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Measuring the Impact of Financial Liberalization Policies on Agricultural Development, Econometric Evidence from Nigeria's Agricultural Productivity, 1981-2021

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ABSTRACT

The broad objective of this study was to investigate the Impact of Financial liberalization on Agricultural productivity and growth in Nigeria while the Specific objectives of this study are to: Measure the impact of Commercial bank Loans and advances to Agricultural Productivity and Growth in Nigeria. Determine the impact of the Agricultural Credit Guarantee Scheme on Agricultural Productivity and Growth in Nigeria. Investigate the Impact of Credit to the private sector on Agricultural Productivity and Growth in Nigeria. Ascertain the impact of Broad Money Supply on Agricultural Productivity and Growth in Nigeria using a special type of regression called an autoregressive distributed lag model. This type of model was used because of its dynamic nature of using the lag of the repressors over time. Result reveals that Commercial bank Loans and advances positively and non-significantly impacts Agricultural Productivity and growth in Nigeria. Agricultural Credit Guarantee Scheme positively impacts Agricultural Productivity and growth in Nigeria Credit to the private sector and none significantly impact Agricultural productivity and Growth in Nigeria Broad money supply positively and significantly, impact Agricultural productivity and Growth in Nigeria. The study concluded that the nexus between financial liberalization and agricultural productivity will improve agricultural growth and equally economic growth as well as the standard of living of people if the nexus were adequately harnessed.

Keywords: *Financial liberalization, Agricultural productivity, Commercial bank Loans, and advances*

1. Introduction

Growth in agricultural production and productivity are crucial in achieving sustainable economic growth and poverty reduction in developing countries. The link between agricultural productivity growth and trade liberalization may suggest that trade liberalization goes along with economic development. Malcom & Rakovosiki (2018) see liberalization of economies and the complete elimination of trade barriers to having become popular economic policies of developed and developing nations today while import and export tariffs, quotas, export subsidies, and technical barriers were commonplace during the previous decades. More recently, developing nations, like Nigeria, have been implementing trade liberalization policies. Further, most countries' experience on trade liberalization policies seems to indicate that the trade policy reforms achieve larger importance in the financial sector like banking, insurance, and other institutional investors which agricultural production and growth are not left behind.

Eze & Okoye (2011) see trade liberalization policy framework introduced in 1986 in Nigeria was supposed to increase the availability of goods and services to consumers and expand the opportunities to the agricultural sector, enhancing market competition, increasing investments, raising agricultural productivity, and output and improvement in Economic Growth.

Mussai & Medail (2017) opined that Growth in agricultural production and productivity are crucial in achieving the diversification strategy, sustainable economic growth, and poverty reduction in developing countries. The positive link between agricultural production and growth as well as trade openness may suggest that trade liberalization goes along with economic development. Trade liberalization of economies and the complete elimination of trade barriers have become popular economic policies of developed and developing nations today while import and export tariffs, quotas, export subsidies, and technical barriers in agriculture were commonplace during the previous decades.

(Mireilla,2017). More recently, developing nations, like Nigeria, have been implementing trade liberalization policies. Further, most countries' experiences on trade liberalization policies seem to indicate that the trade policy reforms achieve larger importance in agricultural productivity growth and domestic welfare gains. Oladipo (2016) expressed that the trade liberalization policy framework introduced in 1986 was supposed to increase the availability of goods and services to consumers and expand the opportunities to the agricultural sector, enhancing market competition, increasing investments, raising agricultural productivity, and output.

Sogules and Nkoro (2016) stated that traditional trade theory emphasizes that free trade based on locative efficiency, increases social welfare assuming perfect competition. The theory further implies that free trade policies improve the welfare of any economy by reducing deadweight loss associated with the characteristics of monopoly or oligopoly. Even though trade theory states that free trade increases welfare, the Welfare effects of free trade have been debated. Some studies show that there is little or no evidence to suggest that trade liberalization involves accelerating agricultural production growth or per capita income is capable of stunting economic growth. However, there is a substantial level of empirical evidence confirming that there is a link between trade openness and growth that results from trade liberalization (Andersen and Babula (2008). Also, some research shows that trade liberalization and agricultural productivity acts as feedback on each other. Agricultural productivity can be gained from trade openness which results from liberalized trade policies as agricultural products need to be more competitive to get expected agricultural production levels (Mahadevan (2003). A substantial level of analysis points out that Nigeria may have benefitted from trade policy reforms in moving away from protectionism.

Following the collapse of oil prices and the massive shortfall in government revenues and attendant adverse economic and social repercussions, the need for accelerated investment in the Agricultural sector has become more urgent. This is because Agriculture has seemed to be neglected in Nigeria considering that before the coming of oil in Nigeria, it contributed to the highest means of our National earnings.

The study is undertaken to assess the impact of the increased discretionary allocation of credit to the private sector as a result of the banking sector reforms and the various directed funding programs by the regulatory authority on agricultural output in Nigeria such as commercial bank loans in Agriculture, Agricultural credit guarantee scheme through sectoral credit to agriculture or loans and advances to agriculture, level of broad money supply and stabilization of exchange rate policy to influence farming inputs in the country.

Hence, this study sought to investigate the Impact of Financial liberalization on Agricultural productivity and growth in Nigeria both in the short and long-run which results in a research gap that the study wants to fill.

The broad objective of this study was to investigate the Impact of Financial liberalization on Agricultural productivity and growth in Nigeria while the Specific objectives of this study are to:

1. Measure the impact of Commercial bank Loans and advances to Agricultural Productivity and Growth in Nigeria.
2. Determine the impact of the Agricultural Credit Guarantee Scheme on agricultural Productivity and Growth in Nigeria.
3. Investigate the Impact of Credit to the private sector on Agricultural Productivity and Growth in Nigeria. Ascertain the impact of Broad Money Supply on Agricultural Productivity and Growth in Nigeria.

2. Review of Related Literature

2.1 Conceptual Review

Financial Liberalization

Financial Liberalization is a concept where restrictions on financial assets, markets, and financial institutions are eliminated, or when financial innovations such as subprime mortgage loans, relaxation of interest rate on credits, or various credit controls are introduced to the financial markets. Financial liberalization according to theory is meant to foster economic growth through an increase in savings via an increase in real deposit rate and increase in private investment in high priority sectors, but how this policy has contributed to the growth of the Nigerian economy but the extent to which this policy has contributed to agriculture remains an empirical question.

Liberalization means the "removal of controls." When we talk about financial liberalization, we refer to the removal of controls and restrictions placed on the financial sector by a governing authority. Financial liberalization gained attention in the early 1970s due to the seminal work of McKinnon (1973) and Shaw (1973) in which they argued that liberalization of the financial sector will lead to an increase in savings, encourage investments and induce economic growth. Through the regulation of credit to the private sector, provision of scannable money supply and control all form of interest rate, exchange rate and level of inflation. Hence, many countries especially developing countries have embraced financial liberalization as the way forward for their economies.

Agricultural productivity

Agricultural productivity can be defined as the amount of output that can be obtained from given levels of Agricultural inputs in the Agricultural sector of the economy. Given limited resources, Agricultural productivity and growth are the only way to sustain and increase the standards of living of people in Nigeria. An increase in productivity in Agricultural occurs when output from a given level of Agricultural inputs increases. This phenomenon is mainly attributed to improvements in the technical efficiency with which the Agricultural inputs are used and innovations in Agricultural technology that allow more output to be produced. Agriculture productivity growth in an economy is important because it is an essential source of overall growth (Belloumi and Matoussi, 2009), and it is a necessary condition for economic growth, as it allows a reallocation of labor from the agricultural to the industrial sector. Whatever the stage of their economic development, all nations continue to have, as always, a vital concern in agriculture and food.

Commercial bank Loans and Advances

The term 'loan' refers to the amount borrowed by one person from another. The amount is in the nature of the loan and refers to the sum paid to the borrower. Thus from the viewpoint of the borrower, it is 'borrowing' and from the viewpoint of a bank, it is 'lending'. A loan may be regarded as 'credit' granted where the money is disbursed and its recovery is made on a later date. It is a debt for the borrower. While granting loans, credit is given for a definite purpose and a predetermined period. Interest is charged on the loan at the agreed rate and intervals of payment. 'Advance' on the other hand, is a 'credit facility granted by the bank. Banks grant advances largely for short-term purposes, such as the purchase of goods traded in and meeting other short-term trading liabilities. There is a sense of debt in a loan, whereas an advance is a facility being availed of by the borrower. However, like loans, advances are also to be repaid. Thus a credit facility- repayable in installments over a period is termed as a loan while a credit facility repayable within one year may be known as advances.

Agricultural Credit Guarantee Scheme Fund

ACGSF, an initiative of the Central Bank of Nigeria. The Scheme started operation in 1978 with an initial capital base of N100 million shared in a ratio of 60:40 between the Federal Government of Nigeria and the Central Bank of Nigeria. The capital base of the scheme has been raised to N3 billion managed by the Central Bank of Nigeria. The ACGSF is meant to share the risks of banks in agricultural lending and hence encourage them to continue to extend credit to the agricultural sector.

Credit to the private Sector

Credit to the private sector refers to financial resources provided to the private sector, such as through leans, purchases of non-equitable securities, and trade credits, and other accounts receivable, that establish a claim for payment. One of the indications or signs (but not the only one), of economic development and increasing share (role) of the private sector in the national economy or GDP of a certain country. Referring to the data from the world bank, an economic measure of domestic credit to the private sector (% to GDP) means that financial resources like leans and non-equitable securities are provided to the private sector by financial institutions like banks, insurance companies, and other financial corporation's all measured as percentages with respect to GDP (or national size of the economy). The higher this measure is, the higher financial resources or financing is to the private sector in a country and so the greater opportunity and space for the private sector to develop and grow. The better the private sector gets and the bigger role it has in the national economy, the better is generally the health and development of the economy of this country are.

Broad Money Supply (M_2)

Broad Money is the most inclusive method of calculating a given countries money supply. The money supply is the totality of assets that households and businesses can use to make payments or to hold as short-term investments, such as currency, funds in a bank account, and anything of value resembling money. The formula for calculating money supply varies from country to country, but broad money is always the farthest-reaching; narrow money includes fewer elements in the calculation.

2.2 Theoretical Review

Theory of Financial Liberalization

The Theory of Financial Liberalization was propounded by McKinnon and Shaw in 1973 by postulating that in a developing country like Nigeria, especially, where Financial services like interest rate, exchange rate, inflation rates are liberalized, it will lead to an increase in the real interest rate which will lead to increase in savings, spur investments and eventually lead to economic growth. The initial framework of McKinnon (1973) and Shaw (1973) focused on financial repression and the need to alleviate financial repression by allowing the market to determine real interest rates, removal of credit control among others. The outcome of repression, according to McKinnon (1973) and Shaw (1973) will be low savings, high consumption, low investments, and repressed economic growth. The McKinnon–Shaw framework is centered on the distortions in the market caused by financial repression. These distortions are caused by instability in the financial system, hence Financial Liberalization was the only veritable means for financial industry stability which agricultural services were not left out. Therefore, liberalization of financial services will encourage agricultural development and in turns economic growth.

2.3 Empirical Review

Several strands of literature have emerged with mixed conclusions and results on the impact of financial liberalization and financial sector reforms on economic growth in various economies. In this section, we shall review some of those studies and their major findings on both the economy and on Agriculture as a sub-sector of the economy.

Abuaf & Jorrion (2021) examined the impact of financial liberalization on agricultural development and growth in Russia from 1980-2013 using VAR. Result reveals that financial liberalization policies and agricultural productivities have a long-run positive and significant relationship. Besides, financial liberalization has a bidirectional causality existing between financial liberalization indices and agricultural growth in Russia.

Sogules & Nkoro (2021) examined the impact of bank credits to agricultural sectors on economic growth using Co-integration and Error Correction Mechanism (ERM) for the analysis. Results revealed that there is a long-run relationship existing between banks' credits to agricultural and economic growth. Given the ERM results, the study showed that

banks' credits to the agricultural sector exhibited a negative and non-significant impact on economic growth while banks' credits to other sectors like the manufacturing sector exhibited a negative significant impact on economic growth in Nigeria.

Agunuwa, Inaya &Proso (2020) examine the relationship between commercial banks' credit and agricultural productivity in the Nigerian economy using the Ordinary Least Squares (OLS) techniques. There is an indication of a positive relationship between commercial banks' credit and agricultural productivity. There is an indication of a negative relationship between interest rate and agricultural productivity. There is also an indication of a positive and significant relationship between government spending and agricultural productivity in Nigeria.

Malcom & Rakovosiki (2019) Investigated the impact of financial liberalization on agricultural output in Russia using the ordinary least square method. Results from the analysis reveal that credit to the private sector, various agricultural credits, and expanded broad money as part of financial debt positively and non-significantly impact agricultural productivity and output performances in Russia.

Mussai & Medail (2018) examined the impact of financial sector reform on agricultural productivity in Brazil using ordinary least square regression. It was deduced that financial sector reforms such as agricultural credits from banks, credit to small scale enterprises, and broad money supply in Brazil positively and significantly impacted agricultural production in Brazil. It was concluded that financial sector reforms improve economic growth and productivity in Brazil.

Mireilla (2017) measures the impact of financial deepening reform on agricultural productivity in the Benin republic using ordinary least square regression. Analysis from the result reveals that credit to the private sector, broad money supply, and ratio of M2/GDP and CPSGDP positively and none significantly impacted on agricultural productivity in Benin.

Kiprop (2016) examined the impact of financial Liberalization on agricultural productivity in Kenya using the ordinary least square method. Results from the analysis revealed that interest rate, exchange rate negatively and non-significantly impacted agricultural productivity while agricultural credits positively and significantly contributed to agricultural output in Kenya.

Kiguel & Kidane (2017) analyses the impact of financial liberalization indices on Agricultural performances in Zimbabwe using ordinary least square and error correction mechanism from 1990-2015. Results revealed that the agricultural Guarantee scheme fund, exchange rate on the agricultural implement, and credit to the private sector in Zimbabwe positively and significantly contributed to the growth of agricultural output in the country.

Kazoranni & Feshani (2018) evaluated the impact of financial liberalization sector reform on Agricultural output in Iran from 1990-2016 using the Ordinary least square method. Analysis of the result reveals that bank grants on agriculture from the Irish central banks positively and significantly impacted agricultural productivity in Iran.

Kendivali (2017) investigated the relationship between financial deepening reform and Agricultural inputs in Rwanda using correlation covariance. Result reveals that credit to the private sector, broad money supply, and economic growth positively and significantly relates to agricultural productivity in Rwanda.

Ismaile (2016) studied the financial and agricultural growth nexus in Nigeria using the VECM approach. Result reveals that financial reforms in Nigeria have a long-run relationship and equal exogenuity relation to agricultural output in Nigeria. Given the ERM results, the study showed that banks' credits to the agricultural sector exhibited a negative and non-significant impact on economic growth while banks' credits to other sectors like the manufacturing sector exhibited a negative significant impact on economic growth in Nigeria.

Fumnanya (2018) measured the impact of commercial bank loans and advances to agricultural productivity in Nigeria using ordinary least square regression. Result reveals that commercial bank loans and advances positively and non-significantly impacted agricultural productivity in Nigeria. The ECM results, reveals that banks' credits to the agricultural sector through loan and advances exhibited a positive and non-significant impact on economic growth while banks' credits to other sectors like the manufacturing sector exhibited a negative significant impact on economic growth in Nigeria.

Farmensh & Douglas (2017) examined the impact of private sector credits on the encouragement of Agriculture in India from 1981-2015 using ordinary least square regression. Estimate from the result shows that private sector credit positively and significantly impacted agriculture and also the economic growth of India.

Ehinomen & Oladipu (2017) Measured the impact of Financial liberalization on Agricultural performance in Ghana from 1986-2015 using the ordinary least square method. Result reveals that financial liberalization practice such as exchange rate, inflation rate, and interest rate negatively and non-significantly impacted agricultural productivity while commercial bank credits on agriculture positively and significantly improve agricultural productivity in Ghana.

Dorduno & Ebiadalla (2018) measured the contribution of Agricultural subsidies and grants to the performance of agricultural outputs in Sudan from 1981-2016 using the ordinary least square regression method. Result reveals that both agricultural subsidies and grants from the national government of Sudan positively and significantly contributed to the growth of agriculture in Sudan.

Criagwell & Wright (2016) investigated financial sector reform to the agricultural sector in Jamaica from 1992-2014 using two ways least square method. Result reveals that interest rate from loan for agriculture, broad money supply, and credit for improved farm products positively and significantly impacted the level of agricultural development in Jamaica.

Attah-Obeng &Opaku (2017) measured the impact of banking reform on Agricultural productivity in Ghana from 1988-2016 using vector autoregressive models. Result reveals that banking sector reform like agricultural loans and advances positively and significantly impacted the level of agricultural development in Ghana.

2.4 Knowledge gap

This study deviated from the previous study on the impact of financial liberalization on the economy to dwell on the impact of financial liberalization on the Agricultural productivity in Nigeria. Thus; resulting in a gap. This gap is reflected in the currency of the research in Nigeria (1981-2021), methodology in Nigeria, Autoregressive Distributed lag (ARDL), and finally, in Literature, most of the work on financial liberalization and Agricultural productivity was done in sub-Sahara Africa and Nigeria was done using OLS, None of the studies was done in Nigeria used ARDL.

3. Methodology

Research Design

This study adopted the *exposit-facto* research design. The *exposit-facto* research design is described as *after-the-fact research* (Onwumere, 2009). This is suitable for the work given that it is based on an already completed event and the researcher is meant to analyze the outcomes of the already completed event and draw reasonable conclusions.

Nature and Sources of Data

All the data to be employed for this work will be time series, secondary, and purely quantitative. They are drawn from sources such as The Statistical Bulletins of the Central Bank of Nigeria and the World Bank development indicator.

They are annualized time series data because they have a natural time ordering covering the period 1981 to 2016 which is a period of 35 years.

Model Specification

The study adopted a model used by Owusu and Odhiambo (2013). It was the Autoregressive Distributed lag model. (ARDL) that the study adopted. The model for this work is specified following the special Classical multiple Regression Model called

Then, the model for this study adopted the above model but was re-modified so that AGRRP will be endogenized and financial liberalization aggregates will be exogenized thus:

$$LNAGRP_t = \beta_o + \beta_1 LNCBLA_t + \beta_2 LNACGSF_t + \beta_3 CPS_t + \beta_4 LNM_{2t+} E_t$$

Where LNAGRP = Log of Agricultural productivity and growth

LRCBLA = log of Commercial bank loans and advances on Agriculture

LNACGSF = log of Agricultural credit guarantee scheme fund.

LNCPS = log of Credit to the private sector.

LNM2 = log of Broad money supply.

E = Stochastic error term.

βo = coefficient/Equilibrium point.

$\beta_1, \beta_2, \beta_3, \beta_4,$ = Proxies.

t = time-series data

To ensure linearity and trimming down the data size without losing its real value, the variables were logged transformed. Given the design of the research, a special type of regression was used for this study called the Autoregressive distributed lag model. (ARDL). This is because ARDL is a dynamic model.

4. Data Presentation and Analyses

4.1 Data Presentation

Table 4.1.1 Log Form of Financial Liberalization and Agricultural Productivity in Nigeria, 1981-2016.

YEAR	LNAGRP	LNCBLAA	LNACGSF	LNCPS	LNM2
1981	2.836153	-0.52662	10.48129	2.148274	2.672158
1982	3.002211	-0.24004	10.36609	2.367281	2.759174
1983	3.169686	-0.06145	10.49978	2.456854	2.872882
1984	3.413455	0.050789	10.11273	2.522759	3.001015
1985	3.533395	0.270180	10.69747	2.570346	3.104553
1986	3.575151	0.604484	11.13338	2.724412	3.169954
1987	3.917806	0.886697	11.53422	3.048467	3.316858
1988	4.300817	1.120602	11.68364	3.307854	3.646932
1989	4.480287	1.244299	11.76989	3.414548	3.826528
1990	4.669365	1.440167	11.49775	3.512968	3.967591
1991	4.814134	1.611975	11.31578	3.722132	4.322823
1992	5.215588	1.942891	11.38545	4.062561	4.710542
1993	5.688064	2.375185	11.30034	4.845114	5.107996
1994	6.098681	2.876819	11.54429	4.965807	5.439351
1995	6.672213	3.229962	12.00861	5.192983	5.666742
1996	6.975894	3.504479	12.32609	5.474774	5.846017
1997	7.099582	3.330034	12.39685	5.756397	6.024126
1998	7.201201	3.302507	12.28163	5.863507	6.190614
1999	7.263309	3.435463	12.41342	6.066499	6.444055
2000	7.318811	3.714277	12.79788	6.273581	6.778167
2001	7.608583	4.022633	13.49881	6.639826	7.146238
2002	8.355032	4.091836	13.86581	6.835716	7.317188
2003	8.430748	4.128791	13.96777	6.999911	7.577082
2004	8.504161	4.215656	14.54968	7.259583	7.664731
2005	8.704889	3.882831	14.92958	7.516645	7.877743
2006	8.924433	3.899817	15.26554	7.736577	8.242206
2007	9.053918	5.007824	15.30298	8.210693	8.542354

2008	9.220323	4.666772	15.72076	8.845256	8.988222
2009	9.360951	4.910456	15.93771	9.121227	9.149646
2010	9.476458	4.855197	15.86198	9.225924	9.308822
2011	9.549511	5.542068	16.13688	9.274264	9.406934
2012	9.668777	5.756893	16.08833	9.592146	9.539312
2013	9.730119	5.839763	16.05882	9.664712	9.626435
2014	9.799169	5.996203	16.38023	9.748568	9.780149
2015	9.885169	6.147613	16.25283	9.834895	9.846986
2016	10.02788	6.227445	16.40665	9.881475	9.94265
2017	9.549511	5.542068	16.13688	9.274264	9.406934
2018	9.668777	5.756893	16.08833	9.592146	9.539312
2019	9.730119	5.839763	16.05882	9.664712	9.626435
2020	9.799169	5.996203	16.38023	9.748568	9.780149
2021	9.885169	6.147613	16.25283	9.834895	9.846986

Sources: CBN Statistical Bulletin (2016)

Where: AGRP=Agricultural productivity. CBLAA= Commercial bank loan and Advances on Agriculture. ACGSF= Agricultural credit guarantee scheme fund. CPS =Credit to the private sector, M_2 = Broad money Supply.

Table 4.1.1 contains Agricultural productivity. Commercial bank loan and Advances on Agriculture, Agricultural credit guarantee scheme fund. Credit to the private sector, Broad money Supply collected from the central bank of Nigeria statistical bulletin covering the period of 1981-2021. The data is a set of log transform annualized time series required for empirical analysis as adopted from the model which was specified in chapter three.

Stationary Tests using Philip and Peron

In an attempt to confirm the order of integration of the series under study thereby confirming their suitability for a linear combination in the form of a model, the unit root test following the form specified as the Philip and Peron Test is used. Table 4.1.2 below presents a summary of the unit root result that is stationary.

Table 4.1.2 Summary of Unit Roots Test Results

Variable	ADF Statistic	Critical Values @ 5%	Probability Value	Inference
LNAGRP	-5.9501	-1.9510	0.0059	I(0)
LNCBLA	-6.6547	-3.5485	0.0000	I(1)
LNACGSF	-4.6236	-3.5485	0.0040	I(1)
LNCPS	-4.0658	-3.5485	0.0156	I(1)
LNM2	-3.1974	-2.9511	0.0289	1(1)

Source: Extract from Appendix One E-Views 10.

From the result of the unit root test contained in table 4.1.2, Agricultural productivity value is integrated at 1(0), while Commercial bank loan and Advances on Agriculture, Agricultural credit guarantee scheme fund. Credits to the private sector, Broad Money Supply are all integrated of order 1(1). Given these different orders of integration, the Ordinary Least Square Regression Method was given up in preference for the Autoregressive Distributed Lag Model which tolerates such stationary property combination. In addition, the sample size is also good enough for the ARDL given that its estimates remain robust and consistent in the face of not too large a sample size and finally good for data characterized with structural brakes.

Basic Descriptive Statistics or Standard Tests for Normality

The statistical properties of the data sets are seen as vital determinants of their behaviors when used in econometric analyses. Based on this, the researcher presented in this section, the basic descriptive statistics called the Normality test of the variables under study.

Table 4.1.3 Basic Descriptive Statistics/ Standard Tests for Normality:

	LNAGRRP	LNCBLA	LNACGSF	LNCPS	LNM2
Mean	6.876275	3.147346	13.21586	6.019015	6.356244
Median	7.232255	3.469970	12.40514	5.965003	6.317335
Maximum	10.02788	6.227445	16.40665	9.881475	9.942650
Minimum	2.836150	-0.526616	10.11273	2.148274	2.672158
Std. Dev.	2.413218	2.024796	2.143745	2.615533	2.480587
Skewness	-0.293804	-0.256560	0.235162	0.044629	-0.039479
Kurtosis	1.636243	1.929051	1.519453	1.644237	1.605245
Jarque-Bera	3.307672	2.115333	3.619834	2.769092	2.927365
Probability	0.191315	0.347265	0.163668	0.250438	0.231383
Sum	247.5459	113.3045	475.7708	216.6845	228.8248
Sum Sq. Dev.	203.8268	143.4929	160.8476	239.4355	215.3659
Observations	36	36	36	36	36

Source: Author's Computation E-views 10

Table 4.1.3 contains the basic measures of central tendency, spread and variations calculated on the level series of the dataset. Of particular interest is the Jacque- Bera (JB) statistics which is a test for normality. It is a combined test of a skewness (S) of zero (0) and a kurtosis (K) of three (3), which are signs of a mesokurtic distribution. In this case, however, the JB statistics shows that the variables are positively and negatively skewed and are leptokurtic.

4.2 Data Analysis

Table 4.2: ARDL Eviews Output

Dependent Variable: LNAGRRP				
Method: ARDL				
Date: 08/23/18 Time: 08:37				
Sample (adjusted): 1985 2021				
Included observations: 32 after adjustments				
Maximum dependent lags: 2 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): LNCBLA LNACGSF LNCPS LNM2				
Fixed regressors: C				
Number of models evaluated: 1250				
Selected Model: ARDL(1, 1, 3, 4, 4)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
LNAGRRP(-1)	0.137931	0.173790	0.793666	0.4406
LNCBLA	0.063558	0.109905	0.578301	0.5722
LNCBLA(-1)	0.345560	0.115769	2.984909	0.0098
LNACGSF	0.228798	0.126087	-1.814608	0.0911
LNACGSF(-1)	0.316622	0.139233	2.274037	0.0392
LNACGSF(-2)	0.005669	0.128595	0.044081	0.9655
LNACGSF(-3)	-0.185728	0.104626	-1.775156	0.0976
LNCPS	0.351807	0.215197	-1.634819	0.1244
LNCPS(-1)	-0.303763	0.238730	-1.272412	0.2240
LNCPS(-2)	-0.144108	0.246415	-0.584816	0.5680
LNCPS(-3)	-0.423744	0.246179	-1.721285	0.1072
LNCPS(-4)	-0.586108	0.262611	-2.231849	0.0425
LNM2	0.621212	0.277430	2.239167	0.0419
LNM2(-1)	0.678279	0.452506	1.498939	0.1561
LNM2(-2)	-0.184894	0.465997	-0.396770	0.6975

LNM2(-3)	0.823144	0.473347	1.738985	0.1040
LNM2(-4)	0.511401	0.354952	1.440760	0.1716
C	1.329506	0.672087	1.978175	0.0679
R-squared	0.998920	Mean dependent var		7.347637
Adjusted R-squared	0.997608	S.D. dependent var		2.122506
S.E. of regression	0.103800	Akaike info criterion		-1.394382
Sum squared resid	0.150842	Schwarz criterion		-0.569905
Log-likelihood	40.31011	Hannan-Quinn criteria.		-1.121091
F-statistic	761.6361	Durbin-Watson stat		2.452023
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection				

Result

Commercial bank loans and advances positively and non-significantly impact Agricultural Productivity and growth in Nigeria. Agricultural Credit Guarantee Scheme positively impacts Agricultural Productivity and growth in Nigeria. Credit to the private sector positively and none significantly impact Agricultural productivity and Growth in Nigeria, Broad money supply positively and significant, impact Agricultural productivity and Growth in Nigeria

5. Conclusion

This study investigated the impact of financial liberalization on Agricultural productivity in Nigeria between the periods 1981 to 2021. The economic motivation of the study is anchored on the desire to find out the extent to which financial liberalization on Agricultural productivity in Nigeria. A review of the empirical and theoretical basis for the work was done. The research methodology concentrated on the use of the baseline ARDL, of the variables under study. The analysis of the baseline ARDL reveals that Commercial bank Loans and advances positively and non-significantly impact Agricultural Productivity and growth in Nigeria. Agricultural Credit Guarantee Scheme positively impacts Agricultural Productivity and growth in Nigeria. Credit to the private sector positively and none significantly impact Agricultural productivity and Growth in Nigeria. Broad money supply positively and significantly, impact Agricultural productivity and Growth in Nigeria.

Based on findings, the study concludes that Financial liberalization impacted positively but non-significantly Agricultural productivity in Nigeria between the periods 1981 to 2016. It should be noted that this study can be employed for the purposes of generalization and can be expanded to capture other economic spheres with distinctive peculiarities in relation to financial liberalization in Nigeria.

6. Recommendations

In line with the specific objectives of this study, we recommend as follows:

1. Commercial bank loans and advances to agriculture should be dutifully managed as a driver of Agricultural growth. Effective policies need to be adopted in order to increase the level of contribution of the Commercial bank loan and advances to agriculture.
2. Agricultural Credit Guarantee Scheme Fund positively impacts Agricultural Productivity and growth in Nigeria but the level of the impact is non-significantly. There is a need from the Government to be accompanied by appropriate trade liberalization policies that enhance agricultural performance. Although the private sector credit is the most effective measure for reducing poverty, it should not be adopted in isolation; it must be adopted to finance agriculture, manufacturing industry, and other service industry in Nigeria.
3. A broad money supply is the most effective measure for reducing poverty, it should not be adopted in isolation; it must be adopted to finance agriculture, the manufacturing industry, and other service industry in Nigeria. Broad money supply help in ensuring that money is available in the economy through agricultural means which should be considered as a main concern within the development agenda. Since the country is abundant with potential agricultural and mineral resources, serious efforts need to be made in terms of improving the productivity of these sectors, to promote the competitiveness of commodities, and to create a conducive investment climate to attract foreign capital for a positive balanced portfolio.

References

Abuaf, Y.D.&, Jorrion, A.C. (2009). Does financial liberalization, spur agricultural productivity and growth in Russia; Munich Personal RePEc Archive, MPRA Paper No. 52419. Available from: http://www.mpra.ub.uni-muenchen.de/52419/.

Agunwa, AA, Inya, G, Proso, M.K (2015). An investigation into the relationship between commercial; bank credit supply and agricultural production in Nigeria. *International Journal of Agriculture and Forestry*, 2(1): 46-52

Akpaeti, A.J, Bassey, N.E,& Ibok, O.W.(2014). The impact of financial sector reforms on the Nigerian agricultural export performance. *American Journal of Experimental Agriculture, 4(9): 1072-1085.*

Akpaeti, A.J. (2013). Does financial sector reforms affect agricultural investments in Nigeria? A Cointegration and VAR Approach. *International Journal of Food and Agricultural Economics,* 1(2): 13-28.

Andersen, L., & Babula, R. (2008.) The link between openness and long-run economic growth. *Journal of International Commerce and Economics*

Attah-Obang, H.B. & Opaku, J.E. (2004). Banking reforms and Agricultural productivity in Ghana. *African Economic Research Consortium (AERC) Research Paper 42, Namibia.*

Belloumi M, Matoussi MS (2009). *Agricultural Productivity Growth in MENA Countries J. Dev. Agric. Econ.* 1(4): 103-113.

Chinweoke, H.B. & Egwu,J.E.& Nwabeke,F (2015). Impact of commercial bank loans and advances to Agricultural productivity and Manufacturing industry in Nigeria. *African Economic Research Consortium (AERC) Research Paper 42. Namibia.*

Criagwell J, & Wright M. (2003) Financial sector reform, and Agricultural Productivity Growth in Brazil. *Journal of Economic Growth,* 5: 341-360.

Dorduno, G.N.& Ebiadalla, M (2018). Contribution of Agriculture, Subsidies, and grants to Agricultural performance in Sudan. *International Business and Economics Research Journal,* 7(10): 73-84.

Ehionmen, E.B. & Oladipu FN. (2017) The impact of financial libralisation reforms on agricultural sectors in Ghana: An Empirical Investigation. *Journal of Sustainable Development in Africa,* 13(8).

Eze, T.M.& Okoye. J.C(2009), Government financial liberalization policy and agricultural productivity and growth in Nigeria. *Journal of Economics and Management Sciences,* 1(12). Available from: http://www. growinginclusivemarkets.org.

Farmaensh &Doughlas, J. (2017). Private sector credit and Agricultural productivity in India: An assessment. International Poverty Centre, United Nations Development Programme.

Fumnanya, S. (2018). Impact of commercial bank loans and Advances on Agricultural productivity in Nigeria. *Journal of Applied Finance & Banking,* 1(4): 39-55.

Gujaranti, N.D. & Poter, D. C. (2009). *Basic Econometrics,* England. MC-Graw Hills Publishing Books Bolton.

Ismaile, A.E. (2016). Financial sector reforms and Agricultural productivity in Nigeria. *Transdisciplinarity Cognition Journal,* 15: 45-57.

Kazoranni, T., & Feshanni, A.E. (2018), Financial liberalization, financial development, and Agricultural productivity in the case for South Africa. *Published Master of Commerce Thesis in Department of Economics, Rhodes University, Grahamstown.*

Kendivanli, E. (2017). Relationship between Financial deepening and Liberalization on Agricultural productivity A Two-Country Analysis. *Eastern Economic Association Annual Conference, City University of New York, January 2005.*

Kiguel, A. & Kindane, J.E. (2014). Impact of financial liberalization on private investment: empirical evidence from sub-Sahara Agricultural productivity. *Review of Economics & Finance,* 4(2): 77-86.

Malcom, L.A. & Rakovoski, B.A. (2018). Impact of financial liberalization on agricultural productivity and growth in developing countries: the Russian experience. International *Journal of Economics and Management Sciences,* 1(12).

McKinnon R.(1973.) *Money and Capital in Economic Development.* Washington, D.C Brooking Institution.

Mussai J., & Medail, J.C. (2017). Financial liberalization and agricultural productivity and growth in Russian. *Savings and Development journal*, 22(4).

Oladipo, B.O (2016). Institutional reforms, interest rate policy and the financing of the agricultural sector in Nigeria. *European Scientific Journal, 9 (12)*.

Onwumere, J.U.J (2009). *Business and Economic Research Method.* Vougasen Ltd, Enugu. 2nd Edition.

Owusu, E.L. & Odhiambo, N. M. (2013), Financial liberalization and economic growth in Nigeria: an ARDL-bounds testing approach. *Journal of Economic Policy Reform,* 17(2): 164-177.

Pasaran, H. & Pesaran, B. (1997) Working with Micro-Soft 4.0 Interactive Economic Analysis. *Oxford University Press.*

Pasaran, H. & Shin, Y. (1999). An Autoregressive Distributed lags modeling approach to co-integration Analysis. *Chapter 11 in Econometrics and Economic Theory in the 20th century. The Ragnar Frisch.*

Saunders, M. Lewis, P. &Thorn H, A. (2012). Research Methods for Business Students. *Pearson Education Limited, Harlow, England 6th Edition.*

Shaw, E.S.(1973). Financial Deepening in Economic Development. New York: Oxford, University, 58(1).

Sogules, G.N.& Nkoro, M (2016). Contribution of bank credits to Agricultural performance in Sudan. *International Business and Economics Research Journal,* 7 (10): 73-84.

Ugwu, D.S,& Kanu, I.O. (2012). Effects of agricultural reforms on the agricultural sector in Nigeria. *Journal of African Studies and Development 4(2)*