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Effect Of Government Expenditure On Agricultural Sector On Agricultural Value-Added Growth Rate In Nigeria

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ABSTRACT:
This study was carried out to evaluate the impact of government expenditure on the agricultural sector on the agricultural value-added growth rate in Nigeria between 2003 and 2022 using annual time series data sourced from the Central Bank of Nigeria Statistical Bulletin and World Bank Development. Agricultural value-added growth rate was used as the dependent variable, while government expenditure on agriculture was used as the independent variable. Auto Regressive Distributed Lag (ARDL) Model was used to analyze data. The results of the ARDL Model revealed that government expenditure on the agricultural sector had a significant negative relationship with Nigeria's agricultural value-added growth rate. Therefore, the researchers recommended that the government fund or support intending agricultural investors and producers through financial initiatives that would help develop value-added enterprises/businesses.

KEYWORDS: *government expenditure, agricultural value added, agricultural financing, agricultural sector, auto-regressive distributed lag model*

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INTRODUCTION

Agriculture is the science of the cultivation of soil for crops and the rearing of animals. Agriculture is as old as man himself, as it was the first occupation of mankind. Even with the evolution of modern civilization, it remains an essential part of the growth and development of any extant economy (Anthony-Orji *et al.*, 2020; Orji *et al.*, 2019; Ogbuabor & Nwosu, 2017). In Nigeria, the agricultural sector is a major sector that drives economic development and industrialization because of its importance in the provision of food for the increasing population, the supply of raw materials to the growing industrial sector, the generation of foreign exchange earnings, creation of employment opportunities, and provision of market for the product of the industrial sector (World Bank, 2016). Nigeria has a large expanse of arable land and a favorable climate for agriculture. As of 1990, the estimated arable land was 81 million hectares out of the Nigerian total of 91 hectares, 18 million hectares of which were classified as permanent livestock production pasture. This enables the production of various crops, livestock, forestry, and fishery products (Ewetan et al., 2017). The 1962–1968 development plan was the first national plan of Nigeria post-independence. Among its many objectives, the introduction of modern agricultural methods, agricultural extension services, and the supply of better farm implements were greatly emphasized.

This national plan was, to a large extent, achieved, and Nigeria became the leading producer of export crops such as cocoa, which was produced in the western region; palm oil, which was largely produced in the southern region; and groundnut, which was produced majorly in the northern region. According to the Central Bank of Nigeria (CBN) reports, in the 1960s, agriculture contributed about 60 percent to the nation's Gross Domestic Product (GDP) (CBN, 2016). The National Bureau of Statistics (NBS) reported that agriculture was the most important sector contributing to the country's output, employment, and foreign exchange earnings (NBS, 2014).

However, the sector's success was short-lived, and its share of contribution to the GDP of Nigeria declined drastically to 25 percent between 1975 and 1979. Later, it rose to 38 percent in 2002 but fell again to 20 percent in 2010. There has not been a significant change in agriculture's share of the GDP since then. This fall in agricultural production was owed greatly to the oil boom the economy experienced in the 1970s.

The 1970s brought about the emergence of the oil industry as the main driver of economic growth. Since then, agricultural production has been progressively declining regarding its annual contribution to Nigeria's GDP. The Nigerian economy became over-dependent on the oil sector, and this caused a decline in the revenue generated by the agricultural sector over time. The Nigerian government has recognized how detrimental the over-dependence on only one sector can be to the economy and has recently started to seek to diversify the economy through the development of other productive sectors aside from the oil sector.

The government has considered the importance and prospects of the agricultural sector, one of the major sectors it seeks to develop. There are other sources of generating employment and economic growth, but only a few can be compared with agriculture's ability to reduce poverty and enhance economic growth, especially at the early stages of development. For example, in Zambia and Nigeria, mineral wealth has yet to provide a platform for a wide range of employment opportunities, poverty reduction, and economic growth, as agriculture has proven to have done. With the increasing income and affordable food provided by a dynamic agricultural sector, the economic transformation will be fast, and economies will remain trapped in a cycle of low growth and poverty (Department for International Development, 2005).

Adequate financing is essential for any sector's successful development. Credit plays an essential role in the development of the agricultural sector of the economy. The agricultural sector depends more on credit as a source of finance than any other sector in the economy due to the seasonal variation in the returns of farmers and a changing trend from subsistence to commercial farming (Abedullah et al., 2009). The provision of suitable financial policies and enabling institutional finance for both subsistence and commercial agriculture have prospects of enhancing agricultural development, hence increasing the contribution of the sector in the generation of employment and foreign exchange earnings and increasing the income of economic agents engaged in agricultural practices (Olomola, 2010).

Since 1970, the government has established and implemented several agricultural financing policies. Some early agricultural policies established include the National Accelerated Food Production Program established in 1972, the Agricultural Development Program Established in 1975, and Operation Feed the Nation established in 1976, among many others. Many of these policies lasted only a short time to achieve their objectives. Over the years, inadequate finance has been identified as a major limiting factor to developing the agricultural sector in most developing countries, including Nigeria (Orji et al., 2014, 2020). The use of crude and obsolete tools and poor agricultural infrastructure, such as poor transport facilities, has been an obvious characteristic of the sector. These appalling characteristics are attributed to the lack of financial resources needed to acquire modern and improved farm implements and new farming methods and enhance infrastructure. The government sees this limitation and has, since 1970, introduced and implemented various agricultural financing policies in order to achieve an effective system of sustainable agricultural financing schemes, programs, and institutions that can provide credit facilities to agricultural producers, processors, and marketers at all levels (Eze *et al.*, 2010). Even with all these policies and strategies of the government and other institutions to broaden the framework of sustainable growth, the performance of the agricultural sector is still suboptimal.

Small-scale farmers dominate agriculture in Nigeria, and it is largely subsistent with low production capacity and stagnancy, and over 90 percent of agricultural output is accounted for by farmers with less than two hectares of land available for crop production (Federal Ministry of Agriculture and Rural Development, 2008). Many policies have been ineffective because of poor management or because macroeconomic policies affecting exchange rates, inflation, and cost of capital have drowned their impact.

Despite the natural endowments that the Nigerian soil is blessed with, the agricultural sector has continued to record a decline in productivity. The low availability of credit facilities, as well as corruption and sharp practices in financing agricultural development in Nigeria, has hindered the potential of the agricultural sector to boost economic growth and development and alleviate poverty in Nigeria. Other factors hindering the development of agriculture in Nigeria include socioeconomic and structural problems such as Poor and inefficient allocation of adequate funds to the agricultural sector, Unavailability of credits to local farmers, and lack of capacity building on the part of the farmers, which often result to loan default, High-interest rates on loan facilities which affect the borrowing ability of farmers in Nigeria and the inability of farmers to utilize credits granted due to inadequate formal training. Having realized the declining role of agriculture in economic development, which resulted in an increase in the poverty rate over the years, government over the years has put in place certain policy measures and programmes with a view of increasing the growth and development of agriculture, which will, in turn, bring about enhanced agricultural output and agricultural value assed in Nigeria. However, an evaluation of federal government capital expenditure on agriculture compared to the total federal government capital expenditure on other sectors shows that the agricultural sector needs more funding. This portrays a gloomy future for the sector development in the country. From 1980 to 2011, the federal government capital expenditure on agriculture was below 10% except in the following years; 1981, 1982, 1983 (the highest), 1985, 1986, 2001, 2002, 2004, 2005, 2007, 2008, and 2009 because these were the years that coincides or the year after with different government agricultural development policies and programmes such as the Green Revolution in 1980, the structural adjustment programme (1986), The Directorate of Foods, Roads and Rural Infrastructure (1987). However, it was 5.7% but increased to 7.1% the following year, the Food for All programme in 1987, the Better Life for Rural Women programme in 1987, and the Rural Agro-Industrial Development Scheme.

This begs the question of whether agriculture is adequately financed in Nigeria and how much this finance impacts economic growth and development in Nigeria. Consequently, there is a need to undertake a study on this note to provide clear perspectives on the impact of agricultural sector financing on agricultural output and agricultural value-added growth rate in Nigeria by examining the effect of government expenditure on the agricultural sector on agricultural value-added growth rate in Nigeria. The study therefore hypothesized that

H_{01}: Government expenditure on the agricultural sector does not have a significant impact on the agricultural value-added growth rate in Nigeria

LITERATURE REVIEW

Concept of Agriculture

Akinboyo (2008) defines agriculture as the science of using the land to raise plants and animals. It is the simplification of nature's food webs and the rechanneling of energy for human planting and animal industries. Ogen (2007) states that from the standpoint of occupational distribution and contribution to the GDP, agriculture was the leading sector in the 1960s. Also, the Nigerian economy, like Brazil's, could be described as an agricultural economy during the first decade after independence. This is because agriculture served as the engine of growth of the overall economy of the two countries. Agriculture is the economic mainstay of most households in Nigeria and is a vital sector for the economy. The important benefits of the agricultural sector to Nigeria's economy include the provision of food, contribution to the gross domestic product, provision of employment, provision of raw materials for agro-allied industries, and foreign exchange earnings during the period of 1960s; Nigeria was the world's second-largest producer of cocoa, the largest exporter of palm kernel and the largest producer and exporter of palm oil. It was also a leading exporter of other major commodities such as cotton, groundnut, rubber, hides, and skins. Despite the reliance of Nigerian peasant farmers on traditional tools and indigenous farming methods, these farmers produced 70% of Nigeria's exports and 95% of its food needs. The agricultural sector, however, suffered neglect during the heyday of the oil boom in the 1970s.

Government initiatives in Agricultural infrastructure

Government initiatives in Agricultural infrastructure according to Oyaniran (2020) are as follow; Establishment of Special Agro-Industrial Processing Zones, the Federal government is establishing Special Agro-Industrial Processing Zones to concentrate agro processing activities and also SAPZs are aimed at boosting productivity, integrating production and enhancing the processing and exporting of select commodities; Development of Railway Infrastructure, as part of its plans to aid the free flow of goods, the government is in construction of rail lines across the country and once complete, these would serve as an alternative to road transport and enhance the distribution of goods and commodities within the country; Development of Road Infrastructure, in addition to its development of Railway infrastructure, the Federal

government is also investing in the rehabilitation and construction of roads linking numerous parts of the country and a key example is the ongoing rehabilitation of the Lagos Badagry expressway which serves as a key component of the West African Trade Routes; Enhancement of Ports Infrastructure, in addition to the six existing seaports, the government has commenced the development of additional ports in AkwaIbom and Lagos to enhance its maritime capabilities and the Nigerian Ports Authority has also signed a MOU with the Royal Port of Antwerp Oyaniran (2020).

Government policies and strategies for agricultural development

Before the mid-1980s, economic development in Nigeria was largely rooted in development planning, so agricultural policies, programs, and projects were prioritized in the various plans. However, from the mid-80s to the late-90s, development planning was abandoned in favor of the structural adjustment plan. This opened the way for various policies and programs conceived and implemented over specific eras. From 2001 to 2007, the National Economic Empowerment and Development Strategy (NEEDS I and II) was drawn up and implemented with presidential initiatives to develop selected agricultural commodities. This was followed by the Seven-Point Agenda (2007 - 2010), culminating in preparing the Food Security Strategy Document in 2009. This ushered in the need to emphasize a value-chain approach to agricultural development. During this period of strategic planning, the Nigerian government also formulated sub-sector-specific policies, including (FAO, 2017):

i. The Land Resources Policy to guide the sustainable use of agricultural lands;
ii. The National Cooperative Development Policy;
iii. The National Agricultural Mechanization Policy, and
iv. The National Seed Policy

In order to reduce rural exodus and empower the rural population to create jobs and wealth and contribute to poverty reduction, the National Policy on Integrated Development was formulated. This policy sought to integrate the Nigerian rural economy into the mainstream of the national development process through effective coordination and management. From 2001 – 2009, some innovative programs and projects covering such areas of agricultural development as production, marketing, storage, and financing were implemented. The most prominent of these programs and projects were the Special Program for Food Security (SPFS), the FADAMA II Program, the Presidential Initiatives on Cassava, Rice, Vegetable Oil, Tree Crops and Livestock, the Fertilizer Revolving Fund (FRF) and the restructuring of the Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB). In 2004, three key agricultural development and marketing companies were established. These included the Tree Crops Development and Marketing Company, the Livestock Development and Marketing Company, and the Arable Crops Development and Marketing Company. Targets were, among others, to strengthen agricultural production and provide useful marketing information and marketing outlets as well as storage and processing facilities (FAO, 2017). To innovate and facilitate credit delivery, the Central Bank of Nigeria (CBN) developed new strategies based on the Trust Fund model to reduce risks faced by banks in agricultural lending for production, processing, and marketing operations. As a result of implementing these policies, strategies, and specific initiatives, programs, and projects, the agricultural sector recorded significant advances globally and at the level of specific commodities. The tremendous increases in the outputs of staples like maize, millet, sorghum, cassava, rice, vegetable oil, and yam were notable. For example, annual cassava production increased from 33 million metric tonnes in 1999 to 46 million metric tonnes in 2006, while rice increased from 3.3 million metric tonnes to 4 million metric tonnes over the same period (FAO, 2017). In most developing countries (low and middle-income countries), the agricultural sector remains the largest contributor, providing inputs, food, employment opportunities, raw materials for other industries, provision of foreign earnings from the exportation of the surpluses, and, more importantly, the enormous advantage of the value added in the various production process (Izuchukwu, 2011).

Concept of Agriculture Value-Added

Before explaining the term agriculture value added, it is imperative to define adding value. Boland (2009) put it as the process of changing or transforming a product from its original state to a more valuable state. He gave an instance of the intrinsic value in commodities like field corn grown, harvested, and stored on a farm and then fed to livestock on that farm has value. Thus, a changed product's value is added, like processing wheat into flour. It can be referred to as a product by changing its current place and time and from one set of characteristics to other more preferred or desired characteristics in the marketplace.

Agriculture value-added involves changing raw agricultural products into a new structure through processing, packaging, drying, cooling, cleaning, or any other process or technique that differentiates the product from its original raw form (Mellissa, 2007). It entails transforming or converting raw materials into finished or semi-finished products and maintaining product quality. According to the (U.S. Department of Agriculture, Rural Business Development, 2015), Value-added products are defined as follows: "A change in the physical state or form of the product (such as milling wheat into flour or making strawberries into jam), the production of a product in a manner that enhances its value, as demonstrated through a business plan (such as organically produced products) and the physical segregation of an agricultural commodity or product in a manner that results in the enhancement of the value of that commodity or product (such as an identity preserved marketing system)." While value-added agricultural business is any activity, an agricultural producer performs outside of traditional commodity production to receive a higher return per unit of the commodity sold. Activities like agri-tourism and entertainment agriculture. Examples of value-added agricultural products include garlic braids, bagged salad mix, artisan bread, lavender soaps, and sausages. Adding value to agricultural products is a worthwhile endeavor because of the higher returns that come with the investment, the opportunity to open new markets and extend the producer's marketing season, and new recognition for the farm.

Agricultural Financing and Government Expenditure

Agriculture is also financed in Nigeria by the government through annual budgetary allocations. Generally, approved expenditures for agriculture increased significantly between 2004 and 2018, but allocations fall into different episodes. 28 Overall, budgeted expenditures for agriculture increased nearly 210 percent from 8.43 billion Naira in 2004 to 182.84 billion Naira in 2018. However, the increases were not uniform over time; periods of increases and decreases succeeded each other. The first growth phase was between 2004 and 2009 when approved expenditures increased 180 percent to 162.71 billion Naira. This was the period identified above when government policy treated agriculture as a government-led development activity. The increasing budgets funded the numerous presidential initiatives on agriculture, including inefficient subsidies on inputs (seeds, fertilizer, agrochemicals). Actual government spending on agriculture also rose consistently yearly, as discussed earlier.

Approved expenditure for agriculture plunged significantly in 2010 and 2011 by 62.8 and 25.3 percent, respectively, from the preceding year's figures. The policy reform began in 2010 to transition from a government policy of "agriculture as a development activity" to a private sector-led economic activity. This policy led to the rediscovering of the subsidy agenda and the discontinuation of the government's direct procurement of agricultural inputs. The subsidy reform, particularly, was behind the massive agricultural budget reduction in 2010. This period also witnessed the introduction of the federal government's fiscal consolidation agenda, especially in 2011, when the government sought to "achieve more with less" by plugging loopholes in the financial and procurement systems that led to wasteful spending. Another contributing factor was splitting the Federal Ministry of Water Resources into two separate ministries in 2011 by the government. The fiscal consolidation agenda and the excising of water resources from agriculture further reduced the approved agriculture expenditure in 2011 (Michael, 2016).

The next two years witnessed an increase in 2012 to N82.78 billion and a further increase to 84.24 billion Naira in 2013. These increases were responses to the funding requirements of the new Agricultural Transformation Agenda, formally launched in mid-2011. They were also in response to political economy issues in the Nigerian budgeting system that resulted in the national assembly inflating the executive budget proposals beyond what the Ministry of Finance intended to or could fund (Michael, 2016).

The decline of the approved budget for agriculture in 2014 and 2015 was for differing reasons. The continuing fiscal consolidation program contributed to the –22.2 percent decline in 2014. Another probable contributing factor was the conclusion of the World Bank's First Agriculture Sector Development Policy Operation (AgDPO1), endorsed in 2013, but with the proceeds expected to flow in 2014. FMARD had expected to draw on the funds directly as additional extra-budgetary resources to budget provisions. However, a special audit finding on the AgDPO1 found, "It appears there was a misunderstanding of the concept of the budget support financing at the sectoral level, as FMARD had the impression that the funds could be earmarked for their sole use, making them withdraw the sum of $21,444,000.00 for their activities, which they later refunded" (Osakwe, 2017). It seems that this erroneous impression influenced the Ministry's budget request. The decline of 37.0 percent in the approved budget for 2015 was a fallout of the drastic decline in world oil prices, which began in mid-2014. The continuing decline forced the executive to withdraw the budget proposal submitted to the National Assembly for downward review.

The massive increases in budgetary allocation since 2016 are a policy response of the new government that came into power in mid-2015 to the agriculture challenge. Anchoring the economic diversification program on agriculture was a major platform of the government's electoral campaign. The government promised to raise agriculture to new heights. The increased allocations are an effort to realize these promises. Consequently, the government increased budgetary allocations to agriculture by 86.3 percent in 2016 despite the poor state of government revenues. However, the government could only achieve a budget execution rate of 73.9 percent in that year. This notwithstanding, the government further raised the budget for agriculture by 77.4 percent to N136.47 billion in 2017 and 34.0 percent to N182.84 billion Naira in 2018.

The increased approved allocations in recent years do not represent an improved share of agriculture in approved aggregate expenditure over the preceding years. The 2018 allocations translate to only 5.6 percent of approved total federal government expenditures for the year, which falls short of the AU target of 10 percent. However, the 2018 allocation is the federal government's highest achievement so far, i.e., considering the approved budget only and not the outturns. This exceeds the next best performance in budget allocations, which was 4.4 percent, achieved in 2009. Actual expenditure (outturns) for that year amounted to 5.8 percent. It still needs to be determined whether the government funded the improved budget allocations of 2017 and 2018 or whether the underfunding experience of 2016 has been repeated.

Theory of Financial Intermediation

This study is anchored on the theory of financial intermediation. The Theory of Financial Intermediation, as explained and modernized by (Bekun, 2015) in a research paper submitted to the Institute of Graduate Studies, Eastern Mediterranean University, North Cyprus, is a channel through which huge amounts of credit are available for spontaneous economic expansion. This theory was shown as the supply-leading role of financial institutions. (Robison, 2001) stated that the theory specifically postulates rural economic growth emphasizing agricultural financing. The implication is that the financial sector provides upfront loans for farm products through subsidized credits and other agricultural inputs. The hypothesis considered the limitations farmers, growers, and tillers encounter in obtaining farm inputs and other agricultural implements, as well as bank interest. At the same time, (Robison,2001) argued that finance is a handmaid to economic expansion and that increased productivity promotes the demand for the financial instrument. For optimal performance, financial institutions' resources should be efficiently and effectively channeled to the needed sectors, such as agriculture (Nnamdi & Torbira, 2015). A long-term association between economic growth and credit disbursement was cited by (Nwakanma et al., 2014), showing that production increases as more and more credits are made available to farmers, leading to positive economic growth in Nigeria. The capacity of financial institutions to finance farm products via the banking system, according to Schumpeter (1934), promotes the growth and development of any nation. (Demetriadesand Hussein, 1996) and (Rajan&Zingalas, 1996) found solid evidence that the expansion of the financial sector aids the growth of the country's economic sectors. (Capiro&Demirguc-kunt, 1998) cited long-term credit connection with strong production and growth. However, (Obansa&Maduekwe, 2013) noted that the flow of credit to the agricultural sector via financial institutions became necessary due to dynamic changes in land tenure systems and new farming techniques.

Empirical Review

Enilolobo and Ode-Omenka (2018) investigated the impact of deposit money banks' credit on agricultural output in Nigeria from 1978 to 2016. Time series data were sourced from the statistical bulletin of the Central Bank of Nigeria. Ordinary least squares regression models were used in analyzing data. The findings of the study indicated that there was no long-run relationship between deposit money banks' credit to the agricultural sector and agriculture sector output in Nigeria.

Oguwuike (2018) assessed the effect of agricultural output on economic growth in Nigeria from 1981 to 2016. Secondary data on GDP, crop production, livestock, fishery, and forestry were obtained from the CBN statistical bulletin. The econometric methods of ordinary least squares regression analysis, co-integration test, and error correction mechanism were used. The co-integration result showed that co-integration exists among the variables in the model. From the results, the first and third lags of GDP were positively and significantly related to the current level of economic growth. The crop and livestock production coefficients were positively signed and statistically significant in influencing GDP. The coefficient of the fishery was positively signed but statistically not significant in influencing GDP. The coefficient of forestry was negatively signed but statistically significant in influencing GDP. Adesoye et al. (2018) analyzed the effect of agricultural value chain financing on agricultural productivity and economic growth in Nigeria from 1981

to 2015. The autoregressive distributed lag (ARDL) model was used to analyze the data. The inferential statistics revealed that expenditure on the agricultural value chain positively and significantly impacted agricultural sector output in Nigeria. The study revealed that farm lands, agricultural inputs, and machinery significantly influence agricultural productivity in Nigeria. The study further showed that capital, labor, and agricultural output had a positive and significant impact on the economy of Nigeria.

Shobande *et al.* (2018) researched the relationship between financial sector performance and agricultural growth in Nigeria between the first quarter of 1996 and the fourth quarter of 2017. Autoregressive Distributed Lag (ARDL) model was used to analyze the time series data collected. The study found that agricultural financing, money market, capital market, and exchange rate positively correlate with agricultural growth in Nigeria. In contrast, inflation has a negative effect on agricultural growth. Emmanuel et al. (2017) examined the impact of financing agricultural seed production on the yield of seed plants and export revenue in Nigeria. The study used secondary data covering 16-year period from 2000 to 2015. Data on expenditure on seed financing, agricultural productivity, and export revenue were used in the analysis. The research found that improvement in seed financing has a positive and significant impact on the yield of seed plants and that there is a positive relationship between the yield of seed plants and increased export revenue in Nigeria.

The study by Ademola (2019) empirically assesses the impact of agricultural financing on the growth of the Nigerian economy. The study used gross domestic product as its dependent variable, while commercial banks' loans and advances, government expenditure on the agricultural sector, and lending rate were the independent variables. The study revealed that the size and amount of credit available to agriculture of the total amount of credit granted by the government has yet to impact Nigeria's economic growth level. This is as it shows a negative influence on Nigeria's output level. This also goes with the level of agricultural output, which maintained a negative but insignificant influence on the output level of Nigeria.

Meanwhile, the real interest rates and the total commercial bank loans to agriculture positively impacted Nigeria's output level. The reason is that when it involves the private sector and individual entities, the loans and advances will have a small quantity of regularity in disbursements. This is evident in the level and frequency of loans made available by the apex banks through Nigeria's commercial and specialized banks.

METHODOLOGY

This study adopted the ex post facto research design.The method of data collection for this study was the desk survey method of collecting data. It collects data from existing sources to get initial ideas about research interests.

Model specification

Based on this study's theoretical framework, objectives, and hypothesis, a model was specified to show the effect and relationship among/between the variables of interest. Based on this, the model showing the effect and relationship between /amongst the variables of interest was transformed into functional and econometric equations. Thus:

$$AP = f(AF) \quad 1$$

Where,
AP = Agricultural production (proxied by agriculture value-added growth rate (AVA)
AF = Agricultural financing (proxied by government expenditure on agriculture (FGRA))

Therefore, given the models and their corresponding proxies, the econometric equations after the ordinary least square (OLS) dynamics shall be thus:
Equation one: AGRICULTURE VALUE ADDED GROWTH RATE (AVA)

$$AVA = b_o + b_1 \log FGRA + et$$

RESULTS AND DISCUSSIONS

Table 4.1 Descriptive statistics

	AVA	FGRA
Mean	4.597095	41.57823
Median	4.188437	38.06551
Maximum	7.412883	78.37000
Minimum	2.122603	7.537355
Std. Dev.	2.013052	21.96838
Skewness	0.062137	0.274014
Kurtosis	1.380544	1.983291
Jarque-Bera	2.198401	1.111693
Probability	0.333137	0.573586
Observations	20	20

The descriptive statistics in Table 1 show that FGRA had a mean value of N4.157, while AVA had a mean value of approximately 4.6. Note that the Mean describes the average value for each data series in the model. From the analysis, FGRA had a Standard Deviation of 21.9, implying that it is the more volatile variable than AVA in the model, which has a standard deviation 2. The Table further reveals that both variables with positive skewness values are skewed slightly to the right. Kurtosis measures the peakness or flatness of the distribution of a series. The kurtosis of a normal distribution is 3. If it exceeds 3, the distribution is peaked or leptokurtic relative to the normal.

Conversely, if it is less than 3, the distribution is flat or platykurtic relative to normal distribution. Table 4.1 further reveals that both variables are flat or platykurtic since their kurtosis values are less than 3. Jarque-Bera (JB) tests whether the series is normally distributed or not. The test statistic measures the difference of the skewness and kurtosis of the series with those from a normal distribution. In the JB statistic, the null hypothesis, which states that the distribution is normal, is rejected at a 5% significance level. From the analysis presented in Table 4.1 above, all the variables had Probability values of greater than 0.05; as such, we conclude that all the variables are normally distributed. The number of observations is twenty, signifying the number of years of the study.

Inferential results

ARDL Model results with logAVA as Dependent Variable

Table 4.2 Result of ARDL Model for model (1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(AVA(-2))	0.382460	0.213209	1.793828	0.1031
LOG(FGRA)	-1.035153	0.305518	-3.388187	0.0069
C	8.858661	2.740576	3.232408	0.0090
R-squared	0.926126	Mean dependent var		1.370431
Adjusted R-squared	0.874415	S.D. dependent var		0.477666
S.E. of regression	0.169275	Akaike info criterion		-0.413481
Sum squared resid	0.286541	Schwarz criterion		-0.017760
Log-likelihood	11.72133	Hannan-Quinn criter.		-0.358916
F-statistic	17.90948	Durbin-Watson stat		1.681182
Prob(F-statistic)	0.000066			

Source: Researchers' analysis with e-views 10 output (2023)

The Auto Regressive Distributed Lag (ARDL) Model result, as shown in Table 4.2 above, suggests that government expenditure on the agricultural sector (FGRA) has a significant negative relationship with Nigeria's agricultural value-added growth rate. A percentage increase in FGRA would bring about a 104 percent decrease in AVA. A keen observation of the result showed that the R-squared and Adjusted R-squared were approximately 0.93 and 0.87, respectively. This means that the explanatory variables accounted for about 93% of variations in the explained variable. Put differently, about 93% of the variation in agricultural value added to the independent variables explained the growth rate. The remaining 7% may be attributed to variables not captured in the model (stochastic variables).

Post estimation test
Table 4.3 Test for Auto-correlation

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. |* . |	. |* . |	1	0.200	0.200	0.8513	0.356
.**| . |	***| . |	2	-0.319	-0.374	3.1408	0.208
.**| . |	. | . |	3	-0.214	-0.062	4.2437	0.236
. | . |	. | . |	4	0.061	0.017	4.3403	0.362
. |* . |	. | . |	5	0.091	-0.030	4.5682	0.471
. | . |	. | . |	6	-0.016	-0.024	4.5759	0.599
. | . |	. |* . |	7	0.047	0.108	4.6478	0.703
. | . |	.*| . |	8	-0.038	-0.104	4.6993	0.789
.*| . |	.*| . |	9	-0.176	-0.135	5.9334	0.747
. | . |	. | . |	10	-0.058	0.010	6.0823	0.808
. |* . |	. | . |	11	0.080	-0.031	6.4152	0.844
.*| . |	.**| . |	12	-0.116	-0.251	7.2284	0.842

Source: Researchers's analysis with e-views 10 output (2023)

This test is carried out to further test for autocorrelation. The result of the Correlogram Q-Statistic in Table 4.3 suggests that the variables are free from autocorrelation.
The correlogram Q- Stat. table indicates that all p-values were >5%, hence the conclusion that the model was free from autocorrelation.

Test for serial correlation
Table 4.4 Test for serial correlation
Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.934533	Prob. F(2,6)	0.4433
Obs*R-squared	4.275371	Prob. Chi-Square(2)	0.1179

Source: Researchers's analysis with e-views 10 output (2023)

The Breusch-Godfrey Serial Correlation LM Test in Table 4.4 above showed that the probability values of 0.4433 and 0.1179 are statistically insignificant at a 5% significance level. The results show that the model is free from serial correlation.

Test of hypothesis
Decision Rule: The researchers used critical values like p-value as the basis for acceptance and rejection of null hypotheses. Where the critical p-value computed is less than a 5% significance level, the variable was considered significant. Hence, it was rejected.

H_{01}: There is no significant impact of government expenditure on the agricultural sector on the agricultural value-added growth rate in Nigeria

Variables	Coefficient	t-Statistic	P-value
LOGFGRA	-1.035153	-3.388187	0.0069

Source: Extracted from Table 4.2

The test of hypothesis ($H0_2$) revealed that the p-value of LOGFGRA is less than 0.05 significance level, with a probability value of 0.0069. The null hypothesis, which states that government expenditure has no significant impact on the agricultural sector on agriculture value-added growth rate in Nigeria, is rejected.

CONCLUSION AND RECOMMENDATION

The study evaluated the impact of government expenditure on the agricultural value-added growth rate in Nigeria using annual time series data from 2003 to 2022. The study used the Auto Regressive Distributed Lag (ARDL) Model to ascertain how government expenditure influenced Nigeria's agricultural value-added growth rate. Empirical results revealed that government expenditure on agriculture significantly affected Nigeria's agricultural value-added growth rate. This study concluded that government expenditure significantly affects Nigeria's agricultural value-added growth rate within the referenced period. The

researchers recommended that the government fund or support intending investors and producers of agricultural-related products through financial initiatives that would help develop value-added enterprises/businesses.

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