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Financial Depth Indicators and Agricultural Sector Performance in Nigeria

Andrew E.O Erhijakpor

Department of Accounting, Banking and Finance
Faculty of Management Sciences, Asaba Campus, Delta State University, Nigeria.

Abstract

The paper investigated Financial Depth Indicators (FDI) and agricultural sector output performance in Nigeria from 1989 to 2018. The objective was to investigate how the FDI measured by private sector credit (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), stock market development (% of GDP), banks credit to the agricultural sector (% of GDP) while the dependent variable is agricultural sector output measured by the contribution of the agricultural sector to GDP. Data for the study were obtained from the Central Bank of Nigeria Statistical Bulletin and World Bank Data Bank (2018). The study found that credit to the private sector (% of GDP), broad money supply (% of GDP), stock market developments (% of GDP), prime lending rate positively impact the Nigerian agricultural sector, while financial savings (% of GDP), bank credit to the agricultural sector (% of GDP), and inflation rate negatively impact on the Nigerian agricultural sector. However, only bank credit to the agricultural sector (% of GDP), stock market developments (% of GDP) and prime lending rate passed the test of significance. Hence, the study concludes that bank credit to the agricultural sector (% of GDP), stock market developments (% of GDP), and prime lending rate contributes significantly to the Nigerian agricultural sector. In light of this, the study recommends that the Nigerian government should concentrate more on policies that enhance more credit to the private sector and development of the stock markets as well as policies that will push down prime lending rates.

Key words: Financial Depth, Agriculture Sector Output, Private Sector Credit, Stock market Development, Broad Money Supply.

1. Introduction

The role of the agricultural sector in human history especially in emerging countries like Nigeria cannot be over-emphasized. This is in congruence with the fact that Nigeria as a country is highly endowed with abundant natural resources. Since a large percentage of its populace is rural-based, they depend absolutely on agriculture for a living (Ali, Jatau, Ekpe, 2016). Moreover, agriculture has the inert capacity to increase economic growth and development as well as expand productive capacities of industries via the provision of raw materials for industrial purposes, increasing export base of the country, capital formation, wealth creation, provision of job opportunities than other sectors, among others (Okuma, 2019).

In like manner, Sofa (2016) reported that promoting agriculture has become even more imperative given modern global realities and growth whereby a combination of micro-nutrient deficiencies, under-nutrition, and over-nutrition has become rampant both at the household level and within many

developing nations like Nigeria. Consequently, subsequent administrations in the Federal Republic of Nigeria had formulated and executed various policies and programmes to revive the agricultural sector as well as improve rural infrastructure taking into consideration its enormous importance in reshaping an economy. However, this goal can only be achievable through a well-developed and deep financial market.

Financial deepening is viewed as an increase in the financial asset of an economy. In other words, financial deepening is the ability of financial institutions (banks, financial markets, insurance companies, stock exchanges, etc.) in a country to effectively and efficiently mobilize both domestic and foreign savings for investment purposes (Alrabadi, & Kharabseh, 2016). Therefore, financial development attracts a reservoir of domestic and foreign savings, improves resource allocation, and facilitates investment.

Despite the various attempts of the Nigerian government to build a well-developed financial system devoid of economic malady, the Nigerian financial sector has performed below expectation. The provision of credit facilities to the agricultural sector and the impact of the credit facilities on the sector remains a controversial issue. Furthermore, despite the notable allocation of credit facilities to the Nigerian agricultural sector and implementation of various financial policies which ought to be in favor of the agricultural sector, agriculture output still declines. In most cases, agricultural loans are not farmer-centric because often the loan structures are not suitable for annual cropping or livestock production.

It is argued that a lack of financial depth in the financial structure of a country can hinder the flow of financial resources to different sectors of the economy, inclusive of the agricultural sector. Extensive research on the relationship between financial deepening and economic growth/productivity exists in developed economies. However, studies of this nature in the Nigerian context are either unexplored or given less scholarly attention. Against this backdrop, this paper examines the effect of financial deepening on agricultural output in the Nigerian context.

2. Review of Related Literature

2.1. Conceptual Framework

Hamilton and Godwin (2013) define financial depth as the intensification in the supply of financial assets in the economy. Given that, the growth of domestic savings provides the real structure for the creation of diversified financial claims, financial deepening may also connote the ability of financial institutions (especially banks) to optimally mobilize domestic savings for investment purposes. Balago (2014) argued that the financial market is said to be deep (developed) if its depth (in terms of market size, and liquidity) are not shallow, economic agents can access financial services, the financial institutions (especially banks) can provide financial services at low cost (affordable cost) and with sustainable revenue, and that the capital market activities are efficient. Globally and for developing countries, in particular, financial deepening is a strategic tool used to achieve all-inclusive growth through an efficient financial intermediation process.

Based on the foregoing, we conceptualized ‘financial depth’ as the depth, the aggregate size of the financial sector, its sectoral composition, and a range of attributes of individual sectors that determine their effectiveness in meeting users’ requirements. In sum, a well-

developed financial depth enhances dexterity and capacity to cope with macro-economic vagaries, increase economic productivity by bridging the financial gap between surplus units to deficit units, as well as facilitate risk diversification and management through improved information sharing mechanism (Ogbuagu & Ewubare, 2017).

The agricultural sector has a multiplier effect on any nation's socio-economic and industrial fabric because of the multi-functional nature of the sector. It has the potential to be the industrial and economic springboard from which the country's development can take off. Agriculture employs about 70 to 80% of the country's labour force and contributes 60% of the nation's gross domestic product (GDP) and foreign exchange earnings (Ugwu & Kanu, 2012). Several agricultural policies and programmes have been embarked upon and implemented by the government to revamp the agricultural sector. This, therefore, suggests that, if appropriate policy measures are put in place to address the current challenges facing the sub-sector cited above coupled with the benefits which are accruable from diversification strategy, the sector will contribute maximally to the growth of the economy.

2.2 Theoretical Literature

This paper is anchored on to fundamental theories namely the supply hypothesis and the financial repression theories which are briefly described hereunder.

Supply-Leading Hypothesis: The supply-leading hypothesis (also known as finance-led growth hypothesis is Schumpeter (1911) supported by MCkinnon (1973), King and Levine (1993), Calderón and Liu (2002) amongst others. This theory posits that the ultimate goal of financial structure depth is to provide the enabling environment which spurs (drives) speedily economic growth, especially the growth of the real sectors namely primary sector: agricultural and mining and secondary sector: (manufacturing & building, and construction sector; and tertiary sector (services and commerce)) facilitated by financial development (Schumpeter, 1911). In sum, this theory holds that economic growth is anchored on a financial sector that has depth.

Financial Repression Theory: the financial repression theory is credited to the works of McKinnon (1973) and Shaw (1973) and they argued that financial deepening would significantly improve economic growth if regulatory authorities did not interfere in the operations and activities of financial institutions (especially banks). In a repressed system, financial intermediation is hampered and this, in turn, impedes the development of the overall economic system, especially in terms of mobilizing savings for investments. The theory further explains that the economic liberalization from their repressive conditions would increase domestic savings, investment, and economic growth. However, one major drawback of this theory is that it holds that financial institutions contribute negatively to the growth and development of every economy reason being that its role conflict with economic activities and that of the real sector. These financial institutions include trade unions, firms, and the state which play a paramount role in gathering information and reducing uncertainty (Graham, 1996).

2.3. The Empirical Evidence

Some related study has been conducted to analyze the causality of financial depth and agriculture performance. However, the findings are mixed and inconclusive. Tuaneh and Ewubare (2016) examined the

implication of financial deepening on agricultural performance from 1981 to 2014. Their result revealed that Money Supply as a Ratio of GDP and Credit to the Private Sector as a Ratio of GDP significantly affect Agriculture's Contribution to GDP, Crop Contribution to GDP, and Livestock Contribution to Gross Domestic Product. Using the Error Correction Model, Nnamocha, and Eke (2015) examined the effect of bank credit and agricultural output in Nigeria from 1970 to 2013. Their results showed that in the long-run bank credit and industrial output contributed a lot to agricultural output in Nigeria, while only industrial output influenced agricultural output in the short run.

Oboh, Tule, and Ebu (2019) examined the effect of monetary policy on agricultural sector performance in Nigeria. The study covered from 1981 to 2016. The study used the Autoregressive-distributed Lag (ARDL) approach and established a long-run relationship between agriculture value-added and some financial/monetary policy variables. The findings suggested that in the long run, money supply and maximum lending rate have significant effects on agriculture value-added while exchange rate and inflation do not. Ajudua, Ojima, and Okonkwo, (2015) explored the effect of monetary policy on the Nigerian agricultural sector's performance, 1986-2013 using the following indicators monetary policy measured by money supply (MS), interest rate (INT), monetary policy rate (MPR), and inflation rate (INF) as independent variables, while the dependent variable is agricultural output measured by agriculture gross domestic product (AGDP). The regression results revealed AGDP was positively by the monetary/financial policy indicators.

3. Methodology

3.1. Nature and Source of Data

Annual time series secondary data collected from CBN Statistical Bulletin are used for the analysis. The data used in the analysis cover the period 1989 to 2018 (30 years). The period covered is informed by the availability of data of the main variables as well as the period covered the post structural adjustment programme (SAP) era in Nigeria.

3.2. Model Specification

The model for the study was grafted from the works of Okuma (2019) where the author used Ratio of Financial Savings to GDP, Ratio of Private Sector Credit to GDP, and ratio of Money Supply to GDP which was represented in econometric model as:

$$AOG = \beta 0 + \beta 1PLR + \beta 2DR + \beta 3RPFS + \beta 4RSC + \beta 5RMS + \mu \ldots\ldots\ldots\ldots\ldots 1$$

Where: AOG is Agricultural Sector Output, PLR is Prime Lending Rate, DR is Deposit Rate, RFS is Ratio of Financial Savings to GDP, RPSCis Ratio of Private Sector Credit to GDP, RMS is Ratio of Money Supply to GDP, $\beta 0$ is Constant, $\beta 1$- β6 are the Beta Coefficient of the regression, while μ is the Stochastic Disturbance term

However, the present study differs from the model specified by Okuma (2019) because we included banks credit to the agricultural sector and stock market development (% of GDP) as re-modified in equation 2 below:

$$AOG = \beta 0 + \beta 1PSC + \beta 2RMS + \beta 3RFS + \beta 4SMC + \beta 5BCA + \beta 6INFR + \beta 7PLR + \mu \ldots.2$$

Where: AOG is Agricultural Sector Output, RPSC is Private sector (% of GDP), RMS is Broad money supply (% of GDP), RFS is Financial savings (% of

GDP), BCA is Banks credit to the agricultural sector (% of GDP), SMC is Stock Market Development (% of GDP), INFR is Inflation Rate, PLR is Prime Lending Rate, $\beta 0$ is Constant Value, $\beta 1$-$\beta 7$ are the Beta Coefficient of the regression, while μ is the Stochastic Disturbance term.

4. Data Presentation and Analysis

4.1. Descriptive Statistics

Table 4.1 represents the descriptive statistics of the data. This shows the numbers of paired observation, mean, median, maximum and minimum, the standard deviation and other indicators. The table are self-explanatory as they show the trends over the period under study.

Table 4.1: Descriptive Statistics for all Study Variables

	AOG	PSC	RMS	RFS	SMC	BCA	INFR	PLR
Mean	22.45700	12.04733	15.01633	7.752333	12.53633	0.561000	19.68000	19.54267
Median	23.22000	8.250000	13.27000	6.180000	11.21000	0.525000	12.14500	18.29000
Maximum	26.99000	20.77000	21.31000	13.49000	39.95000	1.010000	76.80000	30.68000
Minimum	17.95000	6.220000	9.150000	3.560000	3.050000	0.170000	0.200000	13.54000
Std. Dev.	2.869292	5.644590	4.041461	3.174572	8.472217	0.222654	18.49195	4.148053
Skewness	-0.091314	0.518434	0.224238	0.442720	1.117689	0.199521	1.770759	1.311476
Kurtosis	1.453574	1.443301	1.543581	1.636885	4.583175	2.144983	5.078670	4.058822
Jarque-Bera	3.030982	4.373009	2.902859	3.302609	9.379197	1.112862	21.07902	10.00122
Probability	0.219700	0.112309	0.234235	0.191800	0.009190	0.573251	0.000026	0.006734
Observations	30	30	30	30	30	30	30	30

Source: Econometric Views Version 9.0. (2020)

4.2. Unit Root Test

In order to establish the degree of integration, a stationarity test is conducted using the standard Augmented Dickey Fuller (ADF) to avoid spurious result and conclusion. The result is therefore presented below:

Table 4.2: Summary of Augmented Dickey Fuller (ADF) Test

ADF TEST AT LEVELS

Target Variables	ADF Test Statistics	MacKinnon Critical Value @ 5%	Order of Integration	P-value	Decision
Agricultural Sector Output	-1.332506	-2.967767	1(0)	0.6007	Non-Stationary
Private Sector Credit (% of GDP)	-0.921111	-2.967767	1(0)	0.7669	Non-Stationary
Broad money supply (% of GDP)	-1.216978	-2.967767	1(0)	0.6532	Non-Stationary
Financial savings (% of GDP)	-0.770251	-2.967767	1(0)	0.8126	Non-Stationary
Stock Market Development (% of GDP)	-1.572259	-2.967767	1(0)	0.4836	Non-Stationary
Banks credit to the agricultural sector (% of GDP)	-1.944879	-2.967767	1(0)	0.3082	Non-Stationary

Inflation Rate	-4.429981	-2.967767	1(0)	0.0016	Stationary
Prime Lending Rate	-4.734863		1(0)	0.0007	Stationary

ADF TEST AT FIRST DIFFERENCE

Target Variables	**ADF Test Statistics**	**MacKinnon Critical Value @ 5%**	**Order of Integration**	**P-value**	**Decision**
Agricultural Sector Output	-6.087489	-2.971853	1(1)	0.0000	Stationary
Private Sector Credit (% of GDP)	-4.931978	-2.971853	1(1)	0.0005	Stationary
Broad money supply (% of GDP)	-5.399458	-2.971853	1(1)	0.0001	Stationary
Financial savings (% of GDP)		-2.971853	1(1)	0.0016	Stationary
	-4.442963				
Stock Market Development (% of GDP)		-2.971853	1(1)	0.0002	Stationary
	-5.190550				
Banks credit to the agricultural sector (% of GDP)		-2.971853	1(1)	0.0000	Stationary
	-7.043160				
Inflation Rate	-8.687359	-2.971853	1(1)	0.0000	Stationary
Prime Lending Rate	-6.526355	-2.971853	1(1)	0.0000	Stationary

Source: Econometric Views Version 9.0. Output (2020)

From table 4.2 of ADF results; we conclude that all the financial depth variables and the independent variable are stationary either at level or at first differencing. This is because Inflation Rate and prime lending rate attained stationarity at their natural levels while Agricultural Sector Output, Private Sector Credit (% of GDP), Broad money supply (% of GDP), Financial savings (% of GDP), Stock Market Development (% of GDP), and Banks credit to the agricultural sector (% of GDP) attained stationarity at first differencing. Hence, it became imperative to also examine if the variables could be co-integrated at long run (have long run relationship). This study therefore resorts to use the Johansson cointegration test**.**

4.3.Co-integration Test

This is used to determine the number of co-integrating vectors using Johansen's methodology with two different test statistics namely the Trace Test Statistic and the Maximum Eigen-value Test Statistic. The former tests the null hypothesis in which the number of different co-integrating associations is less than or equal to 'r' in contradiction to the alternative hypothesis of more than 'r' co-integrating associations.

The maximum Eigen-value statistic is used to test the null hypothesis of at most 'r' co-integrating vectors alongside the alternative hypothesis of 'r+l 'co-integrating vectors. More so, the Johansen contends that trace and statistics have nonstandard distributions under the null hypothesis, and provides approximate critical values for the statistic, generated by Monte Carlo methods. In a condition where Trace and Maximum Eigenvalue statistics produce different results, the results of trace test should be favoured.

The result is therefore presented in table 4.3:

Table 4.3: Summary of Johansson Co-integration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.974405	271.9519	143.6691	0.0000
At most 1 *	0.874563	169.3223	111.7805	0.0000
At most 2 *	0.801080	111.1956	83.93712	0.0002
At most 3 *	0.582145	65.97969	60.06141	0.0146
At most 4 *	0.497906	41.54628	40.17493	0.0361
At most 5	0.406869	22.25519	24.27596	0.0880
At most 6	0.230583	7.629649	12.32090	0.2668
At most 7	0.010312	0.290225	4.129906	0.6512
Trace test indicates 5 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.974405	102.6295	48.87720	0.0000
At most 1 *	0.874563	58.12675	42.77219	0.0005
At most 2 *	0.801080	45.21591	36.63019	0.0039
At most 3	0.582145	24.43341	30.43961	0.2326
At most 4	0.497906	19.29109	24.15921	0.1993
At most 5	0.406869	14.62554	17.79730	0.1410
At most 6	0.230583	7.339424	11.22480	0.2214
At most 7	0.010312	0.290225	4.129906	0.6512
Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level				

Source: Econometric Views Version 9.0. Output (2020)

From Table 2, the co-integration test result reveals that long run relationship exists among all the variables examined. Specifically, there exists long run relationship among financial inclusion variable, private sector (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), stock market development (% of GDP), banks credit to the agricultural sector (% of GDP), Inflation rate, and prime lending rate with trace statistic reporting five co-integrating equations.

4.4.Granger Causality Test

The result of the Granger Causality Test was used to address to check whether or not the independent variable granger causes the dependent variable under study. The result is therefore presented below:

Table 4.4: Pairwise Granger Causality Tests

Date: 10/04/20 Time: 16:19
Sample: 1989 2018
Lags: 1

Null Hypothesis	**OBS.**	**F-Statistic**	**Prob.**
PSC does not Granger Cause AOG	29	0.39839	0.5334

AOG) does not Granger Cause PSC		2.17808	0.1520
RMS does not Granger Cause AOG	29	1.32803	0.2596
AOG does not Granger Cause RMS		1.61214	0.2154
RFS does not Granger Cause AOG	29	0.10976	0.7431
AOG does not Granger Cause RFS		2.83327	0.1043
SMC does not Granger Cause AOG	29	1.52456	0.2280
AOG does not Granger Cause SMC		9.70325	0.0044
BCA does not Granger Cause AOG	29	0.00185	0.9660
AOG does not Granger Cause BCA		9.67135	0.0045
INFR does not Granger Cause AOG	29	0.01296	0.9102
AOG does not Granger Cause INFR		0.46149	0.5029
PLR does not Granger Cause AOG	29	0.73723	0.3984
AOG does not Granger Cause PLR		2.66943	0.1143

Source: Econometric Views Version 9.0. Output (2020)

The results of the above analysis imply that F-statistics and the probability value between AOG and SMC as well as AOG and BCA proved the existence of unidirectional causality among the stated variables. Therefore, there is existence of demand following hypothesis. Thus, Agricultural Sector Output AOG in Nigeria only Granger causes stock market development and bank credit to the agricultural sector (% of GDP).

The granger causality test further revealed that the F-statistics and P-value of Agricultural sector output and private sector (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), stock market development (% of GDP), banks credit to the agricultural sector (% of GDP), inflation rate, and prime lending rate indicate independence causality (i.e. no causality). Therefore, there is no existence of relationship among private sector (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), stock market development (% of GDP), banks credit to the agricultural sector (% of GDP), Inflation rate, and prime lending rate and Agricultural Sector Output AOG in Nigeria during the period of 1989 to 2018.

4.5.Test of Research Hypothesis

The result of the Ordinary Least Square (OLS) estimate was used to address the objectives of the study. The model's results were used to answer research questions and to test hypotheses. The result is therefore presented in table 4.6 below:

Table 4.6: Ordinary Least Square Estimate

Dependent Variable: AOG
Method: Least Squares
Date: 10/04/20 Time: 13:28
Sample: 1989 2018
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.896580	0.301269	6.295308	0.0000
PSC	0.013518	0.108296	0.124824	0.9018
RMS	0.300316	0.151691	1.979794	0.0604
RFS	-0.196493	0.097656	-2.012088	0.0566
SMC	0.098688	0.035922	2.747271	0.0118
BCA	-0.112636	0.040369	-2.790180	0.0107
INFR	-0.001856	0.012179	-0.152425	0.8802
PLR	0.156237	0.073467	2.126633	0.0449
R-squared	0.823470	Mean dependent var		3.103558
Adjusted R-squared	0.767301	S.D. dependent var		0.129619
S.E. of regression	0.062527	Akaike info criterion		-2.483268
Sum squared resid	0.086011	Schwarz criterion		-2.109616
likelihood	45.24902	Hannan-Quinn criter.		-2.363734
F-statistic	14.66065	Durbin-Watson stat		1.967924
Prob.(F-statistic)	0.000001			

Source: Econometric Views Version 9.0. (2020)

The R-squared of 0.823470 shows that only about 82.35% of the variation in agricultural sector output AOG can be jointly explained by financial deepening variables. The difference between the R-square and Adjusted R-square is rather minute showing a small inaccuracy of the r-square in prediction. The F-statistics shows that the model fit is good as seen in the high statistical significance level (Sig. < .001). More so, the Durbin Watson test attest to the fact that the model is not serially correlated since when it is approximated it is within the acceptable benchmark.

Furthermore, the intercept of 1.896580 shows the value of the dependent variable when the independent variable is constant. The slope of 1.896580 reveals the nature of relationship existing between the dependent and the independent variables; in this case it is direct. The test of hypotheses concomitant with the variables selected for the study follows below. The Null Hypothesis (H_O) state there is no significant relationship between the independent variables and the dependent variable, while the Alternative Hypothesis (H_1) state that there is a significant relationship.

Null Hypothesis (H_O) One: private sector credit (% of GDP) and agricultural sector output.

The regression result from table 4.6 show that there is no significant relationship between private sector credit (% of GDP) and agricultural sector output in Nigeria.

Null Hypothesis (H_O) Two: broad money supply (% of GDP) and agricultural sector output.

The regression result in table 4.6 show that there is no significant relationship between broad money supply (% of GDP) and agricultural sector output in Nigeria.

Null Hypothesis (H_O) Three: financial savings (% of GDP) and agricultural sector output

The regression result in table 4.6 showed that there is no significant relationship between financial savings (% of GDP) and agricultural sector output in Nigeria.

Null Hypothesis (H_O) Four: stock market development (% of GDP) and agricultural sector output

The regression result in table 4.6 showed that there is significant relationship between stock market development (% of GDP) and agricultural sector output in Nigeria. Hence the null hypothesis is rejected in this case.

Null Hypothesis (H_O) Five: banks credit to the agricultural sector (% of GDP) and agricultural sector output

The regression result in table 4.6 that there is significant relationship between banks credit to the agricultural sector (% of GDP) and agricultural sector output in Nigeria. The alternate hypothesis is accepted in this case.

Lastly, the regression result in table 4.6 reported that inflation rate has statistical insignificant impact on agricultural sector output in Nigeria. However, prime lending rate has statistically significant impact on agricultural sector output in Nigeria.

4.5.Discussion of Regression Result

The results of this study were discussed in line with the results of OLS estimate for each of the financial depth indicators. This discussion was done to establish the nature of relationship existing between financial depth and Agricultural Sector Output in Nigeria based on the stated objectives of the study. The Augmented Dickey Filler (ADF) results of financial depth indicators and Agricultural Sector Output indicated that all the variables are stationary at their natural levels and first differencing. This necessitated the use of co-integration. Accordingly, the co-integration test also revealed that the five (5) Co-integration financial depth variables have long run equilibrium relationship at 5% significant level. The Ordinary Least Square (OLS) result showed that private sector (% of GDP), broad money supply (% of GDP), stock market developments (% of GDP), prime lending rate have positive contributions to the Agricultural sector output in Nigeria while financial savings (% of GDP), bank credit to the agricultural sector (% of GDP), and inflation rate have negative contributions to Agricultural sector output in Nigeria. However, passed the test of significance

Furthermore, the regression result reported that only bank credit to the agricultural sector (% of GDP), stock market developments (% of GDP) and prime lending rate significantly impacted on Agricultural sector output in Nigeria. Also, the Prob. (F-statistic) value of 0.000001also indicated that all the independent variables combined together still have significant effect on the dependent variables AOG.

Although, among the seven variables of financial depth indicators, it is only private sector (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), inflation rate, and prime lending rate that showed no existence of causality with Agricultural Sector Output in Nigeria during the period of study, result of Pairwise Granger Causality Test also showed the existence of unidirectional causality from Agricultural Sector Output to stock market development; and from Agricultural Sector Output to bank credit to the agricultural sector (% of GDP). These results only differ with respect to prime lending rate as it was found to have contributed immensely to agricultural sector development in Nigeria over the studied period. This implies existence of demand following hypothesis in Nigeria

during the period of study. Thus, Agricultural Sector Output spurs stock market development and bank credit to the agricultural sector (% of GDP). Therefore, the Agricultural Sector Output predicts how sound and productive these financial depth indicators will be. This further revealed that enhancement and improvement on Agricultural Sector Output by the Nigeria policy makers will lead to more productive financial development in Nigeria.

Although, private sector (% of GDP); financial savings (% of GDP); banks credit to the agricultural sector (% of GDP), and prime lending rates disagreed with the aprioiri expectation and the findings of Oboh, et'al (2019); Udoka, et'al (2016), Nnamocha, and Eke (2015) but at the same time gives a strong support to the findings of Tekilu et'al (2018); Onoja (2017); Tuaneh and Ewubare (2016); Ali, et'al (2016); Sifunjo, Adhiambo, Ndege, and Muio (2015); Chisasa, and Makina (2015) who posit that financial development primarily follows economic growth. They assert by and large, it seems to be the case that where enterprise lead financial follows. The demand following hypothesis is more common in developing nations and this is attributed to the undeveloped nature of their financial sector and this result solidify the notion that agricultural sector is very significant and if enhanced will lead to more efficient and effective financial system that will eventually spurs the entire Nigerian economic system. Hence, the causality between financial deepening and agricultural sector output in Nigeria 1989 to 2018 provided more support for the growth-leads-to-finance hypothesis. Nigeria as a nation has been concentrating more on development of the financial system that yields no positive result which may be attributed to thyme fact that agriculture sector of the nation has been almost abounded without considering its causality effect on finance and entire its economy.

5. Conclusion

The study had investigated the effect of financial depth on agricultural sector output in Nigeria from 1989 to 2018. The independent variable in the study is financial depth indicator measured by private sector (% of GDP), broad money supply (% of GDP), financial savings (% of GDP), stock market development (% of GDP), banks credit to the agricultural sector (% of GDP) while the dependent variable is agricultural sector output measured by the contribution of agricultural sector to GDP. More so, the study controlled the effect of macro-economic variables on both the dependent and independent variables using Inflation rate and prime lending rates. Data for the study was sourced from the Central Bank of Nigeria Statistical Bulletin (2018); World Bank Data Bank (2018) while the sourced data were analyzed using descriptive statistics, unit root test, cointegration test, and granger causality test. The finding show that financial depth has contributed much and is statistically significant in explaining the total changes in the agricultural sector output in Nigeria. The study found that financial savings (% of GDP) and inflation rate exerted negative statistical insignificant impact on agricultural sector. Also, stock market developments (% of GDP) and prime lending rate exhibited positive statistically significant impact on agricultural sector output, while bank credit to the agricultural sector (% of GDP) has negative statistically significant impact on agricultural sector output in Nigeria. However, inflation rate exhibited negative statistical insignificant impact on agricultural sector output in Nigeria. The private sector (% of GDP) and broad money supply (% of GDP) exhibited

positive statistical insignificant impact on agricultural sector output in Nigeria. Hence, the study concludes that bank credit to the agricultural sector (% of GDP), stock market developments (% of GDP) and prime lending rate are major determinants of financial depth in Nigeria. *In light of this, the study recommends that the Nigerian government should concentrate more on policies that enhance more credit to the private sector and development of the stock markets as well as policies that will push down prime lending rates.*

References

Abiodun, J.A. & Bukola (2019). Financial deepening and manufacturing sector performance in Nigeria. *IOSR Journal of Economic and Finance (IOSR – JEF)*, 10(4), 18-27.

Adejo, V.T; Kufre, J.B & Ochoche, A. (2017). Agricultural sector credit and output relationship in Nigeria evidence from non-linear ARDL. *CBN Journal of Applied Statistics.* 8(1), 102-121.

Agbaeze, K., &Onwuka (2013).Boosting the financing of agriculture in Nigeria: The capital market option.*Research on Humanities and Social Sciences, 3 (13), 113-126*

Ajudua, E.I., Ojima D.J. Okonkwo, O.S. (2015). Review of monetary policy and the Nigerian agricultural sector performance. *International Journal of Academic Research in Progressive Education and Development, 4(3), 40-60.*

Akpaeti, A. J., Bassey, N. E. Okoro, U. S. and Nkeme, K. K. (2014).Trends and drivers of agricultural investments and growth in Nigeria: The pre and financial sector reforms experience. *Asian Journal of Economic Modelling*, 2(3):115-127**.**

Ali, J.I. Jatau, S. & Ekpe , M.J. (2016). Financial intermediation and agricultural output in Nigeria: An Impact Analysis of Deposit Money Banks' Credit. *International Journal of Agricultural Economics*, 1(1), 16-25

Alrabadi, D.W.H. & Kharabseh, B.A. (2016). Financial deepening and economic growth: the case of Jordan. *Journal of Accounting and Finance*, 16(6), 158-166.

Aniekan, J.A. (2015). Impact of Financial Sector Reforms on Agricultural Growth in Nigeria: A Vector Autoregressive (VAR) Approach. *American Journal of Experimental Agriculture*, 7(1), 17-35.

Azu-Nwangolo, B.O. (2018). Financial deepening and deposit mobilization of commercial banks in Nigeria: a time variant model. *Indian Journal of Finance and Banking*, 2(2), 1-14.

Bada, O.T. & Ogunbi, J.O. (2017). Banks' credits and agricultural sector's development in Nigeria. *Advanced Research in Public Policy, Social Development and Enterprise Studies*, 2(1), 101-120.

Balago, G. (2014). Financial sector development and economic growth in Nigeria: an empirical investigation. *International Journal of Finance and Accounting,* 3 (4), 253-265.

BhattacherJee .A. (2012). Social research: principles, methods and practices. sourced from http//: google.scholars.com. accessed on 1st March, 2020.

Brooks C.(2002). Introductory Econometrics for Finance. New York, Cambridge University Press.

Calderón, C. & Liu, L. (2002).The direction of causality between financial development and economic growth (Central Bank of Chile Working Paper No. 184). Santiago: Central Bank of Chile.

Chisasa, J.&Makina, D. (2015). Bank Credit and Agricultural Output in South Africa: Co-integration, Short-Run Dynamics and Causality. *International Economics Research Journal*, 12(4), 387-398.

Christian, L.N. (2013). Financial deepening dynamics and implication for financial policy Coordination in a Monetary Union: The Case of WAEMU. African Economic Conference 2013 Johannesburg

Dim, C. &Ezenekwe, U. (2013). Does agriculture matter for economic development? Empirical evidence from Nigeria. *Journal of Finance & Economics*, 1 (1), 1-10.

Graham, M. (1996).*Financial Repression, Interest Rates, and Credit Allocation in Sub-Saharan Africa.*UNU World Institute for Development Economics Research. Helsinki, Finland

Hamilton & Godwin (2013). Does financial deepening follow supply leading or demand following hypothesis? A critical look at the Nigerian Evidence. *Journal of Science and Technology,* 5(1), 10-15.

Hurlin, C. &Venet, B. (2008). Financial development and growth: a re-examination using panel granger causality test. Available at https://halshs.archives-ouvertes.fr/halshs-00319995.Accessed on 28th March, 2020.

Isreal, F.K & Buzugbe N.P (2015). Capital market and the performance of manufacturing industries in Nigeria. *European Journal of Business & Management.* 7(13), 20-40.

Kerlinger F.N. (1973) Foundations of behavioural research 2nd Edition.Retrieved from Http://.Homeubalt.Edu/Traital/ Kerlinger.Htn. Accessed on 28th March, 2020.

King R.G, & Levine R. (1993). Finance and growth: Schumpter might be right. *Quarterly Journal of Econometrics*, 108(126):717-737.

Lipton, M. (2012). Towards a food secure future: Africa human development report. UNDP, Regional Bureau for Africa. Available online at: http://web.undp.org/africa/knowledge/wp-2012-007-Lipton-agriculture-productivity.pdf. Accessed on 28th March, 2020

Malthus, T.R. (1978). An essay on the principle of population. As it affects the future improvement of society, with remarks on the speculations of Mr. Godwin Condorcet and other writers. London: J. Johnson in St. Paul's church-yard. Sourced from http//10.4236/me.2012.35082. .Accessed on 12th February, 2020.

Mckinnon R. (1973). Financial liberalization and economic development: A reassessment of interest rate policy in Asia and Latin America.

Nnamocha, P. N. & Eke, C. N. (2015). Bank credit and agricultural output in Nigeria (1970 – 2013): an error correction model (ECM) Approach. *The Journal of Applied Business Research, 31(2),* 489-500

Nwafor, M.C. (2019). Impact of insurance deepening on economic growth in

Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS),* 3(2), 62-67.

Nwankpa, N.N. (2017). Sustainable agricultural development in Nigeria: a way out of hunger and poverty. *European Journal of Sustainable Development*,6(4), 175-184

Nzotta, S.M. (2014). Money, Banking and Finance: Theory and Practice; Hudson Jude Publishers: Owerri, Nigeria.

Oboh, V.U., Tule, M.P. & Ebu, G. U. (2019).Does monetary policy matter for agricultural sector performance? empirical evidence from Nigeria. *Journal of Economics and Sustainable Development*, 10 (12), 48-58.

Ochanda, M. M. (2014). Effect of financial deepening on growth of small and medium-sized enterprises in Kenya: A case of Nairobi County. *International Journal of Social Sciences and Entrepreneurship, 1(11), 191-208.*

Odhiambo, N. M. (2009). Interest rate reforms and financial deepening in Botswana: an empirical investigation. *Economic Notes*, 38(1-2), 1-20.

Ogbuagu, A.R. &Ewubare, D.B. (2017).Financial deepening implications for macro-economic volatility and economic growth in Nigeria, a multivariate approach. *International Journal of Economics, Finance and Management Sciences*, 5(1), 66-80

Ogunbi J.O. & Ogunseye, T.O. (2015). Theory & practice of business finance in Nigeria, (1st Edition). Lagos: Abiodun – Kinson Nigeria Enterprise

Okuma, N.C. (2019). Financial deepening and agricultural sector output in Nigeria. *International Journal of Advanced Educational Research*, 4(2), 1-8.

Olorunsola E. O., Adeyemi A.A.T. Adejo, Kufre J. B. & Ochoche, A. (2017). Agricultural sector credit and output relationship in Nigeria: evidence from Nonlinear ARDL. *CBN Journal of Applied Statistics, 8(1),* 101-118.

Omekwe, S.O. Obayori, I.P. & Bidemi, I. (2018).Determinants of agricultural output in Nigeria.*International Journal of Science and Management Studies*, 1(4), 65-73.

Onyeiwu, C. (2012). Effect of monetary policy on selected macroeconomic variables in Nigeria. The study covered from 1981 and 2008. *Journal of Economics and Development*, 3(7), 62-70.

Onyemachi .C. (2012). An Empirical analysis of financial deepening and economic growth (1986-2010). *Scientific Research*, 17(3), 1-20.

Osinsanwo, B.G. (2013). The macroeconomic effect of financial development on economic growth in Nigeria: A Long Run Analysis, 1970-2011. *Journal of African Macroeconomic Review, 4, 227-245.*

Patrick, H. T. (1966). Financial development and economic growth in underdeveloped countries.*Economic Development and Cultural Change*, 14(2), 174-189.

Phiri, S. (2018).Determinants of agricultural productivity in Malawi. *Journal of Finance and Accounting*, 1(1), 1-15..

Robinson, J.C. (1952). The generalisation of the general theory in the rate of interest and other essays.London: Macmillan Press.

Schumpeter, J. A. (1911). Theory of economic development. Cambridge: Harvard University Press.

Shaw, E. (1973). Financial deepening in economic development. New York: Oxford University Press.

Sifunjo E.K. Adhiambo, C. Ndege, D.M. & Muio, A.K. (2015). The effect of financial deepening on the performance of smallholder farmers in Homa Bay County, Kenya. *Research Journal of Finance and Accounting*, 6(10), 140-150.

Singh, A. (1999). Should Africa promote stock market capitalism? *Journal of International Development,* 11, 343-365.

Sofa.(2016). Climate Change, Agriculture and Food Security. Food and Agriculture Organization of the United Nations, Rome

Tekilu, T. &Wondaferahu, M. &Jubril, H. (2018). The link between financial development and sectorial output growth in Ethiopia: The case of Agriculture, Industry, and Service Sector. *International Journal of Economics and Management Sciences*, 7(1), 1-10.

Tuaneh, G. L. &Ewubare, D. B. (2016). Financial deepening: implications on agricultural performance(1981-2014**).** Available at

https://www.researchgate.net/publication/330937998. Accessed on 28th March, 2020.

Udeorah, S.F. & Vincent, M.O. (2018).Agriculture financing and Performance of the Agricultural Sector in Nigeria, 1981-2015**.** *International Journal of Research in Computer Application & Management,* 8(1), 36-41

Udoka, C. O., Mbat, D. O. and Duke, S. B. (2016).The effect of commercial banks' credit on agricultural production in Nigeria .*Journal of Finance and Accounting,* 4(1), 1-10.

Ugwu, D. S and Kanu, I. O. (2012).Effects of agricultural reforms on the agricultural sector in Nigeria.*Journal of African Studies and Development*, 4(2): 51-59.

Uwajumogu, N.R., Ogbonna, I.C., Chijioke, G. & Agu, S.V. (2013).The Growth-Inducing Impact of Nigerian Capital Market on the Agricultural Sector.*IOSR Journal of Humanities and Social Science,* 16(6), 63-71.