaduna State – Nigeria

\* Corresponding Author's; E – mail: [danlamidauda2015@gmail.com](mailto:danlamidauda2015@gmail.com)

### **Abstract**

*This study explored the contribution of agricultural sector to economic growth in Nigeria over the period 2014-2023. The study employed an ex post facto research design. The study employed secondary data sourced from the Central Bank of Nigeria (CBN). It focused on key agricultural sub-sectors, namely crop production, livestock, and forestry, to evaluate their roles in driving economic growth. Data analysis was conducted using partial correlation as the primary statistical technique. The findings revealed a strong and significant positive relationship between GDP growth and the agricultural subsectors, underscoring their critical role in Nigeria's economic performance. Based on these findings, it is recommended that the government should encourage private partnerships to strengthen investments in crop production, reducing dependency on food imports, the government, through public-private partnership (PPP) arrangements, should improve infrastructure and access to financing to support the livestock sector as well as the government, through environmental sustainability programs, should promote sustainable forestry to enhance GDP growth and create rural employment.*

**Keywords:** Agricultural Sector, GDP Growth, Investment

**JEL Classification:** Q10, O40 & E22

### **1.0 Introduction**

Nigeria, endowed with vast agricultural resources, including 91 million hectares of land (81 million arable) and 18 million hectares of pastureland, has agriculture deeply tied to its socio-economic and political evolution (Alahira, 2022). Historically, sustaining over 75% of the population, agriculture transitioned from traditional pre-colonial practices to export-oriented production under colonial rule, supported by initiatives like the Moor Plantation and the Niger Agricultural Project. Post-independence efforts, such as Operation Feed the Nation (1976) and the Green Revolution (1980), relatively modernized the sector, but agriculture's GDP share declined from 60% in 1960 to 25% in the late 1970s (Central Bank of Nigeria (CBN), 2009), partly due to the oil boom. Despite challenges such as reliance on traditional methods, poor infrastructure, and market access issues, opportunities abound for growth through advanced farming techniques and high-value crops, with the sector projected to grow from \$99 billion in 2011 to \$256 billion by 2030.

Nigeria's economy still depends heavily on agriculture, especially in rural and suburban areas where over 70% of the population works in the sector. Before oil was discovered at Oloibiri in 1956, it was the mainstay of the economy and made a substantial contribution to GDP—



previous estimates indicated a 40% share (CBN, 2009). Nigeria's third quarter 2024 GDP was 22.8% derived from agriculture (National Bureau of Statistics (NBS), 2024). The industry is nevertheless vital for economic diversification, food security, job support, and stability in the face of fluctuating oil prices, despite this downturn.

[Agbele kale](#) (2020) asserts that Nigeria's economy depends heavily on agriculture, which provides the majority of the country's food supply, jobs, and industrial raw materials. It also makes a substantial contribution to foreign exchange and national income. By providing for the nation's high food demand and generating employment, particularly in rural areas where it is the main occupation, it supports the nation's sizable population. In addition to providing vital raw materials for sectors like sugar, tobacco, and textiles, agriculture also boosts foreign exchange profits through exports like cocoa beans, sesame seeds, and palm kernels. Agriculture has been essential for economic resilience, increasing food security, promoting industrialization, and lowering poverty among rural populations by diversifying the economy, especially after the drop in oil prices. For Nigeria to experience sustainable economic growth and better living standards, this sector must be strengthened.

The agricultural sector, which occupies 34 million hectares of arable land and 6.5 million of which is used for permanent crops, 28.6 million for meadows and pastures is essential to Nigeria's economy. Since agriculture accounts for around 23% of Nigeria's GDP, the nation leads the world in the production of commodities including sorghum, cocoa beans, pineapple, and palm oil. Nigeria produces a lot of oil, fruits, nuts, and seeds for export, and it ranks second in the world for sorghum output and fifth for palm oil and cocoa beans. About 70% of households are supported by agriculture through crop cultivation, and 41% through livestock, however rural participation is higher than in urban areas (National Bureau of Statistics, 2023). Even though the country has a long coastline and plenty of water, just 3% of households engage in fishing, making it a modest pastime (Sasu, 2023).

Nigeria imports food and agricultural products from South America, Europe, Asia, and the United States, spending about \$10 billion a year as a result of supply shortages. The National Agricultural Technology and Innovation Plan (NATIP), which was implemented in 2022, and the Anchor Borrowers Program are two initiatives that seek to increase production and decrease reliance on imports (FAO, 2023). But enduring problems including wars between farmers and herdsmen, flooding, poor infrastructure, and a lack of money have all led to food inflation, reaching a peak of 23.75% in December 2022. Insecurity, currency depreciation, and rising fuel prices all contribute to increase in cost of farming (World Bank, 2023). Food security, climate resilience, and infrastructure development are prioritized in the National Development Plan (2021–2025) in order to address these issues and boost economic growth (CBN, 2024)

Despite accounting for more than 20% of Nigeria's GDP in recent years, the sector's role to sustainable economic growth has not been thoroughly evaluated, especially its subsectors: forestry, livestock, and crop production (World Bank, 2024). It is against this backdrop that the study seeks to assess the contributions of agricultural subsectors to Economic Growth in Nigeria (2014-2023). Specifically, the study analyses the relationship between crop production and GDP growth rate in Nigeria; to evaluate the contribution of livestock production to

economic growth in Nigeria, and to assess the role of forestry in influencing GDP growth in Nigeria. The findings of this study contribute to the existing body of knowledge by offering insights that can guide policymakers in agricultural development, assist agripreneurs in refining business strategies and productivity, and serve as a significant resource for scholars researching agricultural economics and growth.

## **2.0 Literature Review**

### **2.1 Conceptual Clarification**

#### **2.1.1 Economic Growth**

Precisely, economic growth is a quantitative measure that gauges how much more goods and services an economy produces compared to a previous time period. 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. Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. It can be measured in nominal or real terms, the latter of which is adjusted for inflation.

#### **2.1.2 Agricultural Sector**

The agricultural sector drives economic development by providing food, raw materials, employment, and income while supporting growth through linkages with other sectors. It includes crop production, livestock farming, forestry, fisheries, and support services, which collectively enhance productivity and sustainability (Food and Agriculture Organization (FAO), 2021).

International Food Policy Research Institute (IFPRI), (2019) the agricultural sector encompasses activities such as crop production, livestock farming, forestry, and fisheries, all of which utilize natural resources to produce food, raw materials, and energy. It plays a vital role in economic stability by ensuring food security, generating employment, and supplying industrial raw materials. Crop production includes food and industrial crops like grains, vegetables, cotton, and sugarcane, while livestock farming involves rearing animals for meat, dairy, and hides. Forestry focuses on sustainable forest management for timber, firewood, and ecosystem services, and fisheries provide food and commercial products through the capture and farming of aquatic organisms.

#### **2.1.3 Nigeria's Agricultural Sector**

FAO (2009) states that fish farming is a widespread practice in developing nations like Nigeria as well as in Europe, Canada, East Asia, China, and Africa. According to Keith (2010), more than 500 million people in developing nations make their living either directly or indirectly from fishing and aquaculture. Because it creates jobs, reduces poverty, generates foreign cash, and provides raw materials for the animal feed sector, fish farming is important to Nigeria's economy.

The forestry industry plays a vital role in national economies as part of sustainable forest management, according to Rotowa et al. (2019).

The industry includes businesses that rely on forest-based products and services, such as the manufacturing of industrial roundwood, wood fuel, charcoal, sawn wood, wood-based panels, pulp and paper, and wooden furniture. Aliyu, Bello, and Tatari (2020) also discovered that agricultural cultivation has been steadily increasing over the past ten years, contributing significantly to Nigeria's non-oil GDP. Enhancing agricultural policies, especially those that concentrate on smallholder farmer subsidies, has a direct impact on raising crop yields and improving economic performance, according to their research. Crop production boosts economic growth by increasing food security and giving a sizable portion of the rural population jobs, according to FAO (2020). Crops like rice, maize, and cassava are essential for combating poverty and promoting rural development in sub-Saharan Africa, according to the report.

Oyaniran (2020) Agriculture is broadly divided into four sectors in Nigeria—crop production, fishing, livestock and forestry. Crop production remains the largest segment and it accounts for about 87.6% of the sector's total output. This is followed by livestock, fishing and forestry at 8.1%, 3.2% and 1.1% respectively. Agriculture remains the largest sector in Nigeria contributing an average of 24 % of the nation's GDP over the past many years. In addition, the sector employs more than 36% of the country's labour force, a feat which ranks the sector as the largest employer of labour in the country.

### **2.1.4 Stylized Facts on Agricultural Sector and Economic Growth in Nigeria**

Nigeria's economy still relies heavily on agriculture, despite the fact that its GDP contribution has fluctuated significantly, indicating both the sector's strengths and weaknesses. Reiterating its crucial role, the agricultural sector experienced good growth in the second quarter of 2024, rising from ₦3,851,887.07 million in Q1 to ₦4,135,134.19 million (National Bureau of Statistics [NBS], 2024). Agriculture's average GDP contribution from 2010 to 2024 was ₦4,131,928.42 million, with a noteworthy peak of ₦5,698,270.51 million in Q3 2023, demonstrating the sector's capacity to flourish under the right circumstances (NBS, 2024). But the sector's bottom line of ₦2,594,759.86 million in Q1 2010 underscores how susceptible it is to a number of issues, such as political unrest, infrastructure deficiencies, and climate change (NBS, 2024).

The agricultural industry plays a major role in employment, food security, and industrial development, making it essential to Nigeria's economic expansion. More than 92% of agriculture's nominal GDP contribution comes from crop production, the largest subsector, with staples including rice, maize, and cassava supplying both internal demand and exports. According to Oxford Business Group (2018), government programs like fertilizer and seed subsidies have increased GDP, decreased reliance on imports of food, and increased productivity. Providing meat, milk, and eggs, livestock production contributes roughly 9% of agricultural GDP, diversifies rural incomes, and supports sectors like dairy and leather. Through carbon sequestration, biodiversity preservation, and sustainable timber production,

forestry contributes around 3% of agricultural GDP to rural jobs and income. According to PwC Nigeria. (2017), aquaculture investments boost output and lessen dependency on fish imports, while fisheries, which contribute about 4%, improve food security and coastal jobs.

## **2.2 Theoretical Framework**

This study is underpinned within the Endogenous Growth Theory, developed by Romer (1990), which emphasizes the importance of innovation and sectoral productivity as drivers of economic growth, serves as the foundation for this investigation. The theory offers a framework for analysing how improvements in forestry, livestock, and crop production techniques boost economic performance. The approach highlights the ways in which agriculture promotes sustainable growth by concentrating on internal elements including resource utilization, infrastructural development, and technological innovation inside the agricultural sector. This theory's application to Nigeria provides insights into how productivity gains and agricultural reforms have fuelled GDP growth throughout the given time frame. This approach was expanded upon by Barro and Sala-i-Martin (1995), who emphasized the value of sectoral investments and knowledge accumulation in promoting sustainable growth. Since improvements in technology and resource use in crop production, livestock, and forestry are crucial for improving economic growth, this viewpoint is especially pertinent for comprehending the contributions of the agricultural sectors. Efficiency and market access are improved by investments in farmer training and rural infrastructure, and these benefits are amplified by supportive policies.

## **2.3 Empirical Review**

To begin, [Etumnu](#) and [Odetola](#) (2013) conducted research on contribution of Agriculture to Economic Growth in Nigeria using accounting framework and time series from 1967 to 1970. The study was guided by a single main objective. In this research, we briefly describe the study area - Nigeria, and discuss the model, data and estimation method. The study revealed that crop production subsector contributes the most to agriculture sector growth and that growth in the agriculture sector is overly dependent on growth of the crop production subsector.

Additionally, Said and Single (2021) explored the Empirical Analysis of Agricultural Sector and Its Contribution to Economic Growth in Nigeria. Therefore, the main objective of this paper is to empirically examine the contribution of agricultural sector to economic growth as well as the relationship between the agricultural sector and economic growth in Nigeria. The analytical framework employed in this study is Ordinary Least Squares (OLS) technique and Histogram-Normality Test, using the data of Nigerian economy covering the period of 1981 to 2018 sourced from its Central Bank (CBN) and World Development Indicators (WDI). The findings of the study revealed that, agricultural sector has significantly contributed to economic growth in Nigeria. Similarly, it has also been discovered that, the agricultural output in Nigeria has increased significantly especially from 2016 to 2018.

Moreover, Bekun, Ugural, and Sertoğlu (2017). This study empirically examines the impact of agricultural sector on the economic growth of Nigeria, using time series data from 1981 to 2013. The annual data used for the study was sourced from the World Bank Development

database. The series spans over 30 years. The choice of the time lag was because of availability of data. The findings revealed that real gross domestic product, agricultural output and oil rents have a long-run equilibrium relationship. Vector error correction model result shows that, the speed of adjustment of the variables towards their long run equilibrium path was low, though agricultural output had a positive impact on economic growth

### 3.0 Methodology of the Study

The study employed an ex post facto research design, utilizing secondary data on the Nigerian economy spanning the period 2014-2023, sourced from the Central Bank of Nigeria (CBN, 2024). It empirically assessed the contributions of agricultural sectors specifically crop production, livestock, and forestry to economic growth in Nigeria. The partial correlation statistical technique was applied for data analysis using the Statistical Package for the Social Sciences (SPSS). The model, adapted and modified from the work of Bekun, Ugural and Sertoğlu (2017), can be expressed as follows:

$$RGDP = \beta_0 + \beta_1(\text{Crop Production}) + \beta_2(\text{Livestock}) + \beta_3(\text{Forestry}) + \beta_4(\text{Inflation}) + \varepsilon$$

Where:

RGDP = Real Gross Domestic Product (dependent variable)

$\beta_0$  = Constant (intercept)

$\beta_1, \beta_2, \beta_3$  = Coefficients for crop production, livestock, and forestry (independent variables)

$\beta_4$  = Coefficient for inflation (control variable)

$\varepsilon$  = Random error term (captures unexplained variation)

This equation explains how each agricultural sector (crop production, livestock, and forestry) and inflation affect Nigeria's economic growth, with  $\beta_0$  representing the baseline RGDP when all variables are zero.  $\beta_1, \beta_2$ , and  $\beta_3$  measure the individual impacts of crop production, livestock, and forestry, respectively, while  $\beta_4$  quantifies how inflation affects RGDP.

## Result and Discussion

**Table 1: Descriptive Statistics of Variables**

Variable	Mean	Standard Deviation	N (Observations)
Crop Production	3966.99	831.39	40
Livestock	297.67	28.42	40
Forestry	45.69	4.63	40
GDP Growth Rate	17687.98	1489.05	40
Inflationrate (Quarterly)	10.98	2.13	40

Source: Central Bank of Nigeria (CBN), 2024.

From Table 1, the descriptive statistics revealed that over the study period, crop production had a mean value of 3966.99 (SD = 831.39), indicating substantial variability in agricultural output. Livestock had an average value of 297.67 (SD = 28.42), while forestry activities recorded a lower mean of 45.69 (SD = 4.63), reflecting a smaller but more consistent contribution to the economy. GDP growth rate showed a high average of 17687.98 (SD = 1489.05), indicating robust economic performance with notable variability. The quarterly inflation rate averaged 10.98% (SD = 2.13), demonstrating relatively stable inflation during the period.

**Table 2: Partial Correlation Matrix Controlling for Inflation Rate (Quarterly)**

Variables	CROP_PROD	LIVESTOCK	FORESTRY	GDP RATE	GROWTH
<b>Crop Production</b>	1.000	.439	.289		.822
<b>Significance</b>	-	.005	.075		.000
<b>Df</b>	0	37	37		37
<b>Livestock</b>	.439	1.000	.593		.653
<b>Significance</b>	.005	-	.000		.000
<b>Df</b>	37	0	37		37
<b>Forestry</b>	.289	.593	1.000		.461
<b>Significance</b>	.075	.000	-		.003
<b>Df</b>	37	37	0		37
<b>GDP Growth Rate</b>	.822	.653	.461	1.000	
<b>Significance</b>	.000	.000	.003		-
<b>Df</b>	37	37	37		0

Significance (2-tailed) indicates whether the correlation is statistically significant ( $p < 0.05$  is typically considered significant).

Source: Central Bank of Nigeria (CBN), 2024)

From Table 2, the correlation analysis controlling for inflation rate revealed a strong and statistically significant positive relationship between GDP growth rate and crop production ( $r=0.822$ ,  $p<0.001$ ), indicating that increased crop production is closely associated with economic growth. Similarly, there is a significant positive correlation between GDP growth rate and livestock ( $r=0.653$ ,  $p<0.001$ ), as well as between GDP growth rate and forestry ( $r=0.461$ ,  $p=0.003$ ). Crop production and livestock are moderately positively correlated ( $r=0.439$ ,  $p=0.005$ ), while forestry shows a weaker, non-significant correlation with crop production ( $r=0.289$ ,  $p=0.075$ ). Livestock and forestry also exhibit a strong positive correlation ( $r=0.593$ ,  $p<0.001$ ). These findings emphasize the significant contributions of crop production, livestock, and forestry to economic growth, with crop production demonstrating the strongest association with GDP growth during the study period.

## 4.0 Discussion

The findings of the study revealed a positive and statistically significant relationship between GDP growth rate and crop production ( $r = 0.822$ ,  $p < 0.001$ ), indicating that increased crop production is closely associated with economic growth. Similarly, there is a significant positive correlation between GDP growth rate and livestock ( $r = 0.653$ ,  $p < 0.001$ ), as well as between GDP growth rate and forestry ( $r = 0.461$ ,  $p = 0.003$ ). Crop production and livestock are moderately positively correlated ( $r = 0.439$ ,  $p = 0.005$ ), while forestry shows a weaker, non-significant correlation with crop production ( $r = 0.289$ ,  $p = 0.075$ ). Livestock and forestry also exhibit a strong positive correlation ( $r = 0.593$ ,  $p < 0.001$ ).

These findings align with Said and Single (2021), who reported that the agricultural sector has significantly driven economic growth in Nigeria, particularly between 2016 and 2018, due to increased agricultural output. Similarly, Rotowa et al. (2019) emphasized the continuous contribution of forestry and fisheries to Nigeria's GDP over the past three decades, with notable increases from ₦88.91 billion in 1989 to ₦171.64 billion in 2016 for forestry, and from ₦94.81 billion in 1989 to ₦358.7 billion in 2015 for fisheries.

In the same vein, Emmanuel, E. Y., et al. (2021) employed an error correction model (ECM) and found positive and significant coefficients for livestock (5.0526,  $p = 0.0432$ ) and fishery production (67.26,  $p = 0.0292$ ). However, their findings indicated that crop production and forestry had negative and insignificant impacts on GDP growth, with coefficients of -4.593964 and -2.625762, respectively. Furthermore, Korgbeelo (2022) found that crop production and forestry outputs make a strong contribution to the development of the Nigerian economy, while the outputs of livestock and fishery make insignificant contributions to Nigeria's economic development. The Granger causality test further indicated bidirectional causality between crop production output and economic development, as well as unidirectional causality from livestock output to economic development.

## 5.0 Conclusion

The study concludes by highlighting the vital roles that the forestry, livestock, and crop production subsectors play in propelling Nigeria's economic growth. Increasing crop production investments, particularly in important commodities like rice, maize, and cassava, can drastically boost GDP growth and lessen reliance on food imports. Its economic impact will also be increased if the cattle industry is supported with better funding and infrastructure. Promoting sustainable forestry methods can also guarantee environmental sustainability, create jobs in rural areas, and accelerate economic progress. All of these steps taken together will assist Nigeria in developing a more robust and varied economy.

### 5.1 Recommendations

1. The government should encourage private partnerships to strengthen investments in crop production, reducing dependency on food imports.
2. The government, through public-private partnership (PPP) arrangements, should improve infrastructure and access to financing to support the livestock sector.



3. The government, through environmental sustainability programs, should promote sustainable forestry to enhance GDP growth and create rural employment.

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