DEPOSITORY INSTITUTIONS AND SUSTAINABLE AGRICULTURE IN NIGERIA

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ABSTRACT

Aligning with Goal two of Sustainable Development Goals (SDGs2) to accomplish zero hunger by the year 2030. This research dives deeper into how Agriculture can be sustained to actualize SDGs2 through the assistance of depository Institutions. The results show that deposit money bank loans, deposit money bank loans rate, exchange rate, government expenditure and agricultural credit sector fund have pose positive effect on agricultural output, only the duo of exchange rate and agricultural credit sector fund indicate a significant impact on agricultural output at the 5% level of significance while deposit money bank loans have a slightly positive significant effect on agricultural output at approximately 10% level of significance. This implies that across the period under investigation, deposit money bank loans, exchange rate and agricultural sector credit fund impose significant and positive contribution to agricultural output.

1. INTRODUCTION

Historically, beginning with early men, agriculture has been found to be vital to human development. Apart from providing some of the basic needs of man (such as food and as a source of income), agriculture supports the development of other sectors of the economy through provision of resources that serves as raw materials in the production of goods and a reliable source of government revenue (Igudia, 2010; Ajie and Ewabore, 2013; Anyanwu, Ibekwe and Adesope 2010). Agricultural sector is key to economic growth as a result of its contributory effect through provision of employment and foreign exchange earnings accumulation (Okonkwo, Nwaru, Nwokoro and Ukeje 2017). As succinctly put by Abayomi (2002) rising agricultural production is highly crucial for attainment of industrialization.

However, according to Federal Ministry of Agriculture and Rural and Development (2016), the Nigerian agricultural sector is bedeviled by two crucial problems: an incompetence to meet domestic food requirements, and an incapability to export at quality levels required for market realization. Stefan and Douglas (2014) attribute the low performance of agricultural sector to inadequate capital financing of agricultural investments. On the backdrop of these two major problems, deposit money banks have been mooted to provide succor in eliminating some of these challenges through provision of funds to farmers in a bid to boost agricultural production. Agricultural financing is

key in food production, particularly in advanced countries (Ojiegbe and Duruechi, 2015). It is used to acquire extensive control of additional resources (Olaitan, 2006).

Thus, the aim of this paper is to empirically investigate the impact of deposit of money banks' loans on agricultural sector output in Nigeria.

2. LITERATURE REVIEW

Nnamocha and Eke (2015) revealed high contribution of bank credit and industrial output to agricultural output in Nigeria in the long run while in the short run only industrial output pose a significant to agricultural output. Obilor (2013) show that financing vehicle such as credit guarantee fund and government fund allocation yield positive effect on productivity. Toby and Peterside (2014) in their analysis of role of banks in agricultural financing revealed that deposit money banks and merchant banks lagged in agricultural financing. Specifically, they reported a weak correlation between deposit money bank lending and agriculture's contribution to gross domestic product. Das, Senapati and John (2009) examined the task of direct and indirect credit on agricultural production found direct credit to be statistically significant on agricultural production while indirect credit posed a significant positive impact on agricultural albeit with a year lag on agricultural output with a conclusion that despite the hiatus posed by current institutional credit delivery system, agricultural credit is provides fundamental support in agricultural production. Ammani (2012) found a positively significant relationship between credits to agricultural sector and agricultural productivity.

Ekine and Onukwuru (2018) examined the deposit money banks and agricultural Sector performance employing ECM revealed that there is no cointegration (or long run) relationship between deposit money banks credit to agricultural sector and the performance of agriculture sector in Nigeria during the period of study; deposit money banks' credit to agricultural sector (BCA) had a positive and a significant impact on Agricultural Sector performance (ASP); Interest Rate (INR) had a negative insignificant relationship with agricultural sector performance (ASP). Also, the study revealed that government expenditure on agricultural sector (GEA) had a positive insignificant relationship on Agricultural Sector performance (ASP). Consequent upon the above, it is recommended that efforts should be made by the government and private individuals to encourage or increase investment in the agricultural sector.   The lending rate on loans to the agricultural sector should be reviewed and fixed at a rate that would encourage farmers to acquire loans from deposit money banks.

3. THEORETICAL FRAMEWORK

Commercial loan theory of liquidity also known as the real bill doctrine was developed by Adam Smith in 1776. Adam Smith use this theory to explain the bank liquidity that short-term loans advanced to finance salable goods on the way from producer to consumer are the most liquid loans the bank can make which can be represented as;

$$SLG = f (STL) \qquad\qquad\qquad\qquad ……. (1)$$

Where;
SLG = Salable goods.
STL = Short term loans
These are self-liquidating loans because the goods being financed will soon be sold.
The loan finances a transaction and the transaction itself provides the borrower with the funds to repay the bank. Here we incorporate lending rate.

$$SLG = f (STL, LNR) \qquad\qquad\qquad\qquad ……… (2)$$

According to Adam Smith these loans are liquid because their purpose and their collateral were liquid. The goods move quickly from the producers through the distributors to the retail outlet and then are purchased by the ultimate cash-paying consumer.

Salable goods (SLG) is proxied by Sustainable Agriculture (SA), while short term loans (STL) which finances the agriculture output is represented by deposit money banks loans (DMBL), lending rate from the deposit money banks'

lending rate towards the agriculture sector is represented by (DMBLR). Further explanation on the theory states that a deposit money banks should forward only short-term self-liquidating productive loans to business organizations. Loans meant to finance the production, and evolution of goods through the successive phases of production, storage, transportation, and distribution are considered as self-liquidating loans.

$$SA = f\,(DMBL, DBMLR) \hspace{4cm} \text{....... (3)}$$

3.1. MODEL SPECIFICATION

In line with Ekine and Onukwuru (2018), the model is specified as:

$$ASP = f\,(BCA, INR, GEA) \hspace{4cm} \text{.......... (4)}$$

Where;
ASP = Agricultural Sector Performance. BCA = Deposit Money Banks' Credit to Agricultural Sector. INR = Interest Rate. GEA = Government Expenditure on Agricultural Sector
   Adopting Equ. (4) to form our model, Equ. (3) is revised to include Government expenditure (GE) on agriculture, Agriculture Credit Guarantee Scheme Fund (ACGSF) and Exchange Rate (EXR). Thus, the functional form of our model is specified as:

$$SA = f\,(DMBL, DMBLR, ACGSF, GE, EXR) \hspace{3cm} \text{...... (5)}$$

Where;
SA = Sustainable Agriculture. DMBR = Deposit Money Banks' Credit to Agricultural Sector. DMBLR = Interest Rate. ACGSF = Agricultural Credit Guarantee Scheme Fund. GE = Government Expenditure on Agricultural Sector.

Accordingly, the econometric form of the model is:

$$SA_t = \alpha_0 + \alpha_1 DMBL_t + \alpha_2 DMBLR_t + \alpha_3 ACGSF_t + \alpha_4 EXR_t + \alpha_5 GE_t + U_t \hspace{2cm} \text{.... (6)}$$

Where:
SA_t = Output of Agricultural Sector at time 't'
$DMBL_t$ = Deposit Money Banks' Loans to Agricultural Sector at time 't'
$DMBLR_t$ = Deposit Money Bank Loans at time 't'
$ACGSF_t$ = Agriculture Credit Guarantee Scheme Fund at time 't'
EXR_t = Exchange Rate at time 't'
GE_t = Government Expenditure on Agricultural Sector at time 't'
α_0 is the constant term, α_1, α_2, α_3, α_4, α_5 and α_6 are co-efficient of the independent variables
U_t = Error term
The aprori expectations are stated as:
 α_0, α_1, α_3, α_5, α_6 >0; α_2, α_4, <0

4.   PRESENTATION/ INTERPRETATION OF RESULT

Table 1: Descriptive Result

	Mean	Median	Std. Dev.
SA	7156.396	4589.442	4743.326
DMBL	94.14497	32.1549	139.8422
DMBLR	17.59504	17.54281	4.757259
EXR	76.59172	57.3722	72.03856
GE	14.5864	4.613742	18.68826
ACGSF	3.059679	.2419337	4.209266

Source: Researcher's Computation (2019) using Stata 14

The above table shows that on average, gross agricultural output between 1981 and 2016 is 7156.3 billion naira with a standard deviation of 4743.3 billion. Meanwhile, across the period 1981 and 2016, average deposit money bank loans are 94.14 billion naira with standard variation of 139.8 billion. Similarly, average government expenditure on agriculture is 14.58 billion naira and agricultural credit scheme fund averaged 3.05 billion naira.

Table 2: Correlation Result

Correlation Probability	SA	DMBL	DMBLR	EXR	GE	ACGSF
SA	1.000000					

DMBL	0.893220	1.000000				
	0.0000***	-----				
DMBLR	0.036187	-0.048513	1.000000			
	0.8340	0.7787	-----			
EXR	0.937187	0.816431	0.102523	1.000000		
	0.0000***	0.0000***	0.5518	-----		
GE	0.780669	0.678691	-0.005164	0.751293	1.000000	
	0.0000***	0.0000***	0.9762	0.0000***	-----	
ACGSF	0.946431	0.874548	-0.067633	0.842616	0.736570	1.000000
	0.0000***	0.0000***	0.6951	0.0000***	0.0000***	-----

Source: Researcher's Computation (2019) using Stata 14
**Significant at 5% level of significance
***Significant at 1% level of significance

Correlation measures the extent or size of linear association or relationship between variables. The correlation results as reported in Table 4.2 above shows that deposit money bank loans, deposit money bank loans rate, government expenditure, exchange rate and agricultural credit sector fund have positive correlation with agricultural output. This implies that as these variables move in an upward direction, agricultural output move in the same direction.

Table 3: Unit Root Test Result

Variable	Test in	Statistic	Prob.	5% Critical Value	Decision
SA	First Difference	-4.604	0.0001	-2.975	Stationary at First Difference
DMBL	First Difference	-5.135	0.0000	-2.975	Stationary at First Difference
DMBLR	Level	-3.422	0.0102	-2.972	Stationary at Level
EXR	First Difference	-3.669	0.0046	-2.975	Stationary at First Difference
GE	First Difference	-9.210	0.0000	-2.975	Stationary at First Difference
ACGSF	First Difference	-8.170	0.0000	-2.975	Stationary at First Difference

Source: Researcher's Computation (2019) using Stata 14
**Significant at 5% level of significance
***Significant at 1% level of significance

Unit root test is a test that investigate the time series properties and ascertain the stationarity or nonstationary of a particular variable. This test has become very imperative when carrying out a study on time series variable because of the well-established knowledge that most economic time series variables are non-stationary at levels, but they tend to become stationary after first or second differencing (Iyoha 2006, Gujarati and Porter 2009).

From the above table, the stationary test shows that whereas deposit money bank lending rate is stationary at level, agricultural output, deposit money bank loans, exchange rate, government expenditure and agricultural credit fund are stationary at first difference at 5 percent level of significance.

Table 4: Regression Result (Ordinary Least Squares)

Variable	Coefficient	Std Error	t-statistics	Probability
Constant	2372.11	609.9028	3.89	0.001***
DMBL	4.506391	2.385387	1.89	0.069*
DMBLR	32.10633	34.03042	0.94	0.353
EXR	26.54382	4.646073	5.71	0.000***
GE	13.79532	13.03537	1.06	0.298
ACGSF	510.138	88.65356	5.75	0.000***
R-Square	0.9685			
Adj. R-Square	0.9633			
Std. Error of Reg.	908.95			
F-Statistic	184.63			
Prob(f-statistic)	0.0000			
Durbin-Watson	1.6499			

Source: Researcher's Computation (2019) using Stata 14
**Significant at 5% level of significance
***Significant at 1% level of significance

The estimated model models the impact of deposit money bank loans on agricultural output in Nigeria. The study covers the period between 1981 and 2016. From the table above, the R-square indicate that 96.8% (percent) of the variation in agricultural output is jointly explained by the control variables with 3.3 % (percent) due to stochastic error term. Nonetheless, with the model adjusting for the degree of freedom, the adjusted R-square indicate that 96.1% (percent) of variation is "truly" explained by the control variables. This implies that the model has a high predictive ability. The F-statistics with an associated probability value less than 5% (percent) level of significance indicate that the overall model is statistically significant implying that the explanatory variables jointly explain variations in the dependent variables and the adjusted R-square is statistically different from zero.

From the regression result shows that deposit money bank loans, deposit money bank loans rate , exchange rate, government expenditure and agricultural credit sector fund have pose positive effect on agricultural output, only the duo of exchange rate and agricultural credit sector fund indicate a significant impact on agricultural output at the 5% level of significance while deposit money bank loans have a slightly positive significant effect on agricultural output at approximately 10% level of significance. This implies that across the period under investigation, deposit money bank loans, exchange rate and agricultural sector credit fund impose significant and positive contribution to agricultural output.

5. RECOMMENDATION AND CONCLUSION

Hence, based on the findings of this study, the following recommendations are proffer;

There should be intensified efforts by the governments and all concerned private hands to encourage investment towards agricultural sector by reviewing the lending rate on loans to encourage farmers acquire loans from deposit money banks. Going further the government can strengthen the agricultural credit guarantee scheme fund through significant budgetary allocation in order to enhance its capital base significantly by increasing its financial grants to agricultural firms and small-scale farmers and finally other factors like Climate Change should be given more attention.

SOURCES OF FUNDING

None.

CONFLICT OF INTEREST

None.

ACKNOWLEDGMENT

None.

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