

Taxation and the Growth of the Agricultural Sector in Nigeria

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Abstract

This study examined the relationship between taxation and the growth of the agricultural sector in Nigeria using annual time series data spanning from 1994 to 2024. The research employed an ex-post facto research design and relied on secondary data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Federal Inland Revenue Service (FIRS). The Autoregressive Distributed Lag (ARDL) model was adopted as the estimation technique to analyze both the short-run dynamics and long-run relationships among the variables. The tax revenue variables examined include personal income tax (PIT), capital gains tax (CGT), value-added tax (VAT), customs and excise duties (CED), and stamp duties (STD), while agricultural sector output served as the dependent variable. The results from the long-run ARDL regression revealed that personal income tax had a positive and statistically significant impact on agricultural output, suggesting that higher personal income tax revenues may enhance government capacity to invest in the agricultural sector. Conversely, capital gains tax, value-added tax, customs and excise duties, and stamp duties all showed significant negative effects on agricultural development, indicating that these forms of taxation may inhibit agricultural productivity or reflect inefficiencies in public expenditure allocation. The study concludes that while some forms of tax revenue, such as personal income tax, can positively contribute to the growth of the agricultural sector, others may have detrimental effects, especially when not reinvested effectively into agricultural infrastructure, research, and extension services. The findings imply a need for a more strategic and sector-focused tax policy that balances revenue generation with the imperative of stimulating agricultural growth. Based on these findings, the study recommends that government authorities should ensure that revenues from personal income tax are effectively channelled into agricultural development programs. Tax policies should be restructured to reduce the negative impacts of other forms of taxation on agricultural activities. Efforts should also be made to enhance transparency and accountability in the utilization of tax revenue to ensure that funds are directed toward critical areas such as irrigation, mechanization, rural infrastructure, and agro-processing.

Keywords: Taxation; Agricultural output; Personal income tax; Capital gains tax; Value-added tax; Customs and excise duties; Stamp duties; ARDL model; Agricultural growth; Nigeria.

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INTRODUCTION

In recent years, the quest for diversified, sustainable and inclusive economic growth has become the overriding goal of most developing nations, including Nigeria. The attainment of this goal is essentially a precondition for reversing the perennial problems of poverty, inequality, unemployment, weak infrastructure, low productivity, over dependence on oil, and other vulnerabilities that currently characterise the Nigerian economy. Given the nation's endowment in natural and human resources, Nigeria can potentially rank among the top 10 leading economies by 2050, with a projected Gross Domestic Product (GDP) of \$6.4 trillion (PricewaterhouseCoopers, 2016). Increasing productivity across various sectors of the economy is

critical for realising such a robust growth, and lifting 30 million people out of extreme poverty, (World Bank, 2019). It, therefore, becomes imperative for government and policymakers to pay more attention to other key sectors of the economy such as agriculture, besides the oil sector, that hold enormous potential for boosting productivity, employment and well-being of Nigerians.

Taxation is a crucial instrument in the fiscal policy instrument of governments worldwide, serving as a primary source of revenue for public expenditure and a key tool for economic regulation. In Nigeria, taxation plays a pivotal role in shaping economic development across various sectors, particularly agriculture, which remains the backbone of the economy. Historically, the Nigerian agricultural sector has been the largest

employer of labor and a critical contributor to Gross Domestic Product (Kasie & Emeka, 2023). It supplies raw materials for local industries, food for the population, and non-oil exports, making it an integral component of national economic stability. Despite its significant potential, the sector has been underperforming, facing numerous challenges, including inadequate infrastructure, limited access to credit, climate change, and inefficient tax policies. The relationship between taxation and the growth of the agricultural sector has therefore become a key area of study, especially in the context of Nigeria's drive toward economic diversification (Onakoya & Afintinni, 2016).

Over the years, Nigeria has relied heavily on crude oil for revenue, with little attention paid to the non-oil sectors, particularly agriculture. This over-reliance on oil has exposed the economy to global shocks, such as oil price volatility, leading to economic instability. As a result, there has been a renewed focus on diversifying the economy through the development of other sectors, including agriculture. Taxation, in this regard, is considered a potential tool to foster agricultural development by providing necessary financial resources for infrastructural development and incentivizing investment in agricultural activities (Oyaniran, 2020). However, there remains a fundamental question: to what extent has the current taxation system facilitated or hindered the growth of Nigeria's agricultural sector?

Taxation when appropriately designed, tax policies can stimulate growth in various sectors of the economy, including agriculture. According to the Endogenous Growth Theory, government policies, including taxation, can influence long-term economic growth by affecting the incentives for innovation and investment in human capital, infrastructure, and technological advancement (Romer, 1990). However, the Nigerian tax system, characterized by multiple taxes, high tax rates, and a lack of clarity, may act as a disincentive for investment in agriculture. Studies have shown that excessive taxation can stifle agricultural productivity by increasing the cost of inputs, reducing profitability, and discouraging investment (Oladipo & Adebayo, 2021). Consequently, it is essential to examine whether Nigeria's current tax policies align with the objective of fostering sustainable growth in the agricultural sector.

One of the major issues confronting the agricultural sector is the burden of multiple taxation, especially at the local government level. Farmers often face a multiplicity of taxes, levies, and fees, which increase the cost of production and reduce the competitiveness of agricultural products. This challenge is compounded by weak tax administration and enforcement, leading to inefficiencies in revenue collection and poor allocation of tax revenue toward sectoral development. Akinyemi *et al.* (2022) argue that a lack of coordination between the different levels of

government in Nigeria exacerbates the problem, resulting in over-taxation and underfunding of agricultural development initiatives. These inefficiencies have hindered the sector's potential to grow, modernize, and contribute meaningfully to national GDP.

Moreover, the agricultural sector, which predominantly comprises smallholder farmers, is often overlooked in tax relief policies, unlike the manufacturing and oil sectors that benefit from tax holidays, incentives, and exemptions. This disparity raises concerns about equity and fairness in Nigeria's tax regime. According to a study by Okeke and Chukwu (2023), providing tax incentives specifically targeted at agricultural investment, such as tax credits for modern farming technologies or tax deductions for sustainable farming practices, could significantly boost the sector's growth. However, current tax policies seem to be misaligned with the developmental needs of agriculture, focusing more on short-term revenue generation rather than long-term growth.

In light of these challenges, there is a growing need for a comprehensive review of Nigeria's tax system to ensure it supports the agricultural sector's growth. Policymakers must consider how to balance the need for government revenue with the goal of fostering a thriving agricultural sector. Addressing issues such as multiple taxation, high tax rates, and a lack of sector-specific tax incentives is critical to ensuring that the tax system does not stifle growth but instead promotes the sustainable development of agriculture in Nigeria. Therefore, this paper seeks to explore the intricate relationship between taxation and the growth of the agricultural sector in Nigeria, providing empirical insights into how taxation policies can be reformed to promote sectoral growth.

In light of this study, the following objectives of the study are considered. The main objective of the study is to examine the relationship between taxation and the growth of the agricultural sector in Nigeria. The specific objectives of the study are:

- i. Ascertain the impact of personal income tax (PIT) on agricultural outputs in Nigeria;
- ii. Evaluate the relationship between capital gain tax (CGT) and agricultural outputs in Nigeria;
- iii. Determine the effect of company income tax (CIT) on agricultural outputs in Nigeria;
- iv. Assess the relationship between value added tax (VAT) and agricultural outputs in Nigeria;
- v. Investigate the impact of custom and excise duties (CED) on agricultural outputs in Nigeria; and
- vi. Explore the impact of stamp duties on agricultural outputs in Nigeria.

LITERATURE REVIEW

Conceptual Clarification

This study tries to explain some key concepts that formulate this research topics. The study will explain

the concept of taxation, agricultural sector and growth of the agricultural sector in Nigeria.

Concept of Taxation

Taxation refers to the compulsory financial charge or levy imposed by a government on individuals, businesses, or other entities to generate revenue for public expenditure and services. It serves as the primary source of income for governments globally and is used to fund various public goods, such as infrastructure, education, healthcare, defense and social welfare programs. The concept of taxation extends beyond merely raising revenue; it is also a tool for economic regulation, wealth redistribution, and fiscal policy management. Through taxation, governments can influence economic behaviour, incentivizing or disincentivizing certain activities. For instance, taxes on tobacco and alcohol, known as sin taxes, are designed to discourage consumption of harmful goods (Musgrave & Musgrave, 2019).

There are several types of taxes, including direct taxes, such as income tax, corporate tax, and property tax, and indirect taxes, like value-added tax (VAT) and sales tax. Direct taxes are levied directly on individuals or corporations based on their income or wealth, while indirect taxes are imposed on the consumption of goods and services, ultimately borne by the consumer (James & Nobes, 2020). The Nigerian tax system, like most tax systems globally, incorporates both direct and indirect taxes. However, its effectiveness in promoting economic development has been questioned, particularly concerning its impact on critical sectors like agriculture (Oladipo, 2021).

In Nigeria, taxation is seen as a potential tool for economic diversification, particularly in reducing the economy's over-reliance on oil revenue. However, the Nigerian tax regime faces several challenges, including inefficiencies in tax administration, multiple taxation at various levels of government, tax evasion, and a narrow tax base. These issues have limited the effectiveness of taxation as a tool for stimulating growth in non-oil sectors, such as agriculture. For example, multiple taxes and levies imposed on farmers, particularly at the local government level, have been identified as significant barriers to agricultural productivity, as they increase production costs and reduce competitiveness (Akinyemi, 2022).

Taxation theory, particularly the benefit principle, argues that taxpayers should pay taxes in proportion to the benefits they receive from public services (Bello, 2021). In the context of agriculture, this would imply that tax revenues should be reinvested in agricultural infrastructure, research, and subsidies to support sectoral growth. However, in Nigeria, there is a disconnect between tax collection and sectoral development, with inadequate funding allocated to agricultural initiatives despite the sector's significant

contribution to employment and GDP (Okeke & Chukwu, 2023).

Ultimately, taxation is a fundamental aspect of economic policy, but its success in promoting sustainable development depends on how well it is designed and implemented. The Nigerian experience highlights the need for a more effective tax system that minimizes the burden on productive sectors like agriculture while ensuring sufficient revenue for public services. Proper tax incentives, targeted relief, and a simplified tax regime could help address some of the sector-specific challenges and promote overall economic growth.

Concept of Agricultural Sector

The agricultural sector encompasses all activities related to the cultivation of crops, livestock production, forestry, and fisheries. It includes smallholder farmers, commercial farmers, agribusinesses, and various value-chain actors, such as suppliers, processors, and distributors. Agriculture has historically been the backbone of the Nigerian economy, providing employment for a significant portion of the population and contributing to food security, raw materials for industries, and non-oil exports. However, despite its critical role, the sector has been underperforming due to a range of challenges, including poor infrastructure, inadequate access to finance, climate change, and inefficient policy frameworks (FAO, 2019).

In Nigeria, the agricultural sector remains predominantly small-scale, with over 80% of farmers being smallholder farmers who rely on rain-fed agriculture, manual labour, and traditional farming practices. These smallholder farmers face numerous constraints, such as limited access to modern farming technologies, high input costs, and poor access to markets. These challenges have contributed to low productivity and have hindered the sector's potential to contribute more significantly to the national GDP (World Bank, 2020).

Agriculture is a key driver of rural development in Nigeria, and its importance extends beyond economic contributions to include its role in poverty alleviation and rural employment. The sector is essential for addressing food insecurity, which remains a critical issue in Nigeria, particularly in the northern regions where agricultural output has been adversely affected by conflict and climate change (Bello, 2021). Agricultural diversification, particularly through the promotion of high-value crops, livestock, and fisheries, is seen as a viable strategy for promoting sustainable growth and increasing rural incomes.

Government policies have traditionally focused on improving agricultural productivity through programs such as the Agricultural Transformation Agenda (ATA) and the more recent National Agricultural Technology and Innovation Plan (NATIP). These initiatives aim to

modernize the sector by encouraging the adoption of improved farming techniques, enhancing value-chain development, and facilitating access to credit and markets (Federal Ministry of Agriculture and Rural Development, 2022). However, these efforts have been hampered by weak implementation, corruption, and a lack of coordination between federal, state, and local governments.

The sector also plays a critical role in Nigeria's economic diversification strategy, particularly in the wake of fluctuating oil prices that have exposed the vulnerability of Nigeria's oil-dependent economy. However, despite its potential, the agricultural sector has not received sufficient investment or policy attention, particularly in areas such as agricultural infrastructure, research and development, and extension services (Okeke & Chukwu, 2023). The lack of effective tax incentives for agricultural investment has also been cited as a barrier to sectoral growth, with calls for more targeted fiscal policies to support agricultural modernization and commercialization (Akinyemi *et al.*, 2022).

Agricultural Sector Growth in Nigeria

The growth of the agricultural sector in Nigeria refers to the sustained increase in agricultural productivity, output, and income, which contributes to overall economic growth and development. This growth is measured through key indicators such as crop yields, livestock production, the contribution of agriculture to GDP, and improvements in rural incomes. The agricultural sector's growth is essential for achieving food security, reducing poverty, and creating employment, especially in rural areas where agriculture is the main economic activity (World Bank, 2020).

Agricultural growth in Nigeria has been inconsistent over the years, influenced by various factors, including government policies, investment in infrastructure, and environmental conditions. In the post-independence era, Nigeria experienced robust agricultural growth, driven by the production and export of cash crops such as cocoa, groundnuts, and rubber. However, the discovery of oil in the 1950s led to a gradual shift away from agriculture, resulting in reduced public investment in the sector and declining productivity (FAO, 2019).

In recent years, there has been renewed focus on promoting agricultural growth as part of Nigeria's efforts to diversify the economy and reduce dependence on oil revenues. Government programs such as the Agricultural Promotion Policy (APP) and the National Agricultural Technology and Innovation Plan (NATIP) have sought to enhance agricultural productivity by improving access to inputs, promoting mechanization, and strengthening agricultural value chains (Federal Ministry of Agriculture and Rural Development, 2022). However,

the sector continues to face significant challenges that hinder sustained growth.

One of the primary constraints to agricultural growth in Nigeria is the low level of productivity, particularly among smallholder farmers who dominate the sector. Factors such as limited access to modern farming technologies, poor infrastructure, and inadequate access to finance have restricted farmers' ability to increase output and incomes. Smallholder farmers often rely on traditional farming methods, which are labor-intensive and less productive compared to mechanized farming (Akinyemi *et al.*, 2022). Addressing these productivity constraints will require targeted investments in infrastructure, technology, and agricultural extension services to ensure that farmers have the necessary resources to improve their yields.

Environmental factors, particularly climate change, also pose a significant threat to agricultural growth in Nigeria. Irregular rainfall patterns, desertification, and flooding have reduced crop yields and increased the vulnerability of rural communities to food insecurity. Climate-smart agriculture, which includes practices such as agroforestry, sustainable land management, and the use of drought-resistant crops, is essential for promoting resilience and ensuring sustained agricultural growth in the face of changing environmental conditions (Bello, 2021).

In conclusion, achieving sustained growth in Nigeria's agricultural sector is critical for the country's economic development and food security. However, this growth will require addressing key challenges such as low productivity, inadequate infrastructure, and the impact of climate change. Policy reforms, increased investment, and innovations in agricultural practices are essential for unlocking the sector's full potential and ensuring that agriculture contributes meaningfully to Nigeria's economic diversification efforts.

Theoretical Framework

The theoretical framework is a structured approach that provides a foundation for understanding and analysing a specific phenomenon such as taxation and agricultural sector and their linkages. The theoretical framework serves as a blueprint for the research, shaping the research questions, guiding the methodology, and helping interpret findings. This study concentrates on two theories explained below.

The Benefit Principle of Taxation

The Benefit Principle of taxation, one of the oldest tax theories, was developed by classical economists, most notably Adam Smith in his seminal work "The Wealth of Nations" (1776). The principle holds that taxes should be levied on individuals in proportion to the benefits they receive from public services. In other words, those who benefit the most from government-provided services should pay more in taxes,

creating a direct link between taxes paid and benefits received. This principle has implications for the agricultural sector, particularly in how tax revenues are used to fund services and infrastructure that benefit farmers and agribusinesses.

The Benefit Principle suggests that agricultural producers, like other economic actors, should be taxed in proportion to the benefits they receive from public goods such as rural infrastructure, irrigation systems, agricultural research, and extension services. In many countries, including Nigeria, farmers rely heavily on government-provided infrastructure like roads to transport their produce to market, as well as on publicly funded agricultural research and subsidies for inputs like seeds and fertilizers. The theory posits that if farmers benefit from these services, they should, in return, contribute to the cost of providing them through taxes (Musgrave & Musgrave, 2019).

Applying the Benefit Principle to agriculture implies that tax revenues collected from farmers should be reinvested into the sector to improve its productivity and sustainability. For instance, taxes could be used to build and maintain rural roads, develop irrigation projects, or finance agricultural research that leads to improved crop varieties or more efficient farming practices. However, in practice, there is often a disconnect between tax revenues and sectoral reinvestment. In Nigeria, for example, farmers frequently pay taxes at various levels of government but do not always receive commensurate benefits in terms of improved services or infrastructure (Oladipo & Adebayo, 2021).

One key criticism of applying the Benefit Principle in agriculture is that many farmers, especially smallholders, operate in informal economies and may not be able to bear the tax burden. Moreover, due to the sector's vulnerability to external shocks like climate change, taxes could further strain farmers who already face numerous financial challenges. Nonetheless, when properly implemented, this principle can promote greater efficiency and accountability in tax policy, as it encourages the government to allocate tax revenues to areas that directly benefit the taxed population.

In terms of tax incentives, the Benefit Principle can also support agricultural growth by justifying tax relief or subsidies for farmers in certain situations. For instance, if farmers in a particular region contribute significantly to the national food supply, the government might provide them with tax breaks or credits to help sustain and grow their production capacities. These tax incentives, in turn, can be viewed as a form of reinvestment in the agricultural sector, consistent with the Benefit Principle (James & Nobes, 2020).

Optimal Taxation Theory

Optimal Taxation Theory was developed in the 20th century, with significant contributions from economists such as Ramsey (1927), who laid the groundwork for the theory, and later economists like Mirrlees (1971), who expanded the model to include considerations of income distribution and equity. The theory seeks to design a tax system that maximizes social welfare while minimizing the negative economic distortions associated with taxation. Optimal taxation is concerned with determining the most efficient way to collect taxes while balancing revenue generation with fairness and economic growth.

In the context of the agricultural sector, Optimal Taxation Theory suggests that taxes should be structured in a way that does not disproportionately burden agricultural producers, who often operate in environments characterized by high volatility, low profitability, and vulnerability to external shocks such as weather conditions and market fluctuations. According to this theory, taxes on the agricultural sector should be minimized or carefully structured to avoid reducing investment in the sector, discouraging production, or creating inefficiencies in the allocation of resources (Ramsey, 1927).

The agricultural sector is particularly sensitive to taxation because of its typically low margins and the essential nature of its products. Over-taxation could lead to reduced agricultural output, higher food prices, and increased rural poverty. From an optimal taxation perspective, governments should impose taxes on agricultural activities in a way that minimally distorts farmers' production decisions. This might include preferential tax rates for the agricultural sector, tax exemptions for certain types of farm inputs, or providing subsidies for sustainable farming practices. These measures ensure that taxation supports rather than hinders the growth of agriculture, a critical sector for food security and economic development in countries like Nigeria (Mirrlees, 1971).

Optimal Taxation Theory also emphasizes equity and efficiency in tax policy. In agricultural contexts, this might mean progressive tax policies that ensure wealthier, more industrialized farms contribute more in taxes than smallholder or subsistence farmers. Tax policies that are too regressive, such as flat taxes on land regardless of productivity or profit, can disproportionately affect smaller farmers and reduce their ability to invest in improving their operations. By contrast, tax systems that differentiate between farmers based on their scale and profitability can ensure that taxation does not undermine efforts to enhance productivity and innovation in the sector (Besley & Persson, 2013).

In Nigeria, the concept of optimal taxation is relevant in the ongoing efforts to reform agricultural

taxation. Smallholder farmers often face multiple layers of taxation from different levels of government, which can significantly reduce their incomes and discourage investment. Applying the principles of Optimal Taxation Theory, the Nigerian government could streamline agricultural taxes, provide tax incentives for sustainable practices, and reduce the tax burden on small-scale farmers, promoting agricultural growth and improving food security (Akinyemi *et al.*, 2022).

Empirical Literatures

Series of empirical studies have discussed the relationship between taxation and agricultural outputs in Nigeria and across boarder. Some of these empirical studies are discussed below.

Ukpong *et al.*, (2022) investigated the impact of fiscal policy on Agricultural Sector Output in Nigeria using taxation as key instrument. The study used agricultural outputs as the dependent variable while the independent variables included taxation, capital Government Expenditure and recurrent government expenditure. The study utilized data sourced from the Central Bank of Nigeria's Statistical Bulletin, providing a comprehensive overview of government spending and agricultural sector output from 1990 to 2020. The study employed the Ordinary Least Square (OLS) multiple regression method to analyze the data. The empirical analysis yielded the following key findings, the variables were found to be positively insignificant in relation to agricultural sector output at a 5% level of significance. The study concluded that government expenditure does not have a significant impact on the agricultural sector output in Nigeria. The study recommended that the federal government of Nigeria, in collaboration with the Central Bank, should focus on strengthening the banking sector to ensure improved and efficient credit flow to the agricultural sector.

Adetule & Olakunle (2022) examined the causal relationship between taxation and agricultural sector productivity in Nigeria from 1986 to 2019. The study employs a time series data from the Central Bank of Nigeria (CBN) Statistical Bulletin (2020) and World Bank Development Indicators (2020). The variables used are agricultural output, agricultural exports, agricultural employment, government expenditure, capital, trade openness, foreign direct investment and interest rates. The study used the vector autoregressive (VAR) framework to examine the causal relationship between government expenditure and agricultural performance. The study found for agricultural output and exports; government agricultural spending has no causal links with the two variables. Meanwhile, it was agricultural employment that caused government agricultural expenditure feedback. The study recommends that it is highly imperative to encourage and motivate the young unemployed groups, especially in the rural and semi-urban areas to become gainfully employed in agriculture. This will help to provide employment opportunities,

reduce the incidence of vices and illegal adventure and consequently increase agricultural performance as a result of the rise in agricultural employment.

Utifon *et al.*, (2022) determined how taxation affects the output of the agricultural sector in Nigeria from 1990 - 2020. The study relied on past data from secondary sources - Central Bank of Nigeria Statistical Bulletin 2020. Real gross domestic product on Agricultural output (AO) was used as the dependent variable while government expenditure on administration (GEA), Government expenditure on social and community services (GES), and tax incentive as independent variables for the periods 1990-2020. The study adopted the Ordinary Least Square (OLS) regression method to analyze the data collected. From the findings, it was discovered that the variables were positively insignificant to agricultural sector output at a 5% level of significance. Therefore, the study concludes that government expenditure does not affect the agricultural sector output in Nigeria. Hence, it was recommended that the federal government of Nigeria through the Central Bank, should strengthen the banking sector to ensure an improved and efficient credit flow to the agricultural sectors because of its strategic importance in stimulating the growth and development of an economy.

Mile *et al.*, (2021) examined the relationship between government agricultural spending and agricultural output in Nigeria using annual time series data from 1981 to 2019. This study used annual time series data from CBN Statistical Bulletin, World Development Indicators and United Nations Conference on Trade and Development. The variables are agricultural output, agricultural land, government agricultural spending, interest rate on bank credit to the sector, value of loans guaranteed by ACGF to agricultural sector, commercial bank loans to agricultural sector and agricultural labour force. This study used descriptive and analytical techniques such as descriptive statistics, Augmented Dickey-Fuller test, VEC Granger Causality/Block Exogeneity Wald test, Johansen cointegration test, vector error correction test, impulse response and variance decomposition. The study found that all variables were not stationary at level but became stationary at first difference. The study also revealed that there is a positive effect of government agricultural spending on agricultural output in Nigeria, though, significant in the long-run only. Therefore, the study recommends that government expenditure on agriculture should be improved upon the funds allocated to the sector and should be made available to real farmers through the provision of fertilizers, improved seedlings and grant aiding to farmers through farmers cooperatives while farmers in Nigeria should form farmers' cooperative societies to be able to easily access credit facilities from banks as well as enhancing their easy access to farm inputs provided by the government.

Abubakar *et al.*, (2020) examined the Impact of taxation on Agricultural Growth in Kogi State from 2000 to 2018. For the dependent variable, Agricultural Growth was adopted by the study, while the independent variables are Government Capital Expenditure and Recurrent Expenditure. The study employed Vector Autoregressive (VAR) Model for data analysis. The results from the VAR Model revealed that there is no significant relationship between government capital and recurrent expenditure and agricultural growth in Kogi State. Based on the findings, the study recommends that Kogi State government should prioritize and increase agricultural expenditure to meet the 10% benchmark set and ensure timely release of funds for the procurement of agroequipment. The study did not cover a wide range but just a State in Nigeria, while this study covered the entire nation, Nigeria.

Keji & Efuntade (2020) examined Agricultural output and taxation in Nigeria between 1981 to 2018. The variables used in this study are Agricultural Output for the dependent variable and the independent variables are income tax, Gross capital formation (GCF), Exchange rate (EXC), Interest rate (INT), Industrial value (IDV), Inflation rate (INF) and Gross domestic product (GDP). Autoregressive distributed lag (ARDL) and Bound cointegrating techniques were employed for the analysis. The outcome disclosed that government spending has a long run significant effect on agricultural output performance in Nigeria. As a result of the findings, the study recommends that the government should improve on seedlings for farmers, provision of modern mechanized tools and government should equally improve on spending on critical infrastructure that could fast track the conveyance of agricultural produce to appropriate quarters such as road, transport, market, industrial zone etc. The study reviewed used macroeconomic variables like Interest rate, exchange rate, inflation rate, gross domestic product, capital formation and industrial value while this study used Agricultural Output, Government Capital expenditure and Government Recurrent expenditure as variables.

Atayi *et al.*, (2020) examined the effect of tax on Agricultural Output in Nigeria. Time series data on agricultural output, recurring government spending on agriculture, agricultural taxation, and gross domestic product were collected over a period of 37 years from the statistical bulletin of the Central Bank of Nigeria (CBN) from 1981 - 2018. Descriptive and econometric analysis methods such as the Augmented Dickey Fuller test, the Johanson co-integration test and Ordinary Least Square (OLS) were applied in this research. The results show that agricultural production, government spending and GDP are positively related. The result showed that rapid economic development cannot be accomplished without well-focused agricultural productivity enhancement programmes being placed in place. Therefore, this study recommends among other things that the Nigerian government should preserve continuity in the level of its

agricultural capital expenditure. The study reviewed covered 37 observations i.e. from 1981–2018, while this study covered 33 observations with more recent period from 1990-2022.

Akinwale & Ayodele (2019) analysed the relationship between fiscal policy measures components and agricultural productivity in Nigeria by estimating the effects and their causal interaction over the period 1981-2017. The study used secondary data obtained from government publications such as the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics. The variables are real agricultural output (AOP), taxation, Government Expenditure on Health (GEH), Government Expenditure on Education (GEE), Government Expenditure on infrastructure; which include expenditures on transportation, construction and communication (GEI), Credit to Agricultural sector (CRAS) and Inflation rate (INFL). The study employed the Autoregressive Distributed Lag (ARDL) technique to analyze the data. The ARDL results revealed that there exists a long-run relationship among the variables and showed that various components of government expenditure can positively improve agricultural productivity in Nigeria. The study recommends effective policy implementation through a complete overhaul of the various government institutions and agencies responsible for implementation, revenue collection and monitoring of government projects as it relates to agricultural development as well as encourage effective manpower development in the agricultural sector to boost productivity.

Ukpai and Dkhar (2018) investigated tax incentives and Agricultural Output in Meghalaya (India) with a time series data from 1984–2014. The variables used included Agricultural Output as the dependent variable, while the independent variables are taxation on Agriculture and Allied Activities, Government Expenditure on Education, Government Expenditure on Transport and Government Expenditure on Healthcare. The study employed the Autoregressive Distributed Lag (ARDL) approach to cointegration and an error correction representation of the ARDL model. The empirical analysis results reveal that in the long run, the effect of public expenditure through agriculture and allied activities, on agricultural output is significantly negative, while expenditures on education and transport on agricultural output are significantly positive that is in line with several earlier studies. Public expenditure in healthcare however does not significantly affects agricultural output. Based on the results, the study recommended a more judicious allocation of government spending to prioritize sectors such as education and transport, while also emphasizing the need for targeted and effective utilization of resources within the agriculture and allied sectors to optimize agricultural output in Meghalaya.

METHODOLOGY

This study adopted the *Ex-Post Facto* research design. *Ex-Post Facto* design is a scientific method of inquiry in which how an already existing independent variable affects a dependent variable before a study. The sample size for this study spans from 1994 to 2024, encompassing 31 years of data. Secondary data was obtained from reliable sources, including government financial reports, agricultural production records, the Central Bank of Nigeria (CBN) statistical bulletin, and the Nigerian Stock Exchange (NSE) reports. The data collection focused on variables such as personal income tax (PIT), capital gain tax (CGT), company income tax (CIT), value-added tax (VAT), custom and excise duties (CED), stamp duties, and agricultural output metrics.

Model Specification

To analyze the relationship between tax revenue and the growth of the agricultural sector in Nigeria, the study adopted an econometric model that captured the influence of various tax components and their impact on agricultural output. The model draws on the classical linear regression framework and is modified to include taxation variables relevant to this study.

The functional, mathematical and econometric form of the models was thus presented.

$$AGRO_t = f(PIT_t, CGT_t, CIT_t, VAT_t, CED_t, STD_t) \quad (3.1)$$

In this study, agricultural output (AGRO) is the dependent variable, while the independent variables include personal income tax (PIT), capital gain tax (CGT), company income tax (CIT), Custom and Excise duties (CED) and stamp duties (STD). The modified model is specified as follows:

$$AGRO_t = \beta_0 + \beta_1PIT_t + \beta_2CGT_t + \beta_3CIT_t + \beta_4VAT_t + \beta_5CED_t + \beta_6STD_t + \mu_t \dots \quad (3.2)$$

In other to linearize the model, we take the natural logarithms of both side in equation 3.2

$$\log(AGRO_t) = \beta_0 + \beta_1\log(PIT_t) + \beta_2\log(CGT_t) + \beta_3\log(CIT_t) + \beta_4\log(VAT_t) + \beta_5\log(CED_t) + \beta_6\log(STD_t) + \log(\mu_t) \dots \dots \dots \quad (3.3)$$

Where:

AGRO_t = Agricultural output at time t (dependent variable).

PIT_t = Personal income tax at time t.

CGT_t = Capital gain tax at time t.

CIT_t = Company income tax at time t.

CED_t = Custom and Excise duties at time t.

STD_t = Stamp duties at time t.

β₀ = Intercept or constant term.

β₁ - β₆ = Coefficients of the independent variables.

U_t = Error term at time t.

To analyze the relationship between taxation and agricultural output in Nigeria, this study employed the Autoregressive Distributed Lag (ARDL) model. The ARDL model is a robust econometric technique that allows for the estimation of both short-run and long-run dynamics in a single equation framework. Given the study period from 1994 to 2024 and the variables of interest agricultural output (AGRO) as the dependent variable, and personal income tax (PIT), capital gain tax (CGT), company income tax (CIT), custom and excise duties (CED), and stamp duties (STD) as independent variables the ARDL approach is particularly suitable.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 4.1: Descriptive statistics on all the relevant variables for the study

	AGRO	PIT	CGT	CIT	VAT	CED	STD
Mean	11792.92	2651.997	15.03300	1199.177	1040.768	531.6861	19.18720
Median	12330.33	1652.700	10.59389	820.9898	718.7557	334.0200	7.415028
Maximum	19306.49	13587.50	99.40340	4896.470	3639.320	1715.920	120.1570
Minimum	3839.680	41.70000	2.649800	654.4482	659.1536	41.37000	5.903000
Std. Dev.	5494.170	3136.030	17.37598	843.2835	694.0700	491.1679	28.31317
Skewness	-0.152015	1.850281	4.015724	3.145520	2.428828	0.998793	2.502158
Kurtosis	1.582196	6.364053	19.50482	13.36412	8.239962	2.758935	8.124274
Jarque-Bera	2.715862	32.30589	435.1796	189.8650	65.94480	5.229266	66.26425
Probability	0.257192	0.000000	0.000000	0.000000	0.000000	0.073195	0.000000
Obs	31	31	31	31	31	31	31

Author's own computation using E-View 10

The dependent variable, agricultural output (AGRO), has a mean of 11,792.92, suggesting a moderate average level of output over the period under review. The standard deviation of 5,494.17 further confirms the presence of notable dispersion around the mean. The Jarque-Bera probability of 0.2571 suggests that the AGRO variable is normally distributed, which is favourable for regression analysis.

Personal income tax (PIT) has a relatively high mean value of 2,651.997, with a standard deviation of 3,136.03, indicating substantial fluctuations over the years. The Jarque-Bera probability of 0.0000 confirm that PIT is not normally distributed, which suggests the presence of outliers or non-constant growth patterns in the data over time.

Capital gains tax (CGT) exhibits a very low mean of 15.03, with a median of 10.59. The wide difference between the mean and maximum value of 99.40 indicates the presence of extreme values. This is supported by a Jarque-Bera probability of 0.0000, confirming significant non-normality.

Company income tax (CIT) has a mean value of 1,199.18 and a standard deviation of 843.28 reinforces this variability. The Jarque-Bera statistic indicates non-normality at a significance level of 0.0000. This non-normal distribution may influence the linear relationship assumptions in econometric modelling.

Value-added tax (VAT) has a mean of 1,040.77. The standard deviation of 694.07 confirms notable

variability, while the Jarque-Bera test confirms non-normality with a probability value of 0.0000. Customs and excise duties (CED) exhibit a lower mean of 531.69, with a Jarque-Bera test gives a probability of 0.073, implying marginal non-normality. This suggests the CED variable may moderately fit into a regression model but would require further diagnostics for robust interpretation. Stamp duties (STD) have a mean value of 19.19 but with a strikingly wide maximum of 120.157 compared to a minimum of 5.90. The high standard deviation of 28.31 indicates significant dispersion in the values. With a Jarque-Bera probability of 0.0000, STD also exhibits non-normal characteristics.

Time Series Unit Root Test (s)

Table 4.2: Unit Root Test using Augmented Dickey-Fuller (ADF) Test

Variables	Augmented Dickey-Fuller Test		Lag	Order of int.	Remark
	@ level	@ 1 st Diff			
Log (AGRO)	-9.561340	-	Maxlag=7	I (0)	Stationary
Log (PIT)	-4.357245	-	Maxlag=7	I (0)	Stationary
Log (CGT)	-5.027003	-	Maxlag=7	I (0)	Stationary
Log (CIT)	-2.631186	-7.000163	Maxlag=7	I (1)	Stationary
Log (VAT)	-0.919692	-4.068792	Maxlag=7	I (1)	Stationary
Log (CED)	-4.716018	-	Maxlag=7	I (0)	Stationary
Log (STD)	-3.184957	-5.615880	Maxlag=7	I (1)	Stationary
	1% level	-4.416345			
Test of CV	5% level	-3.622033			
	10% level	-3.248592			

Author's own computation using E view 10

The stationarity test results using the Augmented Dickey-Fuller (ADF) test indicate that the majority of the variables in the study are stationary either at their levels or after first differencing. Specifically, agricultural output, personal income tax, capital gain tax, and customs and excise duties are stationary at level, classified as I (0), meaning their mean and variance are constant over time without differencing. On the other hand, company income tax, value-added tax, and stamp duties are non-stationary at level but become stationary after the first difference, classified as I (1). Given this, the appropriate econometric approach for the analysis would be to apply an autoregressive distributed lag (ARDL) model, which accommodates variables

integrated of order zero and one, and allows for the examination of both short-run and long-run relationships between tax revenue components and agricultural sector development.

Cointegration Estimation (ARDL Bounds Test) for the Model

The condition for using the ARDL is satisfied. Hence, the cointegration bounds tests will be employed and the F-statistic will determine whether the variables have a long run relationship. ARDL integrates dynamics of the long run and short run without losing information about the long run.

Table 4.3: ARDL Bounds Test result for cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.490883	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Author's own computation using E view 10

The ARDL bounds test result reveals an F-statistic value of 7.490883, which is significantly higher than the upper bound critical values at all conventional

significance levels (5%). Specifically, the F-statistic exceeds the I (1) critical value of 4.15 at the 5% significance level, indicating strong evidence against that

there exists a long-run relationship between tax revenue variables and the development of the agricultural sector in Nigeria.

Long run ARDL Results

Table 4.4: Long Run ARDL Results for the model

ARDL Long Run Form and Bounds Test				
Dependent Variable: DLOG(AGRO)				
Selected Model: ARDL(2, 2, 2, 2, 2, 2)				
Case 2: Restricted Constant and No Trend				
Date: 24/02/26 Time: 13:19				
Sample: 1994 2024				
Included observations: 29				
Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-tatistic	Prob.
LOG(PIT)	0.551468	0.19473	2.8318	0.0163
LOG(CGT)	-0.11176	0.03637	-3.0728	0.0038
LOG(CIT)	0.263563	0.240483	1.095974	0.2875
LOG(VAT)	-0.145628	0.03849	-3.7834	0.0051
LOG(CED)	-0.247227	0.08630	-2.8647	0.0122
LOG(STD)	-0.384793	0.13807	-2.7869	0.0534
C	7.685883	3.86421	1.9890	0.0424
EC = LOG(AGRO) - (0.5515*LOG(PIT) -0.1118*LOG(CGT) - 0.0456				
*LOG(VAT) -0.2472*LOG(CED) -0.0848*LOG(STD) + 7.6859)				

Author's own computation using E view 10

The coefficient of personal income tax is positive and statistically significant at the 5% level, with a coefficient value of 0.551468 and a probability value of 0.0163. This indicates that in the long run, increases in personal income tax revenue have a positive and meaningful effect on agricultural output. The implication is that revenue mobilized from personal income tax may be reinvested into the agricultural sector in a way that supports agricultural development, such as through infrastructure, subsidies, or rural services.

In contrast, the coefficient of capital gains tax is negative and significant at the 5% level, with a coefficient of -0.11176 and a p-value of 0.0038. This suggests that increases in capital gains tax revenue have a detrimental effect on agricultural output. One possible interpretation is that taxation on capital gains might reduce incentives for investment in agriculture-related capital assets or discourage long-term agricultural investment strategies, thus limiting sectoral growth.

The coefficient of company income tax is 0.263563, with a probability value (p-value) of 0.2875. This result implies that in the long run, changes in company income tax are positively associated with agricultural output (AGRO), but the effect is not statistically significant at the conventional 5% levels. The positive coefficient indicates that an increase in company income tax revenue is associated with a corresponding increase in agricultural output. This could

lead to improved productivity and higher output in the agricultural sector.

Similarly, value-added tax has a negative and statistically significant impact on agricultural output, with a coefficient of -0.145628 and a p-value of 0.0051. This indicates that higher VAT burdens may raise the cost of agricultural inputs, machinery, and services, ultimately hampering output. It reflects the regressive nature of VAT on productive sectors, especially in rural economies where agricultural operations are sensitive to cost fluctuations.

The coefficient for custom and excise duties is also negative and significant at the 5% level, with a value of -0.247227 and a p-value of 0.0122. This implies that higher import or excise duties could be increasing the cost of essential agricultural imports such as machinery, fertilizers, or chemicals, thereby negatively affecting production output in the long term.

Stamp duties also show a negative coefficient of -0.384793, with a marginal p-value of 0.0534, which is just above the 5% significance level. While not statistically significant at conventional thresholds, the result still suggests a potential adverse effect of stamp duty taxation on agricultural performance, possibly due to the cost burden associated with documentation and transactions in land and agricultural financing.

ARDL-ECM Test for Short Run

Since the results of the ARDL Bound test of the model indicated that a long-run cointegration

relationship existed between the dependent and explanatory variables, the ARDL-ECM test was carried out to adjust for the short run.

Table 4.5: ARDL Error Correction Regression for the Model

ARDL Error Correction Regression				
Dependent Variable: DLOG(AGRO)				
Selected Model: ARDL(2, 2, 2, 2, 2)				
Case 2: Restricted Constant and No Trend				
Date: 24/02/26 Time: 13:20				
Sample: 1994 2024				
Included observations: 29				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(AGRO(-1))	0.053285	0.161800	0.329326	0.7481
DLOG(PIT)	-0.054448	0.070720	-0.769902	0.4576
DLOG(PIT(-1))	-0.115462	0.073477	-1.571405	0.1444
DLOG(CGT)	-0.022465	0.020091	-1.118203	0.2873
LOG(CIT(-1))	0.063141	0.463287	0.136290	0.8950
DLOG(CGT(-1))	0.009131	0.021150	0.431696	0.6743
DLOG(VAT)	0.274675	0.161873	1.696855	0.1178
DLOG(VAT(-1))	0.133083	0.147885	0.899909	0.3874
DLOG(CED)	-0.065278	0.078754	-0.828880	0.4248
DLOG(CED(-1))	0.056405	0.074350	0.758646	0.4640
DLOG(STD)	-0.039281	0.048324	-0.812868	0.4335
DLOG(STD(-1))	-0.023146	0.047072	-0.491721	0.6326
CointEq(-1)*	-0.468731	0.116715	-4.016048	0.0020
R-squared	0.790900	Mean dependent var		0.053690
Adjusted R-squared	0.161483	S.D. dependent var		0.077631
S.E. of regression	0.071087	Akaike info criterion		-2.156308
Sum squared resid	0.085908	Schwarz criterion		-1.590531
Log likelihood	43.26647	Hannan-Quinn criter.		-1.979114
Durbin-Watson stat	1.958166			

* p-value incompatible with t-Bounds distribution.

Author's own computation using E view 10

The coefficient of the error correction term is -0.468731 and is statistically significant at the 1% level, with a p-value of 0.0020. This negative and significant coefficient confirms the existence of a long-run relationship between tax revenue and agricultural output, as was indicated by the bounds test. The magnitude of -0.4687 implies that approximately 47% of the deviation from the long-run equilibrium is corrected within one year. In other words, the model adjusts moderately toward equilibrium after a shock, demonstrating a relatively stable and self-correcting system. This means that any disequilibrium caused by short-term fluctuations in tax revenues or agricultural output will be corrected by nearly half in the following period.

Regarding the goodness of fit, the R-squared value is 0.790900, which suggests that about 79.09% of the variations in the growth of agricultural output in the short run are explained by changes in the explanatory variables included in the model. This indicates a strong explanatory power. The Durbin-Watson statistic is 1.958166, which is very close to the benchmark value of 2. This suggests that there is no significant evidence of autocorrelation in the residuals. The absence of autocorrelation is a desirable property because it indicates that the model errors are not serially correlated, thus making the regression estimates more reliable and valid.

Diagnostic tests for the Model

ARDL model Stability Test (CUSUM test)

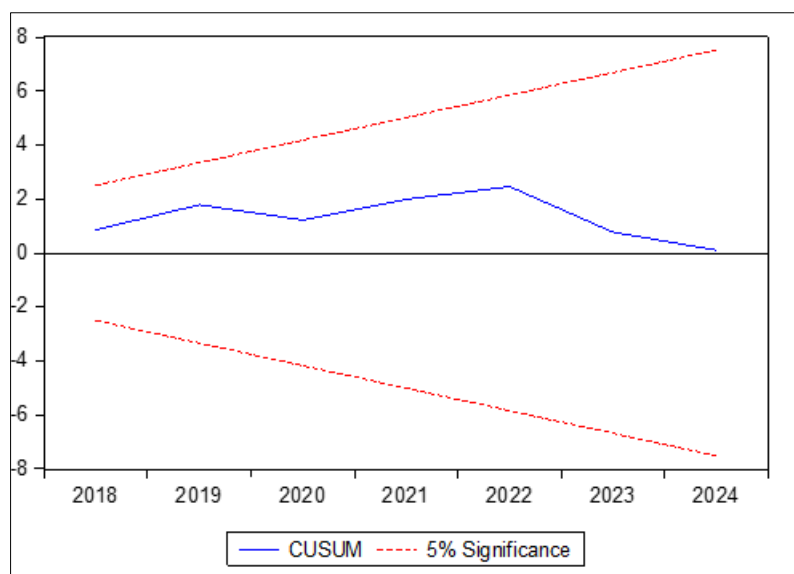


Figure 4.1: (CUSUM test)

The CUSUM-Squared graph expressed in Figure 4.1 revealed that the residuals of the estimated ARDL model is stable, as the cumulative sum of squares plot lie in between the upper- and lower-5% significant bounds.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it is concluded that tax revenue plays a critical role in shaping the development of the agricultural sector in Nigeria, but the effects of its components are varied. The long-run ARDL regression results demonstrate that personal income tax contributes positively and significantly to agricultural output, indicating that increased revenue from this source may support public investment in rural development and agricultural support programmes. However, other tax components such as capital gains tax, value-added tax, custom and excise duties, and stamp duties showed significant negative relationships with agricultural development in the long run, suggesting that these taxes may create financial and operational burdens for farmers and investors in the agricultural sector.

Based on the empirical findings of the study, the following recommendations were made for sound policy formulations in the future.

- 1 Policy makers should promote the effective utilization of personal income tax revenue by channelling it into infrastructural development relevant to the agricultural sector.
- 2 The government should consider revising or offering exemptions on capital gains tax for transactions directly linked to agricultural investments.
- 3 There should be a comprehensive review of the CIT framework as it applies to agro-based

companies to ensure it is not regressive or growth-inhibiting.

- 4 Value added tax policies affecting agricultural inputs and products should be reconsidered. Reducing VAT rates or exempting critical agricultural goods and services from VAT could reduce production costs and improve profitability for farmers and agribusinesses.
- 5 Customs and excise policies should be revised to reduce or eliminate import duties on agricultural machinery, fertilizers, and other essential inputs.
- 6 The government should consider providing stamp duty exemptions or relief for legal documents directly tied to agricultural business transactions.

REFERENCES

- Abubakar, F., Yusuf, H. A., & Abdulmalik, T. A. (2020). Impact of taxation on agricultural growth in Nigeria: Empirical evidence from Kogi State, *International Journal of Intellectual Discourse*, 3(1).
- Adebisi, J., Oseni, K., & Adeyemi, S. (2022). "Impact of Tax Revenue on Rural Infrastructure and Agricultural Productivity in Nigeria." *Journal of Development Economics*.
- Adetule, A. R. & Olakunle, O. O. (2022). Taxation and agricultural performance in Nigeria: A test for causality. *Asian Basic and Applied Research Journal*. 4(1), 236-245.
- Adeyemi, T. A., Ogunleye, O. A., & Sulaiman, R. (2020). "Taxation and Agricultural Output: Evidence from Nigerian States." *Nigerian Journal of Fiscal Policy*.

- Akinwale, O. & Ayodele, A. P. (2019). Effect of fiscal policy components on agricultural productivity in Nigeria, *Journal of Economics and Sustainable Development*, 10(18), 1-13
- Akinyemi, O., & others. (2022). The Impact of Taxation on Agricultural Sector Growth in Nigeria.
- Akpan, I., Ekanem, U., & Ogbu, J. (2021). "Fiscal Policies and Agricultural Output in Nigeria: A Sectoral Analysis." *African Journal of Economic Policy*
- Atayi, A., Boniface, J., Bobola, A., & Olorunrinu, A. (2020). The effect of government expenditure on agricultural output in Nigeria (1981-2018), *GPH-International Journal of Applied Management Science*, 3(11), 01-14.
- Besley, T., & Persson, T. (2013). *Pillars of Prosperity: The Political Economics of Development Clusters*. Princeton University Press.
- Bello, M. (2021). Climate Change Impacts on Agriculture in Northern Nigeria. *Journal of Agricultural Economics*.
- FAO. (2019). *State of Food and Agriculture in Nigeria*.
- Federal Ministry of Agriculture and Rural Development. (2022). *National Agricultural Technology and Innovation Plan*.
- James, S., & Nobes, C. (2020). *The Economics of Taxation*. London: Pearson Education.
- Keji, S. A. & Efuntade, O. O. (2020). Agricultural output and government expenditure in Nigeria, *Journal Perspektif Pembiayaan Dan Pembangunan Daerah*, 8(2), 101-110.
- Kasie, E. K. & Emeka, N. C. (2023). Effect of monetary and fiscal policies on agricultural growth of Nigerian economy, *International Journal of Commerce and Management Research*, 9(3), 98-103.
- Mile, B. N., Ijirshar, V. U., Asom, S. T., Sokpo, J. T., & Fefa, J. (2021). Empirical analysis of government agricultural spending and agricultural output in Nigeria, *Asian Journal of Economics, Business and Accounting*, 21(7), 7–23.
- Mirrlees, J. (1971). An Exploration in the Theory of Optimum Income Taxation. *Review of Economic Studies*, 38(2), 175-208.
- Musgrave, R. A., & Musgrave, P. B. (2019). *Public Finance in Theory and Practice*. New York: McGraw-Hill.
- Ogbu, J. C., Okafor, G. N., & Ibe, E. (2023). "Tax Compliance and Agricultural Sector Performance in Rural Nigeria." *Journal of Agricultural Economics*.
- Okeke, J., & Chukwu, L. (2023). *Tax Incentives and Agricultural Investment in Nigeria*.
- Oladipo, T., & Adebayo, K. (2021). Challenges of Agricultural Taxation in Nigeria: Policy Implications.
- Onakoya, A. B. & Afintinni, O. I. (2016). Taxation and economic growth in Nigeria, *Asian Journal of Economic Modelling*, 4(4), 199-210.
- Oseni, K. O., & Adebayo, M. O. (2022). "Corporate Tax and Agribusiness Investment in Nigeria: A Cross-Regional Analysis." *International Journal of Business and Economic Research*
- Oyaniran, T. (2020). *Current state of Nigeria agriculture and agribusiness sector*, AfCFTA
- PricewaterhouseCoopers, (2016). Nigeria: Looking beyond oil. Available at: <https://www.pwc.com/ng/en/assets/pdf/nigeria-looking-beyond-oilreport.pdf>.
- Ramsey, F. P. (1927). A Contribution to the Theory of Taxation. *Economic Journal*, 37(145), 47-61.
- Romer, P.M. (1990) Endogenous Technological Change. *Journal of Political Economy*, 98, S71-S102. <http://dx.doi.org/10.1086/261725>.
- Ukpai, De. K. & Dkhar, D. S. (2018). Public expenditure and agricultural production in Meghalaya India: An application of the bound testing approach to co-integration and error correction model, *International Journal of Environmental Sciences and Natural Resources*, 8(2), 1-8.
- Ukpong, U. M., Uduak, A., Ekere, S. A., & Akpan, E. O. (2022). Government expenditure and agricultural sector output in Nigeria. *American Journal of Arts and Human Science*, 1(4), 20–26. <https://doi.org/10.54536/ajahs.v1i4.682>.
- Utitofon, M. U., Akpabio, U., Ekere, S. A & Akpan, E. O (2022). Government expenditure and agricultural sector output in Nigeria, *American Journal of Arts and Human Science (AJAHS)*, 1(4), 20-26.
- World Bank, (2018). World Bank Development Indicators. Available at: <https://databank.worldbank.org/source/world-development-indicators>.
- World Bank, (2020). Half of the world's poor live in just 5 countries. Available at <https://blogs.worldbank.org/opendata/half-world-s-poor-live-just-5-countries>.