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AGRICULTURAL OUTPUT, AGRICULTURAL EXPORT, AND ECONOMIC GROWTH IN NIGERIA

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Abstract

This study employs Autoregressive Distributed Lag (ARDL) bounds testing co-integration approach to empirically examine the impact of agricultural output and agricultural export on economic growth of Nigeria from 1981-2020. Also, the study considers the roles of capital formation and trade openness on economic growth. The empirical results indicate the presence of significant long-run relationship between economic growth, agricultural output, agricultural export, gross fixed capital formation and trade openness in Nigeria. In addition, the results reveal that, agricultural output has significant and positive impact on economic growth in Nigeria, both in the short run and the long run. Agricultural export has negative but significant impact in the short run, but exhibits positive and insignificant impact in the long run. Gross fixed capital formation and trade openness exert significant and negative impact on economic growth in the long run; while gross fixed capital formation has significant impact in the short run, trade openness is not. Based on the findings it is necessary for the government to increase agricultural output, through increased expenditure on export promotion, increased trade openness and capital formation in the country. These will surely result in significant increase in economic growth in Nigeria.

Keywords: *Economic Growth, Agricultural Output, Agricultural Export, Cointegration.*

Introduction

The relationship between agricultural output and export to accelerate economic growth of countries is a focal point in major economic debates, both in advanced and developing economies. There is also a robust nexus between agricultural output and export on economic growth in countries across the globe. Kang (2015) opined that the export of agricultural goods and services to generate foreign exchange that is required to import foreign goods and raw materials. The increase in the imports, in turn, stimulates a nation's capacity to increase production in the long run. This is more pronounced in less developed economies, Nigeria inclusive, that have a pronounced disadvantage in the production of capital goods. Accordingly, the contributions of the agricultural sector to the growth and development of an economy are visible in three major areas namely: food for consumption, raw material for industries, and foreign exchange earnings from exports.

Ewetan, Fakile, Urhie and Oduntan (2017) opined that Nigeria was ranked very high in the production and exportation of crops in the 1940s and 1950s. Available statistics indicate that

in 1960, agricultural export commodities contributed over 75% of total annual exports. In the same year, the sector contributed up to 64% to the total GDP. But during the 1970s, the contribution of agriculture to the GDP declined to 48% (CBN 2008). The decline continued in 1980s to 20% and 19% in 1985. Eze, Onwube, Ohalete and Ogbonna (2020) emphasized further that agriculture has been the most important single activity in the Nigerian economy with about 70% of the total working population employment before the advent of oil. At that time, agricultural sector was the largest sector in Nigeria. The contribution of agriculture in terms of output and exports to the Gross Domestic Product (GDP) in Nigeria in the recent times has not been encouraging, as evidence from CBN (2016) and NBS (2017) revealed that from the 1960s to the 1970s, the agricultural sector contribution to Nigeria's GDP was 48 percent which continued in 1980s to 20%, 19 percent in 1985, and continued, majorly as a result of oil glut of the 1980s (Okorie, 2019).

According to Onunze (2012), Nigerian agricultural production and its exports now account for less than 5% of Nigeria's GDP. From the 1990s to 2000, the agricultural sector contribution to Nigeria's GDP was 2.95 percent. However, it kept rising from 3.88 percent in 2001 to 4.25 percent in 2002, and up to 7.40 percent in 2006 (CBN, 2015). As at 2007, the contribution to the GDP declined slightly to 7.20 percent which further declined to 6.30 percent in 2008, 5.90 percent in 2009; From 2010 to 2012, it declined to 4 percent and to 2.61 percent in 2013 (CBN, 2016). In 2017, the agricultural sector output stood at 4.23 percent from 3.06 percent in 2016 (NBS, 2018). With the above trend, it shows that agricultural output and exports have not significantly impacted on the economic growth of the Nigerian economy. Rather, there has been a declining contribution of the agricultural sector to economic growth of the country.

Nigeria is endowed with expanse of fertile agricultural land, numerous rivers, streams, lakes, forests of varying types and grass lands. Also, has an increasing population estimated above two hundred million people. This creates an impression that optimizing low labour cost in agriculture in the country should increase agricultural output capable of making Nigeria emerge as one of the countries with vibrant agricultural sector to support adequate food production and raw materials, necessary to attracts agro-allied industries and consequently stimulate economic growth in the long-run. Agricultural production and export was the mainstay of the Nigerian economy prior to the discovery, exploration, exploitation and exportation of crude oil. The enormous revenue that flew in from crude oil export shifted government interest from agricultural production to crude oil production. The oil boom of the early 1970s with oil sector contributing about 80% of the GDP, further reduced the interest in the agricultural production and exportation (cocoa, rubber, palm oil, palm kernel, cotton, etc.) contributing merely 35% to the GDP between 1955 and 1969. This finally resulted to the total neglect of agricultural production and exportation in 1980s to dependence on oil revenue for economic sustenance.

Statement of the Problem

Nigeria is rich in agricultural resource endowments but contributes a less than satisfactory level of output to the gross domestic product. The poor performance of the agricultural sector is attributed to the poor development of the sector. It is worthwhile to note that 50% of the country's cultivable agricultural land is under cultivated. Also, majority of the cultivated land is done by traditional farmers with crude implements. These traditional farmers use primitive production techniques resulting in very low yields. The farmers are affected by inaccessibility of modern farm inputs, poor credit facility, poor infrastructure, inaccessibility to market, land and environmental degradation, as well as inadequate research and extension services which further affect agricultural output. The productivity of the sector is measured with reference to output. export, and contribution to gross domestic product.

The poor contributions of the agricultural sector to economic growth has not only been attributed to the fact that agriculture is undertaken mostly by ill-equipped traditional farmers or the fact that it was neglected due to oil discovery in the 70s but more so by the fact that agricultural policies and programs are not sustained. Successive governments or regimes come up with new agricultural policies as though such policies are personal policies rather than national policies. Thus despite the vast cultivable agricultural land, with diversified climatic conditions capable of growing a variety of food crops. Nigeria is yet to maximize the nature- given potential. Nahanga and Vera (2016) observed that Nigeria suffers from resource curse, that given the enormous resource endowment in human capital and natural resources. Nigeria should be able to provide for his citizens and move them out of the poverty and hunger, but reverse is the case. Despite the cultivable agricultural land the country is blessed with, Nigeria has the advantage of being the largest producer of oil in Africa, the 6th country with the largest gas reserve and 8th country with the largest crude oil reserve in global ranking, yet her economy and agricultural sector, in particular, is among the least productive in the world.

Nigeria's agricultural sector has remained largely underdeveloped and its contribution to GDP is abysmally poor. The sector negligently refused to adapt and apply advanced methods of farming. This negatively reflects on the productivity of the sector and its contributions to the growth and development. This explains why the country is dependent on food importation. According to Nzeka (2013), in 2012 alone, importation of wheat by Nigeria was valued at $1 billion. The contribution of the agricultural sector to GDP in 2017 was 20.85% (NBS 2018). How can Nigeria reverse this negative trend in agricultural output and begin to tap the enormous potentials she has in agriculture? The answer lies in clearly establishing the relationship between agricultural output, export and economic growth. This study, therefore, examines the impact of agricultural output, and export on economic growth.

The main objective of the study is to examine the relationship between agricultural output, agricultural export and economic growth in Nigeria. Specifically, objectives are to: determine the impact of agricultural output on economic growth in Nigeria, investigate the impact of agricultural export on economic growth in Nigeria.

Literature Review

Economic growth

Economic growth is defined as an expansion overtime in the monetary value of final goods and services produced in an economy for a given period usually a fiscal year. It is a quantitative expansion or increase in a nation's Gross Domestic Product (GDP) per capita. Economic Growth according to Okorie (2019) is a rise in the net national product in a given time frame. Todaro and Smith (2006) view economic growth as a stabilized process by which the productive measure of the economy is expanded overtime keeping in mind the end goal to realize an increase in the national output and income. Onyinbo and Rekwot (2014) defines economic growth as the yearly rate of increment in a country's real GDP, taken as the primary goal for overcoming persistent poverty and offering hope for the possible improvement of society. Thus, economic growth is an increase in the capacity of an economy to produce goods and services, viewed from one period of time to another. Hence, economic growth can be defined as the increase in the amount of goods and services produced in an economy over a period of time. It is conventionally measured as the percentage of rate of increase in real gross domestic product. Growth is usually calculated in real terms; that is, inflation adjusted to eliminate the distorting effect of inflation on the price of goods and services produced.

The measurement of economic growth in Nigeria can be ascertained using the growth accounting model which indicates agricultural contribution towards the GDP growth of a nation (Iyoha and Oriakhi, 2002). Also, by looking at the growth rate of a nation, its level of economic growth can be ascertained. Between 2010 and 2019, a period of ten years, Nigeria's economic growth has been undulating with a peak of 6.22% growth rate in 2014 and an all-time low of -1.58% in 2016 (NBS 2018).

Determinants of economic growth in Nigeria

Economists regard factors of production as the main economic force that determine growth. Some of the economic factors are explained as follows:

1. Natural resources (land): One of the principal factors affecting growth of an economy is the natural resources or land. Land includes natural resources such as the fertility of land, its situation and composition, forest wealth, minerals, climate, water resources, sea resources, etc. For economic growth, the existence of natural resources in abundance is essential.

2. Capital formation: When capital stock increases with the passage of time, it is called capital formation. Capital formation is essential to meet the requirements of an increasing population in economies; investment in capital goods not only raises production but also employment opportunities.

3. Organization: This is entrepreneurship which organizes the other factors and puts them into productive use. Organization is complementary to capital and helps in increasing productivity.

4. Technology: This refers to the methods of production which is the result of new techniques of research or innovations. Change in technology leads to increase in productivity of labour and other factors of production.

5. Structural changes: This is the transition from traditional society to modern industrial economy, involving a radical transformation of existing institutions, social attitudes and motivations. This change results in higher labour productivity and the stock of capital, exploitation of new resources and improvement in technology.

Agricultural export

Agricultural export has played a prominent role in economic development in Nigeria, by providing the needed foreign exchange earnings for other capital development projects. According to Ewetan et. al. (2017) agricultural export commodities contributed well over 75% of total annual merchandise exports in 1960. Nigeria also ranked very high in the production and exportation of some major crops in the World in the 1940s and 1950s. For instance, Nigeria was ranked second to Ghana in Cocoa, and occupied a third position in groundnut production. Oyinbo and Rekwot (2014) observed that Nigeria's export earnings from agricultural crops contributed significantly to the GDP.

Theoretical framework

Vent for Surplus Theory

Vent for surplus theory was propounded by Smith (1776) to explain the dynamics of international trade. It assumes the existence of surplus and idle human and material resources, most especially within the underdeveloped countries. The theory emphasizes efficiency of production methods to increase output far more than the initial inputs to create surplus production. The theory opined that international trade does not determine factors of production but enhances the output of the surplus resources to be used to meet international demand. When output of an economy exceeds the domestic demand, the surplus is sent abroad and exchanged for other produce needed at home. Without such exportation, a part of the productive labour of the country must cease and the value of its annual produce will diminish. By opening a more extensive market for whatever part of the produce of their labour may exceed the home consumption, and encourages an economy to improve its productive powers, augment its annual produce to the utmost, and thereby increase the real revenue and wealth of the society.

Unbalanced Growth Theory

Hirschman, Rostow, Fleming and Singer propounded unbalanced growth theory as a strategy for development of underdeveloped countries. The theory stressed the need for investment in the strategic sectors of an economy instead of all sectors simultaneously. According to the theorists, other sectors would automatically develop themselves through linkage effects. The theory argued that a deliberate unbalancing of the economy in accordance with predesigned

strategy is the best way to achieve economic growth. It is believed that development can proceed in a ways with growth communicated from the leading sectors of the economy to the others, from one industry to another, from one firm to another. Hence, development process is a chain of disequilibrium that must be kept alive, and the task of development policy is to maintain tension, disproportion and disequilibra.

The Dutch Disease Theory

Corden and Neary (1982) pioneered the theory of the Dutch disease syndrome. This emphasized on how small open economies could be de-industrialized after having enjoyed a massively booming primary export sector. The Dutch disease theory states that a resource export boom has an inherent tendency to distort the structure of production in favour of the non-traded goods sector such as the sectors producing the non-booming tradable. The impediments of oil revenue to economic growth and development of oil-dependent states is what is cumulatively called Dutch Disease in the literature of economic development (Onunze, 2001). The enomous influx of cash resulting from oil tends to foster, overzealous and imprudent expenditure. High oil revenue raises exchange rates, promotes adverse balance of payment as the cost of imports rises. It kills incentive to risk investment in non-oil sectors. The competiveness of all non-oil sectors as agriculture and manufacturing industries tend to be crowded out. The employment of both labour and other resources has been exchanged for unemployment as government and private expenditure multipliers have been exported abroad. Together these forces constitute what is called the rentier effect, oil economies being "rentier states" (Kang, 2001). The rentier state theory argues that countries depended on external rent like oil; develop a different bond of relationship between government and their citizens from those that rely primarily on taxation.

Empirical Studies

Oyinbo, and Rekwot, (2014) examined the relationship between agricultural production and the growth of Nigerian economy. ARDL bounds testing cointegration approach was used for the study. The study variables are economic growth, agricultural output, inflation rate and exchange rate. The result of the data analysis indicated that agricultural output was significant in influencing the favourable trend of economic growth in Nigeria.

Osabohien, Akinpelumi, Matthew, Okafor, Iku, Olawande, and Okorie, (2019) used Autoregressive Distribution Lag (ARDL) econometric technique to analyze the long run relationship between agricultural exports and Nigerian economic growth. Economic growth is the dependent variable, proxied by real gross domestic product, while the explanatory variables include: agricultural export, foreign direct investment, inflation rate and the labour force. The results revealed that agricultural exports is positive and significantly affects Nigeria's economic growth.

Taiga, and Ameji, (2020) examined the relationship between agricultural exports and economic growth in Nigeria for the period of 1981 to 2017. The study was guided by two research questions and objectives. The Ordinary Least Square method and Johansen Co-

Integration test were employed for the analysis. The result shows that agricultural exports had a positive long run significant relationship with economic growth.

Kamil, Sevin, and Festus. (2017) examined the impact of agricultural sector on the economic growth of Nigeria, for the period of 1981 to 2013. The study employed Vector error correction model for analysis. The findings revealed that real gross domestic product, agricultural output and oil rents have a long-run equilibrium relationship. Vector error correction model result shows that, the speed of adjustment of the variables towards their long run equilibrium path was low, though agricultural output had a positive and significant impact on economic growth.

Nahanga, and Věra (2016) investigated agricultural exports and economic growth in Nigeria using OLS regression, Granger causality, Impulse Response Function and Variance Decomposition approaches. Both the OLS regression and Granger causality results support the hypothesis that agricultural exports-led economic growth in Nigeria. The results show an inverse relationship between the agricultural degree of openness and economic growth in the country. Impulse Response Function results fluctuate and reveal upward and downward shocks from agricultural export to economic growth in the country. The Variance Decomposition results also show that a shock to agricultural exports contributes to the fluctuation in the variance of economic growth in the long run.

Eze, Onwube, Ohalete, and Ogbonna, (2020) examined agricultural output and economic growth of Nigeria for the period of 1981-2017 using annual data from World Development Indicators. The study adopted Autoregressive Distribution Lag (ARDL) techniques. The result of the study shows that in the long run, exchange rate, gross capital formation, inflation rate, is negative and significant on economic growth. While, trade openness and agriculture value added are positive and not significant in the short run. Also, in the long run trade openness and agriculture value added are statistically significant on economic growth of Nigeria.

Methodology

The Arthur Lewis development theory provides a holistic approach/framework for analyzing the economic growth structure and pattern of developing economies. The theory is predicated on the fact that a developing economy relies critically on two sectors which are the rural/traditional sector (Subsistence / Agriculture) and the modern Sector (Manufacturing/Industrial / Capitalist) for tits development. Opined that economic development is relatively relying on the growth of the mentioned sectors:

$$Y = f(AGRIC, IND) \quad (1)$$

Where; Y = Economic development, AGRIC = Agricultural sector and IND = Industrial sector.

The agricultural sector and the industrial sector are correlated. The agricultural sector employs capital inputs, labour expertise and is also a final consumer of the output of the industrial sector. while the industrial sector employs labour and output of the agricultural

sector. This theory emphasizes the mechanism by which underdeveloped economies can convert their domestic economic structures from heavy reliance on traditional subsistent agriculture to a more modern and more advanced agricultural sector.

Model Specification

This study adopted Arthur Lewis growth model of the theoretical framework. Specifically, the model for this study captured Economic Growth rate as the dependent variable, while Agricultural Output, Agricultural Export, Gross Fixed Capital Formation, and Trade Openness are the independent variables. This study functionally specifies economic growth for Nigeria as: GDPR = f(AGO, AGE, GCF, TRO)

Where;

GDPR

GDP growth rate proxy for economic growth, it is measured as GDP growth rate (annual % growth).

AGO Agricultural Output, measured in agricultural value added (% of GDP) to include; forestry, hunting, and fishing as well as cultivation of crops and livestock production.

AGE = Agricultural Export, measured in agricultural raw materials exports (% of merchandise exports) to crude materials except fuels.

GCF= Gross Capital Formation. This is measured as gross fixed capital formation (% of GDP) to include: land, plant, machinery, and equipment purchases and construction.

TRO = Trade Openness. This is the sum of exports and imports of goods and services, measured as share of gross domestic product (% of GDP).

To measure and ascertain the size and signs of these factors empirically, the model to be estimated is specified as follows:

GDPR Bo+ BAGO, + B2AGE + B3GCF + B4TRO+ Ht (3)

Where; Bo is the intercept: B1-B4 are the slope coefficients; t denotes the number of time series observations: and u is the error term.

A priori Expectation

A priori expectations refer to the expected sign of the coefficient of explanatory variables and which shows the expected impact of explanatory variables on the dependent variable. The a priori expectations for the explanatory variables in this study are:

B10, B20, B30, B3 >0.

Estimation Procedures

Unit root tests

As a pre-test, the study employed Augmented Dickey-Fuller (ADF) unit root test technique to check for the stationarity of the variables used in the analysis of this study. This is to avoid generating a spurious regression result. Accordingly, the Stationarity and order of integration of the series will determine the estimation technique to be employed. For instance, when all the series are stationary at level I(0), Equation (3) will be estimated using Ordinary Least Square (OLS) technique. Consequently, if the series are stationary at first difference I(1), the residual- based (Engle & Granger, 1987) Error Correction Mechanism (ECM) will be used to estimate Equation (3). The short-run ECM model is specified as follows:

AGDPR = Bo=0ECM-1 +-iYjAGDPR-j +-AJAAGOt-j+}-8jAAGEt-j+ E-PjAGCF-j+-jATRO-j + εt (4)

Where; Bo is constant, @ is the coefficient of error correction term lagged by one period t- which captures the speed of adjustment of the series towards long-run equilibrium; 7, 2. 8, 9, and Y are short-run parameters and & is the error term which is expected to be well behaved. A denotes the differenced identity.

Furthermore, we estimate autoregressive distributed lagged (ARDL) model if the stationarity of the series are mixture of 1(0) and I(1). The static cointegration model in equation (3) is associated with the problems of serial correlation and endogeneity. This associated problems of the covariance of the regressor and the residual not equal to zero violates the assumption of ordinary least square method. To address the problems of serial correlation and endogeneity associated with static modeling of equation (1), this study adopted Auto-Regressive Distributed Lag (ARDL) bounds test approach developed by Pesaran, Shin & Smith, (2001). The ARDL model is modeled for economic growth of this study is:

GDPR = Bo+VJAGDPR-j +-AjAAGOt-j+-8jAAGEt-j+}-¿jAGCFt-j+ VATRO (5)

Bound Test Co-integration

The ARDL bound testing procedure is based on the comparison of the F-statistics obtained from equating the coefficients of the un-differenced variables in the conditional ECM with the critical values provided by Pesaran et al. (2001), which is hence used to test the null hypothesis that no cointegration exist against the alternative hypothesis that cointegration exists among the series. When the f-statistics is greater than the upper bound I(1), we reject the null hypothesis that no cointegration exists among the series. If the f-statistics is less than the lower bound I(0), we fail to reject the null hypothesis that no cointegration exist among the series. Accordingly, if the F- statistic falls between 1(0) and I(1), our inference would be inconclusive. The conditional ECM is specified as follows;

AGCF-1

GDPR = 66 + β1 Σ AGDPR-1 - β2 ΣΔΑΦΟ-1 - β,ΣΔ SAGE-1 - ΒΑΣΔ

-B50 ATRO-1+01GDPR-1-02AGOt-1-03AGEt-1-04GCFt-1+04TRO-1 (6)

Where; d1 04 are the coefficient of the un-differenced variables in the model to be used in obtaining the test statistics for comparison with the upper and lower bound. When there exist co- integration (long-run relationship) between the series, Equation (3) will be estimated to capture the long-run dynamics of the series, while the short-run dynamics will be captured by the ARDL model specified in equation 7;

GDPR = αo+B=0 AGDPR-1-B2 E0 AAGO-1 - B3 E0 AAGEt-1 - B4 Σ=0 AGCF-1 B40ATRO-1+ He

Result and Discussion

Stationarity Test

To ascertain the stationarity of the series/data entering the model, the popular Augmented Dickey-Fuller (ADF) unit root test procedure was employed. Under the ADF unit root test, the null hypothesis that a series has a unit root (non-stationary) is rejected when the ADF statistic is greater than the critical values at 1%, 5% or 10%. We fail to reject the null hypothesis that a series is not stationary if the ADF statistics is less than the critical values. Though, a series can be differenced once (or twice), to make it stationary. As shown in Table 1, the series (GDPR, AGO, AGE, GCF, and TRO) are found to be a mixture of I(0) and I(1). While GDPR, AGO and AGE are stationary at levels, GCF and TRO were made stationary after first differencing. Since the series were a mixture I(0) and I(1), we employed the ARDL bound testing approach to ascertain the presence of cointegration (long-run relationship) among the series.

Table 1: Augmented Dickey Fuller Unit Root Test Results

Trend and Intercept

Variables	ADF	5% Critical Value	Order of Integration
GDPR	-3.729420		I(0)
AGO	-7.055374		I(0)
AGE	-5.366029		I(0)
GCF	-5.253691	-3.533083	I(1)
TRO	-4.778819	-3568379	I(1)

Sources: *Researchers' compilation from E-view (version 9.0)*

ARDL Approach to Co-Integration

From the presented ARDL bound testing output in Table 2, the computed F-statistic (12.75403) is greater than the upper bound I(1) at both 1%, 2.5%, 5% and 10%. Therefore, the null hypothesis of no cointegration among the series is rejected. This result thus implies that a long- run relationship exists among the series (GDPR, AGO, AGE, GCF and TRO). With the presence of co-integration among the series established, Equation (3) and Equation (7) will hence be estimated as the long-run and short-run estimates respectively.

Table 2. Result from Bound Test

Dependent Variables	**FUNCTION**				**K-1**	**F-statistic**
GDPR	f(GDPR/AGO,AGE, GCF, TRO)				4	12.75403
	Asymptotic critical value bounds for the F- statistic					
1%	5%				10%	
1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	
3.74	5.06	2.86	4.01	2.45	3.52	

Discussion of Long-Run Estimates

Since the ARDL bound test procedure for cointegration testing suggests the existence of longrun equilibrating relationship between the series in the model. The long-run and short-run model were therefore estimated to obtain the long-run and short-run estimates of the model. The result of the long-run estimates presented Table 3 is analogous to the long-run model specified in Equation (3).

From the long-run estimates in Table 3, agricultural output and agricultural export exhibit positive long-run relationship on economic growth in Nigeria. A unit increase in agricultural output and agricultural export will cause economic growth to increase by 1.485% and 0.762% respectively, while agricultural output is significant, agricultural export is not. Also, gross fixed capital formation and trade openness have negative and significant long-run relationship with economic growth in Nigeria in the long run. On average, a percent increase in gross fixed capital formation and trade openness, will reduce economic growth by 0.36% and 0.48% respectively.

Table 3. Long-Run Estimates

Variables	**Co-efficient**	**STD Error**	**t-Statistic**	**Prob.**
AGO	1.485375	0.308808	4.810033	0.0002
AGE	0.762116	0.614716	1.239787	0.2319
GCF	0.358969	0.083300	4.309351	0.0005
TRO	0.475220	0.122761	3.871097	0.0012

The long-run estimates presented in Table 3 correspond with Equation (7). The short-run model is estimated using the ARDL technique, with optimum lag length indicated by SIC as (1, 2, 4, 3, 4). To test the plausibility of the ARDL model, it was subjected to post estimation diagnostics such as the test for autocorrelation, homoscedasticity, normality and the stability of the model. As presented in Table 5, the diagnostics show that the model is free from autocorrelation, heteroscedasticity, and that the error terms are normally distributed.

From the short-run dynamics in Table 4, akin to the long-run estimates, agricultural output and economic growth exhibit a significant negative relationship. And this implies that a percent increase in agricultural output will lead to 60% increase in economic growth in Nigeria. The positive sign of the coefficient of agricultural output lends supports to the findings of previous studies (see Eze et. al, 2020; Kamil et. al, 2017). Similarly, verifying the empirical findings of Nahanga and Vera (2016), agricultural export is negative and significant on economic growth in Nigeria. From the short-run estimates, a percent increase in agricultural export will result to a decline in economic growth by 74%. Furthermore, gross fixed capital formation also acts as a decreasing function of economic growth in Nigeria. A percent increase in gross fixed capital formation will cause economic growth to decline by 82%. Trade openness on the other hand, exerts an insignificant positive effect on economic growth in Nigeria.

The coefficient of the error correction term lagged by one period (-1) is rightly stated as it is negative, less than 1 and statistically significant, and therefore meets our expectations. The sign of the coefficient indicates a relatively high speed of adjustment to equilibrium after a shock and indicates that approximately 62% of the deviations or disequilibrium in economic growth will be corrected annually.

Conclusion, Policy Implications, and Recommendation

This study utilizes the ARDL bounds testing technique to examine the impact of agricultural output and agricultural export on economic growth in Nigeria from 1980 to 2020. The results indicate the presence of cointegrating (long-run) relationship between economic growth, agricultural output and agricultural export in the country. The results revealed that agricultural output has a long run as well as shortrun significant positive impact on economic growth, while agricultural export is negative and significant in the short-run, but positive and not significant in the long run. Gross fixed capital formation is negative and statistically significant both in the short run and long runs in Nigeria. Trade openness is negative and statistically significant in the long run, but positive and not significant in the short run. Based on the findings, it is clear that increase in agricultural spending in Nigeria, will impact on economic growth through increased agricultural productivity.

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