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Impact of Agricultural Financing on Agricultural Output, Economic Growth and Poverty Alleviation in Nigeria

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Abstract
This study examined the impact of agricultural financing on agricultural output, economic growth and poverty alleviation in Nigeria.. In an attempt to do this, ordinary least square regression technique was employed in which T-test, R-Square, Standard Error Test and Durbin Watson test ADF/PP unit root and co-integration test were used in the data analysis. The research findings revealed that Commercial Bank Credit to Agricultural sector (CBCA) and Agricultural Credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector (ACGSF) were significant to Agricultural sector output percentage to gross domestic product (ASOGDP) the dependent variable, thereby alleviated the poverty rate and induced to economic growth in Nigeria, that there exist a long-run relationship among the variables in Nigeria under the study period. In the light of the research findings, the researcher recommended that there is the need for the Central Bank of Nigeria to reduce the cash-reserve ratio. However, funds that accrue from such policies must be added to the agricultural credit portfolios. There is the need to review the land use decree to enable Nigerians have free access to land. This will consequently increase the farmers that could eventually serve as collateral for credit facilities from the banking system. Finally, agricultural commercialization has been found in the study to be of high significance. To this extent, there is need for government to put in place policies to stimulate agricultural commercialization through cooperative system, agricultural subsidies and zero-tariff for importation of agricultural inputs.
Keywords: Agricultural Financing, Agricultural Output, Economic Growth, Poverty Alleviation.

1. Introduction

Agriculture primarily provides food for man and raw materials for agro- based industries. It consists of all the productive endeavors of man in collaboration with nature to rear plant and animal for a better harvest. It involves all aspects of farming, fishing livestock, rearing, poultry and forestry. Anyanwu (1997), state that agriculture has been the main source of gainful employment from which the nations can feed its teeming population, providing the nation's industries with local raw materials and also as reliable source government revenue.

Until the discovery of oil in Nigerian, agriculture was the most important sector of the economy accounting for more than two- thirds of colonial Nigeria's export earnings. The contributions of agriculture declined drastically during the civil war (1967-70) and after the discovery of oil in Nigeria due to lack of visionary planning for sustainable development. The oil boom devastated agriculture which fell from 60% of GDP in the 1960's to 31% by the early 1980's production declined because of inexpensive imports. Nigeria, a nation that had been a major agricultural net exporter and was largely self sufficient in food production quickly became a net importer of agricultural commodities.

Agriculture is a major contributor of Nigeria's GDP and small- scale farmers play a dominant role in this contribution (Rahji and Fakayode 2009) but their productivity and growth are hindered by limited access to credit facilities (Odoemenem and Boinne 2010). Agricultural credit is expected to play a critical role in agricultural development (Douong and Izumida, 2002). Farm credit has for long been identified as a major input in the development of the agricultural sector in Nigerian.

To Swinnen et-al (1999), access to agricultural credit has been severely constrained in developing countries. This is because of the imperfect and costly information problems encountered in the financial markets. Such problems are known to be particularly important in agriculture (Stiglitz, 1993). Farm households are credit constrained and the provision of credit would lead to an increase in production reduction in unemployment, and increase in income. It has been estimated that only 5% of the farmers in Nigeria and about 15% in Asia and Latin America have had access to formal credit; and on an average across developing countries 5% of the borrowers have received 80% of the credit (Ranjula, 2001).

It is a bid to redress this situation that the Agricultural credit Guarantee Scheme (ACGSF) was established in 1977. The scheme was designed to encourage commercial banks to increase lending to the agricultural sector by providing guarantees against inherent risk in agricultural lending.

By 2008, about 34 years after, the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) formerly Nigerian Agricultural and cooperative Bank (NACB) established in 1973 and 31 years after the agricultural credit Guarantee fund scheme (ACGSF) put in place in 1977, one would have thought that the problem of agricultural credit inadequacies and poor yield in production unemployment would have been solved. The problem is still very much around and bedeviled with many bottlenecks viewed against this background, it is felt that there is the need to examine the operations of deposit money banks in terms of

agricultural credit approval and rejection.

With an estimated 140 million people, Nigerian is African's most populous. The country has a low-cost labour pool, abundant natural resources and the largest domestics market in sub- Sahara Africa. Agriculture occupies a prominent position in the national economy contributing about 39 percent of GDP and employing more than 65 percent of the population Von et-al, 1994). It is the main source of food and raw materials supply to the country's teeming population and industries.

Nigeria s agricultural output comes from peasant farmers who reside in the rural Provides the means of livelihood for over 70 percent of the population, is a major of raw materials for the agro- allied industries and a potent source of the much needed foreign exchange (Von et-al, 1994) and Hill, (1983). Smallholder farmers are the major producers of food in Nigeria. They produce about 85% of total agricultural production and reside mainly in the rural areas (Okuneye, 1995).

Weitz (1917) pointed out that the vast number of families who constitute the main agricultural cultural work force, agriculture should not be seen as merely an occupation of source of income to them rather it is a way of life particularly as evident in the traditional societies. This is true of Nigeria where more families have turned agriculture into a culture not because they earn a living or employment, but just to satisfy conventional .imposed culture by engaging in subsistence farming and particularly in co-operating the disguised employment problem. Also, Heidhues, (1995) in his own contribution to the literature like other researchers absented in respect of Nigeria that no matter how much development, agriculture will retain its dominance in the economy for many decades to come. More importantly he observed that only agriculture and particularly from agricultural report that the economy can receive its principal stimulus to the economy's growth. Thus his argument though look like a fallacy as the economy now enjoy more agricultural product even on the emergence of oil in Nigeria, therefore the importance of agriculture cannot be underestimated.

However, Credit policies are policies directed at developing and encouraging certain sectors of the economy. Essentially, it involves giving loan on prefential terms and conditions to priority sectors of the economy particularly agriculture Heidhues, (1995).Adegoye and Ditoo (1987) defined credit as the process of obtaining control over the use of money, goods and service in the present in exchange for a promise to repay it at a future date. However, Miller (1977) defined agricultural credit as a device for facilitating the temporary transfer of purchasing power from one individual or organization to another. It is simply, the ability to command present use of goods in return for promise to pay in future. He further noted or stated that credit provide the basis for increase production. Thus, this brings together in a more productive union the skilled farm manger with small financial resources but lack farm management stability. Addition to what he said, credit could be short term, medium term or long terms.

According to Ijere (1996) credit can be considered from its ability to energize or motivate other factors of production. It can make the latent potential or under used capacity functional. He further said that credit act as a catalyst that activates the engine of growth, enable it to mobilize its inherent potential and advance in the planned or expected direction. It follows therefore that the greater influx of capital, the more the propensity of the economy to move in its given path. Credit therefore constitutes the power or key to unlock latent talents, abilities, vision and opportunities which in turn acts as the mover of economic development.

Nwankwo (1981) emphasized that farm credit availability and accessibility should be a special area for policy focus in the 80s. He stressed that despite access to institutional credit is virtually non- existence to the average farmer due to inability to satisfy set of conditions and their inability to provide acceptable collateral and weakness of farmer's cooperation. He also contributed to the hindrance to farm credit to the land use Decree of 1978, which recognizes the owner of a piece of land as someone who has a certificate of occupancy. But the certificate is hardly issued, yet banks require it before loans can be granted. He however deduced that policy and strategy in the 80s should identify the bottleneck in access to institutional credit and evolve measure to overcome or minimize them.

Okoria (1986) identified some factors that have effect on loan repayment. These are nature and time of disbursement, profitability of loan receiving enterprise and the number of supervision visits by credit officers after disbursement. Other factors found to influence loan recovery by institutional and non- institutional lenders are type of lending institution, amount and type of credit and the socio- political environment in which the institution operates.

Nweze (1994) remarks that objectives of cooperative associations are to pool resources, labour for farm work, provision of financial assistance to members in need and community development. In these associations, information asymmetric between borrowers and lender are unimportant, and their institutional consequences, the use of collateral and interlinked contracts are absent. Through credit households pool risk through the use of contracts in which the repayment owed by the borrower depends on the realization of random production and consumption shocks by both the borrower and the lender.

Idris (2010) states that the important role of credit in agricultural enterprise development and sustainability has prompted the federal government of Nigerian (FON) to establish credit schemes such as the

Agricultural Credit Support Scheme (ACSS) to ensure farmers access to agricultural credit. Other programmes and schemes include; people Bank of Nigeria (PBN), Nigeria Agricultural and cooperative Bank [NACB), Economic advancement programme (EAP), Nigerian Industrial Devotement Bank (NIDB), and National Economic Reconstruction Fund (NERFUND).The aim is to identify key macroeconomic impact on agricultural financing in Nigeria from (1980-2010).

Agricultural credit access is crucial to agricultural and rural development in Nigeria. Approximately 70% percent of the populations live in the rural areas with their main source of livelihood being agriculture. Credit constraints to farm households thus impose high cost on the society. This is in terms of rural unemployment, rural poverty, and distortion of production and liquidation of assets. Governments in both developed and developing countries attempt to overcome these problems by subsidizing credit, setting up credit guarantee fund scheme (e.g. ACGFS in Nigeria and specialized agricultural credit bank (e.g. NACB, now NACRDB) and stimulating institutional innovations in the financial system. Many banks perceived agricultural credit as risky and seek to channel credit to less risky sectors. This behavior calls for empirical quantification in the Nigerian context. More so, farm households are quite heterogeneous in terms of resource endowments, production and consumption opportunities, hence, lenders are supposedly able to obtain and use information that the potential credit worthiness of the borrowers.

There is thus the research need to examine the impact of and the financial market performance in terms of the spate of government's intention measures and how these have affected the credit access or constraints facing farm households in Nigeria. We therefore as the following questions; Does Agricultural financing significantly impacted positively on agricultural output, economic growth and poverty alleviation in Nigeria? Is there a log-run relationship between agricultural financing variables and the agricultural output in Nigeria?

The broad objective of this study is to analyze the macroeconomic impact of agricultural financing in Nigeria specifically it shall; to investigate the impact of agricultural financing on agricultural sector output, economic growth and poverty alleviation in Nigeria, to examine the log-run relationship between Agricultural financing variables and the Agricultural Output in Nigeria.

This research work shall be guided by the following hypothesis

H_o: Agricultural financing has not significantly impacted positively on the agricultural output, economic growth and poverty alleviation in Nigeria.

Ho: There is no log-run relationship between Agricultural financing variables and the Agricultural Output in Nigeria

2. Methodology

The researcher adopted the Ordinary least Square (OLS) method of estimation in order to derive the parameters of the model. In order to avoid the problem of spurious regression, the time series properties of data series employed in the estimation equation is tested for stationary using Augmented-Dick-Fuller (ADF) Philip perron unit root test. To investigate whether there is long run relationship among the variables in estimation we employed the Johansen test for co-integration. The trace test is based on the comparison of the null hypothesis, H_0 (r = 0) against the alternative, H_1 (r = 0,) where r stands for the number of co integrating vectors. If the alterative is accepted, it implies co-integration among the variables and suggests long-run relationship among the variables. The functional form, on which our econometric model was based, employed a multiple regression equation model in this work. However, to investigate this study, the researcher obtained the data of the above stated variables from Central Bank of Nigeria's (CBN) Statistical Bulletin, from 1980 to 2010. The study employs time series Annual Data for the period of 31 years. Meanwhile, having stated the objective, Hypothesis and models in the previous chapters, the researcher employed computer application while estimating the models for a realizable result.

2.1 Model Specification

ASOGDP = F (ACGSF, CBCA)

$\text{Log ASOGDP} = \beta_0 + \beta_1 \log \text{ACGSF}_t + \beta_2 \log \text{CBCA}_t \ \log \text{CBCA}_{t-1} + \mu_t$

Whereas the variables meaning and their a-priori sign are given as; ASOGDP **(+)** Agriculture Sector Contribution to Gross Domestic Product (GDP) in Nigeria.' Agricultural Credit Guarantee Scheme Fund loans to Nigerian's. Agricultural sector ACGSF Commercial Bank Credit to Agricultural CBCA**.**

2.2 Presentations and Analysis of Empirical Results

For proper Examination of the impact of Commercial Bank agricultural financing on agriculture output growth in Nigeria, the researcher employed some macroeconomic variables that determine the relationship of agriculture financing in Nigeria economy. These variables includes: Agricultural sector output percentage to Gross Domestic Product (ASOGDP), dependent variable, Agricultural Credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector (ACGSF) and Commercial Bank Credit to Agricultural sector(CBCA), these

variables were captured in the model.

The augmented Dickey-fuller (ADF) and Phillips-Perron (PP) unit root tests at constant level were employed in this study in order to eliminate the spurious content in those variables. Thus, below are the figure and value of ADF-statistic at 5 and 10 percent critical value.

Table 1: Augmented Dickey Fuller Unit Root Test

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
ASOGDP	-6.711048	-2.9750	-2.6265	**1(1)**	**Stationary**
ACGSF	-6.034242	-2.9750	-2.6265	**1(1)**	**Stationary**
CBCA	-6.149702	-2.9750	-2.6265	**1(1)**	**Stationary**

Sources: E-view Regression Output

Table 2: Phillips-Perron Unit Root Test

Series	PP Test Statistic	5% critical values	10% critical values	Order	Remarks
ASOGDP	-16.35957	-2.9705	-2.6220	**1(1)**	**Stationary**
ACGSF	-8.707458	-2.9705	-2.6220	**1(1)**	**Stationary**
CBCA	-8.560181	-2.9705	-2.6220	**1(1)**	**Stationary**

The above empirical test shows that ASOGDP, CBCA, and ACGSF, are integrated of the same order one I(1). From the above tables (i.e. table1 and table2), it was found that both ADF and PP Test with trend and intercept indicated that time series are integrated of the same order (i.e. ADF and PP t-statistic in absolute values terms -6.711048ASOGDP, 6.034242ACGSF, 6.149702CBCA for ADF, and -16.35957ASOGDP, -8.707458ACGSF, and -8.560181CBCA) respectively, are greater than their ADF and PP critical values at 5% (2.9705) and 10% (-2.6220) percent significance level. The linear combination of series integrated of the same order are said to be co-integrated. The level of their integrations indicates the number of time series have been differenced once before their stationarity is induced. Thus, the series are said to be stationary at that first level.

There is a long run relationship between the ASOGDP and the explanatory variables; ACGSF, and CBCA. Firstly, the summary of the Johansen Co-integration Test is shown in the Table below. The model with lag 1 was chosen with the linear deterministic test assumption.

Johansen co-integration test for the series; GDP, CIT, PPT,
Series: D(ASOGDP,) D(ACGSF,1) D(CBCA,1)
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.992190	187.5686	29.68	35.65	None **
0.809579	61.40788	15.41	20.04	At most 1 **
0.505064	18.28648	3.76	6.65	At most 2 **

The condition for significant long-run relationship (co-integration) among the variables such as (ASOGDP, ACGSF, and CBCA) is that the likelihood ratio (L.R)), must be greater than the 5 and 1 percent critical value. Second is that the eigenvalue coefficient of these variables must be different from zero. Viewing these results from these conditions stated above, shows that our eigenvalue coefficients of these variables in their absolute term (i.e. 0.992190ASOGDP, 0.809579ACGSF, and 0.505064CBCA) respectively, are different from zero, and the (L.R), on its own, are all greater than the 5 and 1 percent critical values. We therefore, conclude that there exists a long-run relationship co-integration among these variables (i.e. C/ASOGDP, ACGSF, and CBCA). Having tested and observed that there is log-run relationship in the model, the next to observe is the nature of this relation between the independent variables and (GDP) the dependent to that, which the eigenvalue coefficient did to indicate, will be determined using the "normalize co-integrating coefficient" (1) to analyze the nature of log-run relationship.

2.3 The log-run Equation

-312159.0 (ASOGDP) = -0.131299 (ACGSF) + 0.326082 (CBCA)

The log-run equation above reported that there is a positive log-run relationship between the change in Commercial Bank Credit to Agricultural sector (CBCA). The implication is that, in the log-run, a unit increase (change) in CBCA will increase the Agriculture Sector Output percentage to Gross Domestic Product (ASOGDP)

Growth, and poverty alleviation in Nigeria by 13 percent. While there exist a negative relationship between ACGSF and the ASOGDP, meaning that a decrease change in the ACGSF will results to an increase change to the ASOGDP, and also increase poverty rate in the log-run in Nigeria during the period under review. Finally in this section, the constant variables (ASOGDP) appeared negative; it means that holding these independent variables constant, the value of (ASOGDP) in Nigeria will stand at 31%.

2.4 Regression Results by (OLS) Distribution lag Method.

$-1.901234(ASOGDP) = 0.418520(ACGSF) + 0.987161(CBCA_{t-1})$

T-Statistic = (-1.901234) (3.491943) (7.685423)

Std. Error = (0.728972) (0.119853) (0.128446)

$R^2 = 0.955144$

t- Critical value at 5% = $\alpha /_2 t_{0.025} = 2.056$ with reference to n-k, where n is the number of observation = 29 and k is the number of parameters =3, 29 - 3 =27.

f- Statistic = 276.8157, f- critical = k-1 and n-k value. Where k = 3-1 = 2 and k-n = 27:. (2, 27) $F_{0.05} =$ 3.38, Durbin – Watson stat = 1.736061.

The results of the estimated equation is discussed in terms of the significance and signs on the parameters. Evidence from the results model as contained in equation above, shows that the Agricultural Credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector (ACGSF), and Commercial Bank Credit to Agricultural sector (CBCA) independent variables, has a positive linear relationship with Agricultural sector output percentage to gross domestic product (ASOGDP) the dependent variable. The implication of this positive sign is that 1% change (increase) in (ACGSF) and (CBCA) the independent variables will bring an increase in Agricultural sector output percentage to gross domestic product (ASOGDP) thereby alleviate poverty in Nigeria by 0.418520 and 0.987161 percent respectively, during the period under review. Thus the probability of (ACGSF) influence on the (ASOGDP) in Nigeria is 41% while the (CBCA) is 0.87%. These variables are in line with their a-prior expectation.

The Agricultural sector output percentage to gross domestic product (ASOGDP) coefficient stood at 1.901234 percent. This means that holding other factors including (ACGSF) and (CBCA) constant, Agricultural sector output percentage to gross domestic product (ASOGDP) will be held at 1.9% percent during the period of observation (1981 – 2010).

The coefficient of determination R^2 of this model stood at 0.955144. The implication of the R^2 to this study is that "95% total variation of Agricultural sector output percentage to gross domestic product (ASOGDP) during the period of observation, is explain by the change in Agricultural Credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector (ACGSF), Commercial Bank Credit to Agricultural sector (CBCA) while 5% influence out of 100% is as a result of other factor or variables that were not included in the model but was captured by the error terms of the model. Another implication of this high level of R^2 is that, "it shows that the model specified, used has a good fit to the sample regression line.

However, the F- statistic coefficient of this study ranked 276.8157 very high; this is the group or overall influence of the independent variables to dependent. The high ratio of f-statistic means that it is significant since it is greater than F-critical value (3.37) at 5% level of significance.

2.5 Evaluation of the Working Hypotheses using the individual test of significance and co-integration test from the models.

Decision Rule: if $T_{Cal} > T_{Tab}$ – reject H_0 and accept H_1

If $T_{Cal} < T_{Tab}$ - accept H_o and reject

Critical Value @ $T_{0.25}$ (0.05 %) =2.056.

The T-statistic for all the explanatory variables (CBCA), and (ACGSF) are (3.491943) (7.685423) respectively, this appears to be relatively high compared to the critical values at .05 % (2.056), and hence we evaluate the hypothesis below.

Restatement of Hypothesis

H_0: Agricultural financing has not significantly impacted positively on the agricultural output, economic growth and poverty alleviation in Nigeria.

Considering the t-value results above, shows that the (CBCA and ACGSF) independent variables used in did pass the test of individual significance at 5 % level of significance. The result shows that 1% change (increase) in (CBCA and ACGSF) as financial credit to agriculture in Nigeria, will lead to a increase in (ASOGDP) in Nigeria's by 3.49% and 7.68%. However, the values appear to be significant. We therefore reject the null hypothesis of this study and accept the alternative hypothesis. In other words, the Agricultural financing has significantly impacted positively on the agricultural output, economic growth and poverty alleviation in Nigeria during the period under review.

Hypothesis II

H_O: There is no log-run relationship between Agricultural financing variables and the Agricultural Output in Nigeria

From co-integration results, it was observed that the variables meet the conditions for log-run relationship. Since the eigenvalue coefficients of these variables in their absolute terms (i.e. 0.992190ASOGDP, 0.809579ACGSF, and 0.505064CBCA) respectively, were different from zero, and the (L.R), on its own, were all greater than the 5 and 1 percent critical values. We therefore, reject the null hypothesis and conclude that there exists a long-run relationship co-integration among these variables (i.e. C/ASOGDP, ACGSF, and CBCA) during the period under review.

3.0 Summary and Conclusion

This study examined the impact of agricultural financing on agricultural output, economic growth and poverty alleviation in Nigeria, from 1981 – 2010. The empirical result of the study confirmed that credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector and the commercial banks credit to agricultural sector has significantly impacted positively no agricultural output thereby alleviated poverty rate in Nigeria within this observation period. The study also confirmed that credit rationing is resorted to by banks to meet higher demands for loan applications, a downward review of the cash- reserve ratios and growth impact to Agricultural sector output percentage to gross domestic will enable banks to accommodate more applications from the farmers. With this, the farmers would have to make do with the existing requirements and seek for more funds from other financial institutions such as micro finance banks and finance houses as well as cooperative associations. Finally it is believed from the results that in the long-urn, farmers should be able and also encouraged to apply judiciously their own funds for agricultural development without even the Guarantee Scheme Fund Loan, and once this been achieved, will in turn yield to economic growth alleviation of poverty in Nigeria. We therefore recommended that there is the need for the Central Bank of Nigeria to reduce the cash-reserve ratio. However, funds that accrue from such policies must be added to the agricultural credit portfolios. There is the need to review the land use decree to enable Nigerians have free access to land. This will consequently increase the farmers that could eventually serve as collateral for credit facilities from the banking system. Finally, agricultural commercialization has been found in the study to be of high significance. To this extent, there is need for government to put in place policies to stimulate agricultural commercialization through cooperative system, agricultural subsidies and zero-tariff for importation of agricultural inputs.

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