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Impact of Agricultural Financing on Poverty Reduction and Economic Growth in Nigeria

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ABSTRACT

Various agricultural programmes have been undertaken by different governments in Nigeria for increased output and productivity in the agricultural sector and to alleviate poverty in the Nigerian economy. In this study, we examined the impact of agricultural financing on poverty reducing and economic growth in Nigeria using Keynesian macro-economic framework. The study made use of annual data set of Nigeria from 1981 to 2021. The Auto Regressive Distributed Lag (ARDL) co integration technique was applied. From the results, Agricultural credit grant scheme fund (ACGSF) which is the major indicator of agricultural financing shows a positive and insignificant relationship with the dependent variable Gini Coefficient Per Capita (GNIPC)- a proxy for poverty. This implies that an increase in agricultural financing will increase GNIPC that is, an increase in agricultural financing will decrease poverty rate in Nigeria but not significantly.

KEYWORDS : Agriculture, Development, Economic Growth, Finance, Poverty Reduction

1. INTRODUCTION

The United Nations Report (2016) on common country analysis put Nigeria as a country with population of over 175million, the most populous country in Africa and the 7th most populous in the world. However, with high population characterized by high skilled, semi-skilled and unskilled, over 80 million or 64% of her population are living below the poverty line. Also, the United Nations in 1995 characterized absolute poverty as a condition portrayed by extreme hardship of fundamental human needs, including sustenance, safe drinking water, sanitation, wellbeing, shelter, education and information. A great number of Nigerian citizens have not been able to sustain a minimum standard of living due to lack of unemployment opportunities, food security and so many other social factors. Nigeria, being an agrarian country with a vast fertile land, financing the agricultural sector will serve as a medium to reduce the high percentage of poor persons suffering from unemployment, hunger and lacking other fundamental basic needs financing this sector will form a source of motivation to the unemployed youths and farmers to increase productivity and results to economic growth of the nation.

Access to financing through government or her agents, Commercial and Development Banks, Cooperative Societies and individuals will affect the outputs of agricultural sector, the income of the farmer, and the GDP simultaneously. The importance of financial sector to economic growth cannot be over emphasized as (Hossain, 2004; Beck, Demirgue-Knit & Levine, 2007; Khan, Ahmad & Jan, 2011; Uddin, Kyophilavong & Sydee, 2012; Bruhn & Love, 2013) investigated the role of financial sector on poverty, their results showed positive relationship between the two. On their part, (Shahbaz, 2009; Josephine *et al.,* 2015) examined the empirical evidence on how financial sector affects poverty indicator. Udofia and Essang (2015) also examined agricultural expenditure and poverty alleviation in Nigeria, they found out that poor agriculture expenditure has no significant impact on poverty. In his contribution, Mckinnon (1973) explicitly explained how financial development can directly improve the well-being of the poor. He assumed that financial institutions should provide sufficient credit to the poor who must engage in self—finance investment they are useful because they offer beneficial financial opportunities for saving and economic development. Oladipo *et al* (2021) explained that taxation is one of the

viable strategies for generating revenue for government to reduce poverty and financing government activities. The proceeds from taxation are vital mechanisms for economic growth in many developing countries, such as Nigeria, as tax-generated taxes help the economy to provide agricultural facilities and social welfare support in order to eradicate poverty to the minimum level, (Oladipo *et al*. 2022).

Agricultural financing is the provision of different sorts of services committed to supporting all agricultural activities including marketing, production and the distribution of agricultural products to the markets and final consumers. However, agricultural financing is not limited to agricultural credit alone; it extends to government expenditure on the agricultural sector. According to Okezie Nwosu and Njoku (2013), a substantial part of the budget should be allocated to the agricultural sector annually to improve agricultural output and create employment opportunities especially for the rural poor who characterized the poor parts of Nigeria's economy.

In this work, we work on the theory of poverty that identify the factor of production as it's relates to structure of the interpersonal and inter- group differentials in wealth and income, this explains the emergence and persistence of the poor in the society. The theory of income distribution other described as Distribution of Income provides the micro-economic, foundation of income inequality. This also concern reflects in the thinking that better employment opportunities were the principal avenue by which the poor earn higher income. If agricultural financing is geared towards the benefit of enriching the rich only, therefore neglecting the poor, it will further results to income inequality and increase in the poverty level of the economy. Various researchers have defined poverty in their different ways, Asaleye *et al.,* (2018) defined poverty as lack of essential basic needs to live a satisfying life; these include sufficient food, shelter and physical wellbeing. Popoola *et al.,* (2018) defined poverty as the lack of physical necessities, assets, and income which is the inability to acquire the basic needs necessary for satisfying life and self-esteem life.

Therefore, in addressing the issue of agricultural financing and poverty alleviation, effect of income inequality is vital. Income equality makes agricultural financing more effective to the poor rural farmers and alleviates poverty. Many agricultural programmes have been undertaken by different governments in Nigeria for increased output and productivity in the agricultural sector and to alleviate poverty in the Nigerian economy, these programmes include the National Accelerated Food Production Programme (1972), and Nigerian Operation Feed the Nation (1976), Directorate of Food, Road and Rural Infrastructure (DFRRI)(1986), Agricultural Development Project (ADP), Green Revolution Programme (1979) and National Poverty Eradication Programme (2001). All these programmes were structured to provide infrastructural facilities and farm tools to farmlands and farmers respectively. They were for the provision of rural roads, water and irrigations, rural electricity and training of farmers. In order to assist farmers financially, governments established some agricultural financial institutions, these includes: Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), Agricultural Credit Guarantee Scheme Funds (ACGSF), Bank of Agriculture (BOA). Furthermore, rural banking scheme were introduced to assist local and rural farmers, these include The People's Bank, Community Banks and currently the Microfinance Banks.

In the development theory of economic growth in agrarian nations, the development or adequate financing of agriculture will have multiplier effects on food production, employment opportunity, poverty reduction, industrial and economic growth respectively. In Nigeria, the increasing annual budgetary allocation for agricultural sector by the three tiers of government for the past years have not resulted in poverty reduction or in an anticipated economic growth especially in the rural areas. This study therefore examines the annual government spending on agriculture and its effects in reducing the poverty rates and its impact on economic growth in Nigeria. It also examined the long-run relationship between the poverty level and agricultural financing in Nigeria.

The aim of this study therefore, is to examine the impact of agricultural financing on poverty reduction and the economic growth in Nigeria.

The remaining part of this article is in sections. Section 2 includes review of literature, theoretical framework and model specification; section 3 presents the estimation techniques, methods and design applied in this study; section 4 contains results and discussion of findings. Finally, section 5 presents the summary, conclusion and recommendation.

2. LITERATURE REVIEW

A lot of researchers have written on the importance of agriculture financing to farmers and on poverty reduction in Nigeria, few of such include Josephine *et al.,* (2015) the duo worked on an empirical review on the role of Microfinance banks and poverty alleviations they found out that the operations Microfinance banks have played

significant role in poverty reduction in Nigeria, loans and advances from the banks to rural people have significant impact on poverty alleviation. Abdin (2016) examined the impact of financial development and poverty reduction, his findings show that financial development reduces poverty directly through access to credit which have great impact on productivity and saving opportunity for the poor and indirectly promoting economic growth.

In his contribution, Chemli (2014) used the ARDL approach to examine the relationship between financial development and poverty reduction in 8 countries (Algeria, Egypt, Iran, Jordan, Mauritania, Morocco, Tunisia and Yemen) over the period of 1992-2012. His result showed that financial development favour the poor, Rewilak (2013) made a significant contribution to our understanding of how the financial system can be used as a tool to alleviate poverty, his results suggested that increasing provision of most basic services of financial intermediation is important for poverty reduction relative to offering more complicated financial instruments to the poor.

Zahonogo (2016) examined the empirical evidence on how financial development affects poverty indication, the empirical evident shows that there indeed exists a financial development threshold below which financial development has detrimental effects on poor and above financial development should be associated with less poverty. Dauda and Makinde (2014) used VAR model to examine the nexus between financial sector development and poverty reduction in Nigeria over the period 1980-2010. The results show that economic growth exerts the strongest influence on poverty reduction in the short-run but could be detrimental to the poor in the long-run due to adverse effect of income inequality. Abula and Ben (2016), appraised the impact of public agricultural expenditure on agriculture for the period 1981-2014, using time series date, the Johansen co-integration test showed that there was a long-run relationship between agricultural expenditure, commercial bank loans to the agricultural sector and interest rates in Nigeria. The result also shows that the commercial bank loans to the agricultural sector and interest rate have significant positive impacts on agricultural output in Nigeria.

Abu and Okeme (2019) examined the impact of agricultural financing on economic growth in Nigeria. The study used ordinary least square (OLS) and auto-regressive distributed (ARDL) model approach to process the data. The result of the finding revealed that financing agriculture, which is the primary and foundational industry of the economy, is the best way to promote economic growth. They concluded by suggesting that policymaking should be supported by an effective control mechanism because it serves a purpose rather than being an end in and of itself. The government should disband ACGSF and the Bank of Agriculture (BOA) right away to enable remote outlets for proper monitoring and to make it easier for actual farmers to access loans. Afolabi, Ikpefan, Osuma, and Evbuomwan (2021) empirically examined the impact of agricultural credit on economic growth in Nigeria from the period of 1981 to 2017. Their goal was to investigate the impact of the agricultural credit guarantee scheme fund and deposit money bank credit to the agricultural sector on Nigeria's economic growth. The auto-regressive distribution lag was used to analyze their data. The results showed that Deposit Money Bank Credit to Agriculture is significant in the long run and has a direct relationship in the short run, whereas Agricultural Credit Guarantee Scheme Fund is insignificant in both the short and long run, but has a direct relationship in the short run and an inverse relationship in the long run. It is advised that the Federal Government make concerted efforts to ensure that farmers, especially small-scale farmers, have easy access to the financial aid and grants provided and that the funds should be disbursed appropriately and adequately to the farmers

Adegboyega (2020) used time series data from the Central Bank of Nigeria (CBN) and the World Bank between 1981 and 2018 to examine the effect of agricultural financing on the unemployment rate in Nigeria. Johansen's co-integration, Error Correction Method (ECM), and Granger causality analytical techniques were used to process the data. The findings revealed that agricultural gdp, Agricultural loan to total loan ratio, gdp growth rate, lending rate, and Rural population to total population ratio have a long run relationship with unemployment rate and are statistically significant. The study makes several recommendations, one of which is that stronger bank commitment should be prioritized in government policies on agricultural credit. Angaha and Atong (20) examined the impact of agricultural financing on economic growth in Nigeria between 1990 and 2017, using the threshold autoregressive model (TAR). Short- and long-run analyses were covered in this evaluation. The Augmented Dickey Fuller unit root test, co-integration, and error correction model were used as diagnostic tests. Results indicated that Nigeria has not yet attained a healthy threshold as indicated by all gdp regimes. The study concluded that Nigeria's agricultural financing is insufficient to produce more gains for the struggling economy. The paper suggested that government's budgetary allocation to agriculture needs to be greatly improved. Financial institutions are advised to support the government in its efforts to increase funding to the agricultural sector.

Orji, Ogbuabor, Anthony-Orji and Alisigwe (2020) examined agricultural financing and agricultural output growth in developing economies, the study investigates the causal relationship between agricultural financing and agricultural output growth in Nigeria, using data sourced from Central Bank of Nigeria statistical bulletins and

World Bank Economic Indicators. The Pairwise Granger Causality test was used in the study. The result of the findings revealed that there was no causal relationship between agricultural financing and increases in agricultural output during the time period under consideration. In other words, government should put more efforts on agricultural financing to have more significant impact on the growth of agricultural output. Akther, Younus, Parveen, and Chowdhury (2016) examined the role agricultural credit in reducing rural poverty in Bangladesh from 1984 to 2014. Secondary data was used while ordinary least square technique was employed to process the data. Priority variables, such as agricultural sector credit, rural employment, female employment, agricultural production, and credit to gross domestic product and per capita income were used as independent variables. The result of the findings of the empirical estimate indicates that all of the explanatory variables in the model are important and are linked to rural poverty in a negative way. The rural poverty elasticity with respect to priority sector lending is -0.27, which means that an increase in priority sector lending of 1% will, on average, result in a 0.27 reduction in rural poverty. The policy implications of this study suggest that government and central bank financing of rural areas has significant effects on poverty reduction. Adekoya (2018), investigated the impact of human capital development on poverty alleviation in Nigeria, the study examined how certain variables of human capital development and the poverty rates affect per capita income in Nigeria between 1995 and 2017. The study employs the granger causality test via a vector error correction mechanism (VECM). The findings showed that there was no causal relationship, either one-way or two-way, between government spending on health and education, infant mortality, gross enrollment ratio, and per capita income, but there have been instances of one-way causality for literacy rate, life expectancy, and per capita income. As a result, the federal government should make greater investments in education and health, as these are critical factors in alleviating poverty.

Theoretical Framework

The objectives of this study is to examine the impact of agricultural financing on poverty reduction and increasing economic growth rate in Nigeria, therefore, the theoretical framework adopted to achieve the above objective is based on Keynesian macro-economic framework, this emphasized an increased total spending in an economy and its effects general output, inflation and employment. The theory extensively assumes that any increase in government expenditure has positive and significant impact on economic growth and subsequently on the level of poverty. Following the Keynesian macroeconomic theory, increasing government spending on agriculture would not only increase agricultural output, it would generate more income to both the government, the farmers, and to the food/agricultural output traders, in addition to the provision of raw materials for the small and medium scale industries, thereby reducing the unemployment and the poverty rates. The study will adopt the work of Udofia and Essang (2015).

Also, the Neo-classical monetary approach will be used, this approach emphasized the utility maximizing behavior which means welfare can be measured by consumption. According to Khan (2011), income approach and consumption are important variables to consider in analysis of poverty. Beck, Knit and Lerme (2007) adapted the approach to calculate growth rates of income share, inequalities and poverty over the longest available time period and average financial intermediary development and other explanatory variables over the corresponding time period.

2.2 Model Specification

The study employ and adopted the model of Beck, Kunt and Levine (2007) which stressed more on some agricultural financing indicators, these include the Agricultural Credit Grant Scheme Fund (ACGSF, Commercial Banks to Agricultural Sector (CBCA), Government Recurrent Expenditure on Agricultural Sector. (GREA), GDP per capital growth for economic development, unemployment (UNE) is suggestive of higher propensities for poverty. GNI per capital will serve as a proxy for poverty.
The implicit form of Beck, Kunt and Levine (2007) model is:

$$PV = f(ACGSF, CBCA, CREA, GDPPC, UNE, GEE)$$

GNI per capita is used in place of the left hand side variable of Beck, Kunt and Levine (2007) as a proxy for Poverty. According to the neoclassical monetary approach to poverty, income should be considered as primary in poverty alleviation as it increases the purchasing power, addresses the problem of resource inequality and provides access to resources for those in poverty trap. Dropping the subscript i in Beck et al (2007) because their data was panel in nature while this is time-series:

Model 2 shows the effect of all other variables on the level of the poverty in Nigeria.

$$GNIPC_t = a_1 + \beta_1 ACGSF_t + \beta_2 CBCA_t + \beta_3 CREA_t + \beta_4 GDPPC_t + \beta_5 UNE_t + \beta_6 GEE_t + \ell_t$$

2.2.1 Model for Gini Coefficient

This is to assess whether Agricultural financing exerts disproportimately large on the impact on the poor.

$$GC_t = a_1 + \beta_1 GNIPC_t + \beta_2 ACGSF_t + \beta_3 CBCA_t + \beta_4 CREA_t + \beta_5 UNE_t + \beta_6 GEE_t + \ell_t$$

Where GC = Gini Coefficient; GNIPC = GNI per capita; ACGSF = Agricultural credit grant scheme fund; CBCA = Commercial bank credit to the agricultural sector; GREA = Government recurrent expenditure on the agricultural sector; UNE = Unemployment ; GEE = Government expenditure on education and ε is Error term.

3. ESTIMATION TECHNIQUE/CALCULATION

The study made use of annual data set of Nigeria from 1981 to 2016 (Okere *et al.,* 2019; Ozordi *et al.,* 2019;). This data only contains time series properties (see Folashade *et al.,* 2016; Umukoro *et al.,* 2020). Within this period a lot of programs, policies and strategies have been adopted such as the SAP (Structural Adjustment Programme), NEEDS (National Economic Empowerment Development Strategy) etc. The data was obtained from the following sources; Central Bank of Nigeria (CBN) Statistical Bulletins, World development indicators and several other online sources of data (see Otekunrin *et al.,* 2018a; 2018b; Eluyela *et al.,* 2019a; 2019b; Ozordi *et al.,* 2020; Nwanji *et al.,* 2020).

Firstly, we presented level of stationarity using the unit root test with break point- Dickey Fuller (Lawal *et al.,* 2018; Oladipo *et al.,* 2019a; Eluyela et al., 2020). Next, the Structural break test was conducted to test for structural break in the series after which the ARDL bounds cointegration test was conducted for both specific models (see Popoola *et al.,* 2018; Ademola *et al.,* 2020; Asaleye et al, 2019). Then a series of Residual diagnostic and stability test were conducted (Oladipo *et al.,* 2019b). In order to empirically analyze the long-run relationship and short-run dynamic interactions among the variables of interest, the Auto Regressive Distributed Lag (ARDL) co integration technique is applied as a general vector autoregressive model (VAR). The ARDL co integration approach was developed by (Clarke, Xu & Zou, 2013; Pesaran & Shin, 1999; Pesaran *et al.,* 2001). It has three advantages in comparison with other previous and traditional co integration methods. The first is that ARDL does not need the entire variable under study to be integrated of the same order. The second advantage is that the ARDL test is relatively more efficient in the case of small and finite sample data sizes. The third advantage is that by applying the ARDL technique, we obtain unbiased estimates of the long run model (Harris & Sollis, 2003). The ARDL Model used in this study is stated thus:

$$\mathrm{D}(GNIPC_t) = \alpha_{01} + \beta_{11} GNIPC_{t-1} + \beta_{21} AGCSF_{t-1} + \beta_{31} CBCA_{t-1} + \beta_{41} GREA_{t-1} + \beta_{51} GDPPC_{t-1} + \beta_{61} UNE_{t-1} + \beta_{71} GEE_{t-1} + \sum_{i=1}^{p} \alpha_{1i} \mathrm{D}(AGCSF_{t-1}) + \sum_{i=1}^{q} \alpha_{2i} \mathrm{D}(CBCA_{t-1}) + \sum_{i=1}^{p} \alpha_{3i} D(GREA_{t-1}) + \sum_{i=1}^{p} \alpha_{4i} D(GDPPC_{t-1}) + \sum_{i=1}^{p} \alpha_{5i} D(UNE_{t-1}) + \sum_{i=1}^{p} \alpha_{6i} D(GEE_{t-1}) + \varepsilon_{1t} \quad 4$$

$$\mathrm{D}(GC_t) = \alpha_{02} + \beta_{12} GC_{t-1} + \beta_{22} GNIPC_{t-1} + \beta_{32} AGCSF_{t-1} + \beta_{42} CBCA_{t-1} + \beta_{52} GREA_{t-1} + \beta_{62} UNE_{t-1} + \beta_{72} GEE_{t-1} + \sum_{i=1}^{p} \alpha_{1i} \mathrm{D}(AGCSF_{t-1}) + \sum_{i=1}^{q} \alpha_{2i} \mathrm{D}(CBCA_{t-1}) + \sum_{i=1}^{p} \alpha_{3i} D(GREA_{t-1}) + \sum_{i=1}^{p} \alpha_{4i} D(GDPPC_{t-1}) + \sum_{i=1}^{p} \alpha_{5i} D(UNE_{t-1}) + \sum_{i=1}^{p} \alpha_{6i} D(GEE_{t-1}) + \varepsilon_{2t} \quad 5$$

Where all variables in (1) and (2) have been previously defined, D is the first difference and ε_t is the error term. The bounds test is mainly based on the joint F-statistic whose asymptotic distribution is non-standard under the null hypothesis of no co integration. The first step in the ARDL bounds approach is to estimate the equations by ordinary least square (OLS). The estimation of the equations, test for the existence of a long run relationship among the variables. This is done by conducting an F test for the joint significance of the coefficients of the lagged level of the variables. i.e.H_0:β_{1I}=$\beta_{2i} = \beta_{3i} = \beta_{4i} = \beta_{5i} = \beta_{6i} = \beta_{7i}$ =0 against the alternativeH_1: $\beta_{1i} \neq \beta_{2i} \neq \beta_{3i} \neq \beta_{4i} \neq \beta_{5i} \neq \beta_{6i} \neq \beta_{7i} \neq 0$.

Two sets of critical values for a given significance level can be determined. The first level is calculated on the assumption that all variables included in the ARDL Model are integrated of order zero, while the other is calculated on the assumption that the variables are integrated of order one. The null hypothesis of no co integration is rejected when the value of the F-statistic exceeds the upper critical bounds value while it is accepted if the value of the F-statistic does not exceed the lower bounds value. Otherwise, the co-integration test is indecisive.

4. RESULTS AND DISCUSSIONS

Table 4.1.0: Unit root test with break point (Dickey Fuller T-statistic)

Variable	Trend specification	Break date at 1st diff	Lag length	Critical values at 1%	Critical values at 5%	Critical values at 10%	ADF stat at levels	ADF stat at 1st diff	Order of integration
GNIPC	Trend: Trend and intercept Break:Intercept	(1987)	0	(-5.35)	(-4.86)	(-4.61)	-4.40	(-7.75)	I (1)
ACGSF	Trend: Trend and intercept Break:Intercept	(1991)	0	(-5.35)	(-4.86)	(-4.61)	(-4.14)	(-7.16)	I (1)
CBCA	Trend: Trend and intercept Break:Intercept	(1991)	0	(-5.35)	(-4.86)	(-4.61)	(-2.25)	(-7.68)	I (1)
GREA	Trend: Trend and intercept Break:Intercept	2008	0	-5.35	-4.86	-4.61	-6.99	-	I (0)
GDPPC	Trend: Trend and intercept Break:Intercept	2003	5	-5.35	-4.86	-4.61	-5.53	-	I (0)
UNE	Trend: Trend and intercept Break:Intercept	2014	8	-5.35	-4.86	-4.61	-6.49	-	I (0)
GEE	Trend: Trend and intercept Break:Intercept	(2013)	2	(-5.35)	(-4.86)	(-4.61)	-2.47	(-6.09)	I(1)
GC	Trend: Trend and intercept Break:Intercept	1999	8	(-5.35)	(-4.86)	(-4.61)	-14.6		I(0)

Note: The values in parenthesis are for first differences while those values not in parenthesis are for levels

Source: Authors Computation (2019)

4.1.1 STRUCTURAL BREAK (chow test)

Dependent Variable: GNIPC

Method: Ordinary Least Square

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACGSF	-0.002051	0.000815	-2.515186	0.0190
CBCA	1.03E-05	3.89E-05	0.265609	0.7928
GREA	7.67E-05	9.07E-05	0.845994	0.4059
GDPPC	1.062061	0.044961	23.62184	0.0000
UNE	-0.003381	0.001670	-2.024435	0.0542
GEE	2.03E-05	4.19E-05	0.484081	0.6327
DUMMY	-0.010188	0.003820	-2.667309	0.0135

Source: Authors Computation (2019)

The structural break test was conducted using the dummy variable where values before the structural adjustment programme in 1986 were denoted as 0 and those values after SAP was denoted as 1. The dummy shows that structural break is significant since the probability value (0.0135) is less than 0.05. This shows that the parameters have changed overtime thereby altering the relationship between the dependent and the independent variables. As a consequence, the sub-sample that starts after SAP (1987 to 2016) is used for the regression.

4.1.2 ARDL co integration bounds test

Given that the variables are I(0) and I(1) as reported in the table 4.1.0, the ARDL bounds test is most appropriate. Among other techniques suited for cointegration, we use the autoregressive distributed lag (ARDL) model.

Table 4.1.2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACGSF	0.004775	0.002429	1.966076	0.0681
CBCA	-1.90E-05	3.51E-0.5	-0.542470	0.5955
GREA	-0.000122	0.000125	-0.972963	0.3460
GDPPC	0.820607	0.106101	7.734193	0.0000
UNE	-0.002578	0.001678	-1.536879	0.1451
GEE	4.40E-06	4.20E-05	0.104862	0.9179

Source: Authors Computation (2019)

R^2=0.9985 Adjusted R^2= 0.9974

The R^2= 0.9985 means that the independent variables jointly explain about 99% variation in the dependent variable. The Adjusted R^2 = 0.9974. It is usually less than the R^2 and it takes into cognizance the degree of freedom, it shows that after penalizing the unwanted variables and taking into consideration the degree of freedom, the independent variable explains about 99.74% of the variation in the dependent variable.

Based on apriori grounds, the following variables have their expected signs, ACGSF, GDPPC, UNE and GEE. However, CBCA and GREA do not have their expected signs they turned out to be negative but however looking at the probability value it's not significant, therefore its negativity has no significant impact on the dependent variable GNIPC. In the case of ACGSF and GEE it shows a positive relationship with the dependent variable but not significant, this means that an increase in ACGSF and GEE would also increase GNIPC but not a significant increase. GDPPC shows a positive and significant relationship; therefore, an increase in the GDPPC will significantly contribute to the increase in the GNIPC. UNE shows a negative relationship as expected but it's not significant which indicates that level of unemployment does not significantly impact GNIPC

Interpretation of variables

A unit change in ACGSF (Agricultural credit grant scheme fund), other variables held constant, will on the average bring about a 0.004775 increase in GNIPC (Gross national income per capita). A unit change in CBCA (Commercial Bank credit to agricultural sector), other variables held constant, will on the average bring about a 0.0000195 decrease in GNIPC (Gross national income per capita). A unit change in GREA (Government recurrent expenditure to agricultural sector), other variables held constant, will on the average bring about a 0.000122 decrease in GNIPC (Gross national income per capita)

A unit change in GDPPC (Gross domestic product per capita), other variables held constant, will on the average bring about a 0.820607 increase in GNIPC (Gross national income per capita). A unit change in UNE (unemployment), other variables held constant, will on the average bring about a 0.002578 decrease in GNIPC (Gross national income per capita). A unit change in GEE (Government expenditure on Education), other variables held constant, will on the average bring about a 0.00000440 increase in GNIPC (Gross national income per capita).

Table 4.1.3: F Bounds Test

F-statistic value	Significance	I(0)	I(1)	Decision
10.2	10%	1.99	2.94	Longrun relationship
	5%	2.27	3.28	Longrun relationship
	2.5%	2.55	3.61	Longrun relationship
	1%	2.88	3.99	Longrun relationship

Source: Authors Computation (2019)

Null Hypothesis: No levels relationship

If the F-stat is greater than the lower class boundary I(0) and upper class boundary I(1) there is a long run relationship and reject the null hypothesis. In the table above the F stat (10.2) is greater than the 1(0) and I(1) at 10%, 5%, 2.5% and 1%, it therefore shows a long run relationship. This means that the variables, despite that some are non-stationary, are co-integrated. The existence of cointegration indicates that the regression is not spurious.

The ARDL ECM result is negative and significant as expected and shows that about 78% disequilibrium is corrected in the next period; it also implies that the economy will be adjusted at a speed of 78%. The ARDL ECM suggests the validity of the equilibrium relationship, representing the ability of the economy to be restored to a state of equilibrium.

4.1.4 Stability Test

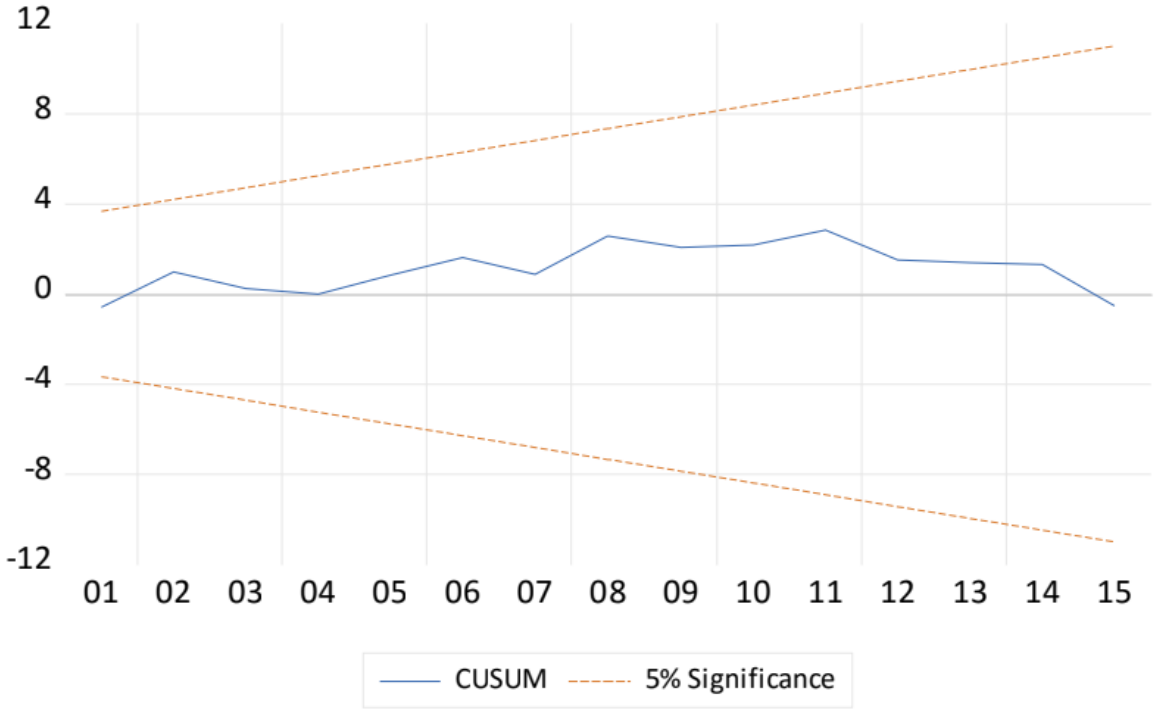


Figure 1: Stability Test

Source: Authors Computation (2019)

From the figure 1 above, the cumulative sum of recursive residuals (CUSUM) test of the stability of parameters are used to assess the stability of parameters. The estimates show parameter stability as the CUSUM plot falls within the critical bounds of the 5% significance level. Therefore, the model passes the stability test at 5% level of significance.

Table 4.1.5: Serial Correlation Lm Test

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation			
F-statistic	1.034310	Prob. F(5,10)	0.4484
Obs*R-squared	9.203535	Prob. Chi-Square(5)	0.1012

Source: Authors Computation (2019)

The table above shows that the prob. Chi-square is 0.1012 which is greater than 0.05. Therefore, the null hypothesis that there is no serial correlation cannot be rejected (i.e. the null would be accepted).

Table 4.1.6: Heteroscedasticity Test Arch

Heteroskedasticity Test: ARCH			
F-statistic	0.089971	Prob. F(1,24)	0.7668
Obs*R-squared	0.097105	Prob. Chi-Square(1)	0.7553

Source: Authors Computation (2019)

The table above shows that the prob.chi-square is 0.7553 which is greater than 0.05, therefore the null hypothesis that there is no heteroscedasticity will be accepted.

Table 4.1.7: Model Specification

Ramsey RESET Test			
	Value	**Df**	**Probability**
t-statistic	0.079244	14	0.9380
F-statistic	0.006280	(1, 14)	0.9380
Likelihood ratio	0.012108	1	0.9124

Source: Authors Computation (2019)

From the table above it shows that the probability value is greater than 0.05 and this shows that the model is well specified, therefore the null hypothesis that the model is well specified is accepted

Table 4.2.1: For Model 2- GC (Gini Coefficient)

VARIABLES	COEFFICIENT	STANDARD ERROR	T- STATISTIC	PROB
GNIPC	11.40484	8.564381	1.331660	0.2404
ACGSF	-0.147553	0.118619	-1.243926	0.2687
CBCA	0.001618	0.002358	0.686115	0.5232
GREA	-0.008834	0.007148	-1.235794	0.2714
UNE	-0.169058	0.114264	-1.479542	0.1991
GEE	-0.001527	0.002265	-0.674266	0.5301

Source: Authors Computation (2019)

R^2=0.9608 Adjusted R^2 = 0.8042

The R^2= 0.9608 and this means that the independent variables jointly explain about 96% variation in the dependent variable. The Adjusted R^2 = 0.8042. It is usually less than the R^2 and it takes into cognizance the degree of freedom, it shows that after penalizing the unwanted variables and taking into consideration the degree of freedom, the independent variable explains about 80.42% of the variation in the dependent variable.

Based on a priori grounds, the following variables have their expected signs, GNIPC, ACGSF, GREA, and GEE. However, CBCA and UNE do not have their expected signs. CBCA they turned out to be positive while UNE turned out to be negative but however looking at their probability value it's not significant, therefore its positivity and negativity respectively has no significant impact on the dependent variable GC. In the case of ACGSF, GREA and GEE it shows a negative relationship with the dependent variable but not significant, this means that an increase in ACGSF, GREA and GEE would also decrease GC but not significantly. GNIPC shows a positive but not significant relationship; therefore, an increase the GNIPC will not significantly contribute to the increase in the GC.

Interpretation of variables

A unit change in GNIPC, other variables held constant, will on the average bring about a 11.40484 increase in GC. A unit change in ACGSF, other variables held constant, will on the average bring about a 0.147553 decrease in GC. A unit change in CBCA, other variables held constant, will on the average bring about a 0.001618 increase in GC. A unit change in GREA, other variables held constant, will on the average bring about a 0.008834 decrease in GC

A unit change in UNE, other variables held constant, will on the average bring about a 0.169058 decrease in GC. A unit change in GEE, other variables held constant, will on the average bring about a 0.001527 decrease in GC.

4.2.2 F Bounds Test

F-statistic value	**Significance**	**I(0)**	**I(1)**	**Decision**
4.39	10%	1.99	2.94	Longrun relationship
	5%	2.27	3.28	Longrun relationship
	2.5%	2.55	3.61	Longrun relationship
	1%	2.88	3.99	Longrun relationship

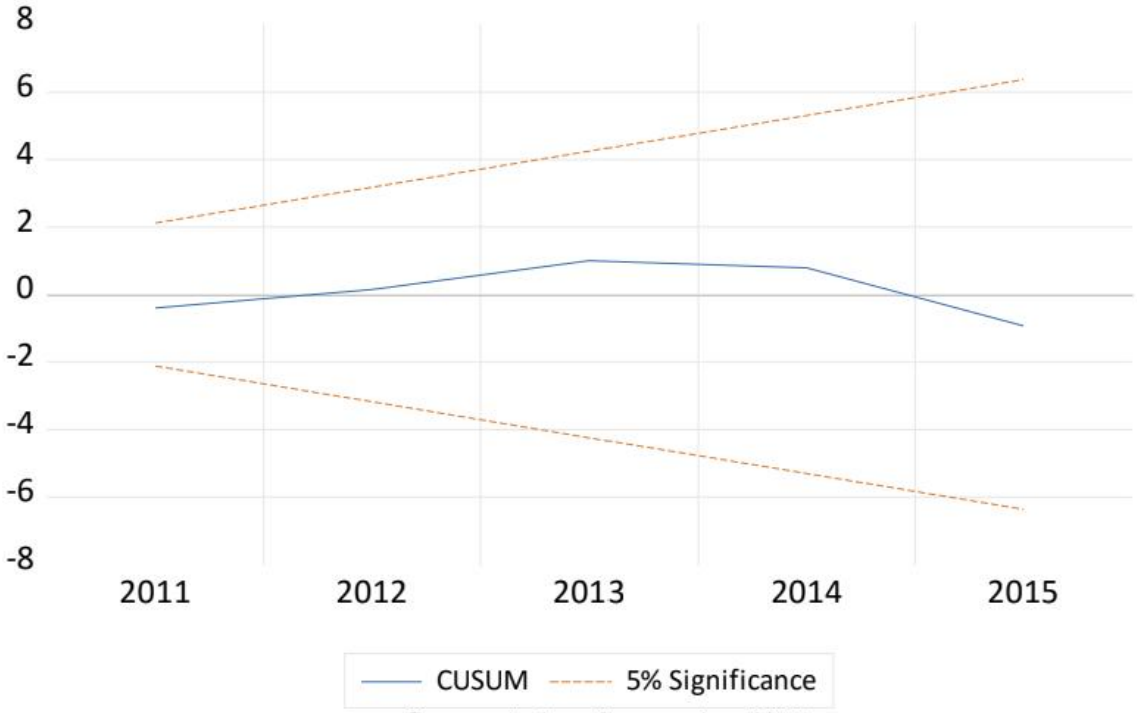
Source: Authors Computation (2019)

Null Hypothesis: No levels relationship

If the F-stat is greater than the lower class boundary I (0) and upper class boundary I (1) there is a long run relationship and reject the null hypothesis. In the table above the F stat (4.39) is greater than the 1(0) and I (1) at 10%, 5%, 2.5% and 1%, it therefore shows a long run relationship. This means that the variables, despite that some are non-stationary, are co-integrated. The existence of cointegration indicates that the regression is not spurious.

The ARDL ECM result is negative and significant as expected and shows that about 52% disequilibrium is corrected in the next period; it also implies that the economy would be adjusted at a speed of 52%. The ARDL ECM suggests the validity of the equilibrium relationship, representing the ability of the economy to be restored to a state of equilibrium.

4.2.3: Stability Test



Source: Authors Computation (2019)

From the graph above, the cumulative sum of recursive residuals (CUSUM) test of the stability of parameters are used to assess the stability of parameters. The estimates show parameter stability as the CUSUM plot falls within the critical bounds of the 5% significance level. Therefore, the model passes the stability test at 5% level of significance.

4.2.4 Heteroskedastic city Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.193312	Prob. F(20,5)	0.9967
Obs*R-squared	11.33765	Prob. Chi-Square(20)	0.9370
Scaled explained SS	1.134080	Prob. Chi-Square(20)	1.0000

Source: Authors Computation (2019)

The table above shows that the prob.chi-square is 0.9370 which is greater than 0.05, therefore the null hypothesis that there is Homoskedasticity (no heteroskedasticity) will be accepted.

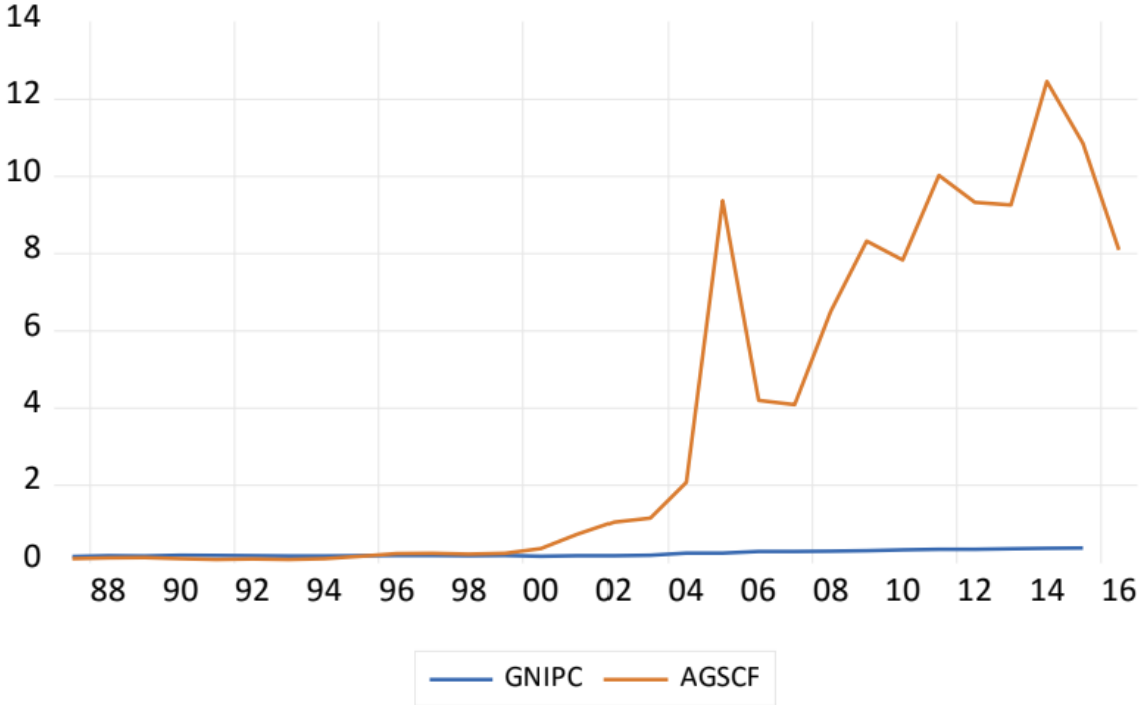
4.2.5: Model Specification Test:

Ramsey RESET Test			
	Value	**Df**	**Probability**
t-statistic	0.365694	4	0.7331
F-statistic	0.133732	(1, 4)	0.7331
Likelihood ratio	0.855044	1	0.3551

Source: Authors Computation (2019)

From the table above it shows that the probability value is greater than 0.05 and this shows that the model is well specified, therefore the null hypothesis that the model is well specified is accepted.

4.3 Trend Analysis of GNI Per capita (GNIPC) and Agricultural credit grant scheme fund (ACGSF)
ACGSF is used as the acronym for Agricultural finance indicator and GNIPC (GNI per capita as a measure of poverty in the economy) is used as an acronym for GNI per capita. The diagram below shows the trend between Agricultural financing and poverty in Nigeria



The diagram above shows that within the period of 1988 to 1999 both GNIPC and ACGSF were moving in the same direction suggesting a positive relationship between them within that period. From 2000 ACGSF begins to rise higher than GNIPC but was fluctuating till 2016. However, from 2004 GNIPC begins to rise, it rises continually till the period of 2016 but at a very slow rate compared to ACGSF. Overall, the trends in these two variables suggest that for virtually all the periods (if not all), they both moved in the same direction suggesting a positive relationship between the two of them. The regression analysis that shows that ACGSF has a positive impact on GNIPC also corroborates the trend analysis that also shows a positive relationship between them.

4.4 Summary of the two models
The results of the two models employed in this analysis are similar. The first model employed with the dependent variable GNIPC (Gross national income per capita) as a proxy for poverty shows a positive and insignificant relationship with ACGSF (Agricultural credit grant scheme fund) the agricultural fiancé indicator. This implies that Agricultural financing has a positive impact on poverty but the impact is not statistically significant. The other model employed to used Gini coefficient to measure level of inequality in order to find out if agricultural financing has a disproportionate large impact on the poor and the results showed that agricultural financing exerts an impact on the poor but not disproportionately. Therefore, both models imply that agricultural financing has a positive impact on poverty but the impact is not statistically significant.

5. CONCLUSION AND RECOMMENDATIONS

The aim of this study is to investigate the impact of agricultural financing on poverty alleviation in Nigeria from the period of 1981 to 2016. This is achieved by analyzing the relationship between agricultural financing on poverty alleviation employing empirical analysis. The first specific objective was to assess whether agricultural financing exerts disproportionately large impact on the poor. This was carried out using Gini coefficient as the model 2 with other explanatory variables such as GNIPC (Gross national income per capita), ACGSF (Agricultural credit grant scheme fund), CBCA (Commercial Bank credit to agricultural sector), GREA (Government recurrent expenditure to agricultural sector), UNE (unemployment), GEE (Government expenditure on Education). From the results, ACGSF (which is the major indicator of agricultural financing) shows a negative and insignificant relationship with the Gini coefficient (a major indicator of inequality) that is, an increase in Agricultural financing will decrease inequality but not significantly which indicates that agricultural financing exerts an impact on the poor but not disproportionately.

The second specific objective was to investigate whether agricultural financing exerts a positive and significant relationship on poverty alleviation. From the results ACGSF (which is the major indicator of agricultural financing) shows a positive and insignificant relationship with the dependent variable GNIPC (a proxy for poverty). This implies that an increase in agricultural financing will increase GNIPC that is, an increase in agricultural financing will decrease poverty rate in Nigeria but not significantly. The third specific objective was to assess the trend between agricultural financing and poverty alleviation. GNIPC and ACGSF were moving in the same direction suggesting a positive relationship between them. Overall, the trends in these two variables suggest that for virtually all the periods (if not all), they both moved in the same direction suggesting a positive relationship between the two of them. The regression analysis that shows that ACGSF has a positive impact on GNIPC also corroborates the trend analysis that also shows positive relationship between them. This indicates that an increase in ACGSF will cause a reduction in Poverty rate.

The ARDL results shows that in the case of ACGSF and GEE it shows a positive relationship with the dependent variable but it's not statistically significant, this means that an increase in ACGSF and GEE would also increase GNIPC but will not contribute to GNIPC significantly. GDPPC shows a positive and significant relationship; therefore, an increase the GDPPC will significantly contribute to the increase in the GNIPC. UNE shows a negative relationship as expected but it's not significant which indicates that level of unemployment does not significantly impact on GNIPC.

From the result of this study, the major challenge to agriculture is finance, poor farmers live on subsistence farming, also, poor financing discourages potential graduates and other unemployed from engaging in farming. The annual growth rates on budgetary allocation on agricultural financing is lower than the others sectoral growth rates. The poor agricultural financing has discouraged unemployed youths to take to farming, this has also aggravated the poverty rates.

From the careful investigations of agricultural financing and poverty alleviation, Government should consider increasing the grants given to farmers to enhance agricultural productivity thereby increasing their incomes and advancing their standard of living. Also, Commercial banks credit to the agricultural sector showed a negative relationship, therefore the interest rate on loans to farmers should be reduced. For instance, interest rate should be reduced to a single digit and period of repayment should be increased between two and three years so as to benefit more of the small scale farmers and encourage them to borrow for the advancement of their agricultural activities hence reducing poverty rate.

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