# IMPACT OF GOVERNMENT AGRICULTURAL FINANCING ON NIGERIAN ECONOMY

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***Abstract***
*This study examined the impact of government agricultural financing on Nigerian economy. The investigation became necessary as inadequate access to agricultural credit appears to persist in Nigeria, posing a constraint to the optimization of farming activities in the country. The study's specific objectives were to evaluate the impact of the Agricultural Credit Guarantee Scheme Fund (A.C.G.S.F.) on Real Gross Domestic Product (RGDP) and Balance of Trade (BoT), while controlling for Domestic Capital Formation (D.C.F). The ex-post facto research design was adopted while time series data were collected from the Central Bank of Nigeria's Statistical Bulletin. Having employed the Autoregressive Distributed Lag (ARDL) model in the data analysis, the test results indicated that government agricultural financing through the A.C.G.S.F., has a long-run positive and significant impact on real gross domestic product in Nigeria for the period of study. The result showed that a 1% increase in the A.C.G.S.F., would yield about 3.3% increases in real gross domestic product in Nigeria. The results also revealed a long-run positive but insignificant impact on balance of trade in Nigeria for the period of study. The study concluded that the A.C.G.S.F if well-articulated, remains the most viable channel for government financing of agriculture in Nigeria. Thus, it was recommended that the Nigerian government should come up with long term agricultural financial development promotion plan. Also, policy measures should be used in stimulating massive and consistent financial investment in the agricultural sector to increase RGDP and balance of trade.*

***Key words:** Government, Agricultural Credit, A.C.G.S.F., Real Gross Domestic Product, Balance of Trade, Economy*

## Introduction

Agriculture plays a key role in food security and economic development, hence it is often deemed a "national security" priority by countries (Beckman & Countryman, 2021). Agriculture has always been a major sector in several developed economies of the world. Looking at the three-sector model, which explains the national economy of every country, there exist the primary sector which include agriculture, the secondary sector such as industry, and then the tertiary sector (services). It is assumed that the contribution of each of these sectors to GDP, indicates the level of economic development of the country (Kołodziejczak, 2020). Due to the critical importance of

the agricultural sector, governments often seek to influence the sector for optimum results by sometimes giving directives on what farmers may produce, where farms are to be located, how products are transported and processed, agro products price control and more.

In Nigeria, the agricultural sector was initially the mainstay of the economy before the discovery of crude oil at Oloibiri oilfield on January 15th, 1956. This discovery led to an increased financing of the oil sector and a decreased financing in the agricultural sector, thereby leading to a drastic reduction in our agricultural produce and export. Nevertheless, on August 15th, 2013, two hundred and twenty billion naira (₦ 220,000,000,000) share capital was launched by the Central Bank of Nigeria (CBN) to support MSMEs that are linked with the agricultural and manufacturing sectors. This initiative reiterates the importance of credit finance as being one of the critical components of achieving sustainable economic activities in any nation (Sulaimon, 2022; Raufu et al., 2025), and thus underscores the need to boost financial activities in the agricultural sector in Nigeria (Okunlola et al., 2019). Hence, the conduct of this study to ascertain the impact of government agricultural financing on Nigeria's economy.

**Statement of the Problem**

Ideally, the government of a nation prioritize the agricultural sector of the economy, largely attributable to the very extensive and vital role the sector plays in the growth of economies. Government policies are therefore formulated and channeled in such a way that the sector receives priority attention and funding both from government and private players. In Nigeria however, successive governments, both at national and sub-national levels, appears not to have not been able to effectively address the challenges around agricultural development especially as it has to do with its financing. The stringent lending conditions placed on agricultural credits by conventional financial institutions, have increasingly made it difficult for most prospective borrowers to access agricultural credit as these institutions show preference for non-agricultural lending over agricultural loans, thus, Onu and Obasikene (2023) stressed that farmers' access to necessary inputs like seeds, fertilizer, insecticides, and other resources that boost productivity, is hampered by lack of operating capital thereby undermining the contribution of the sector to the nation's GDP and balance of international trade. This phenomenon demands for more strategic, results oriented initiatives and interventions from governments at all levels, particularly in the provision of holistic technical and financial assistance to farmers, to pave way for an effective and sustainable growth of the agricultural sector, which will invariably and substantially impact on the nation's economy.

**Objectives**

Based on the problem stated above, the broad objective of this study was to examine the impact of government agricultural financing on Nigerian economy for a period of thirty-five years being 1986 to 2020. While the specific objectives were to:

1. Evaluate the impact of agricultural credit guarantee scheme fund on real gross domestic product in Nigeria.
2. Determine the effect of agricultural credit guarantee scheme fund on balance of trade in Nigeria.

**Hypotheses**

$H_{O1:}$ There is no significant impact of agricultural credit guarantee scheme fund on real gross domestic product in Nigeria for the studied period.

$H_{O2:}$ There is no significant effect of agricultural credit guarantee scheme fund on balance of trade in Nigeria for the studied period.

**Literature Review**

**Agricultural Financing**

Agricultural financing can be described as the financing of agricultural activities. It refers to the financial services provided for agricultural production, processing, and marketing. This range from formal and informal financial sources such as short term, medium term and long term loans to leasing (Fadeyi, 2018). In other words, agricultural financing encompasses the financial services and products provided to farmers, agribusinesses, and other entities involved in agricultural production. This type of financing is essential for the development and sustainability of the agricultural sector (Oluwafemi et al., 2025).

**Importance of Agriculture and Agricultural Financing to the Economy of Nigeria**

The importance of agriculture resources in bringing about economic growth and sustainable development of a nation like Nigeria cannot be underestimated (Usio & Enemona, 2020). Uncountable opportunities abound in the agricultural sector which are yet to be fully exploited and these opportunities have great potential of boosting employment in the country. Such opportunities include agricultural production, processing, storage and marketing. Others are agricultural input production and supply, agricultural business management and agricultural research etc. (Orji et al., 2020). Agricultural products have been recognized to have industrial value and great export potential, it increases farmers' income and that of many other economic agents involved in the processing and marketing of the products. Agricultural products serve as major raw materials for industries and also, as non-oil foreign exchange earnings for the nation. Food items and even some cosmetic products that are usually imported such as sardine and coconut oil can be manufactured in Nigeria through the processing of

agricultural commodities thereby increasing output and generating more employment opportunities in the country (Orji et al., 2019).

Access to financial services is important to the operations of the agricultural sector, especially with the diversification of agricultural exports, where effort is being made to increase the export of agricultural produce, and with farmers requiring credit for their activities as most of these activities are capital intensive. In addition, due to the cyclical nature of the production, an optimal combination of productive resources is important to achieve an increase in productivity (Awunyo-Vitor, 2018). In view of the above, most developing countries have intervened in the agricultural sector to improve access to financial services for the participants therein. Thus, most of them have established state financial institutions, which has been designed to improve farmers access to financial services. as high productivity in the agricultural sector would lead to improved income for the farmers and other agricultural sector participants and with an expected positive effect on the larger economy. Furthermore, a shift from the rural agricultural farming method to the modern agricultural farming method requires the flow of a consistent level of funding (Awunyo-Vitor, 2018).

**Agricultural Credit Guarantee Scheme (ACGSF)**

The Agricultural Credit Guarantee Scheme (ACGSF) was established by Decree No.20 of 1977 and however started operations in April 1978. The fund was meant to guarantee credit facilities extended to farmers by banks up to 75% of the amount in default net of any security realized. The scheme experienced a low level of funding before 1999 but increased significantly after the advent of democracy, focusing on agriculture. Livestock and crop production had the highest loan guarantee funding in 2014, while fisheries peaked in 2009 (Raufu et al. 2025).

**Relationship between Agriculture, Real Gross Domestic Product and Balance of Trade**

In Nigeria just as in other parts of the world, there is usually the existence of a relationship between agriculture and some major economic variables such as real gross domestic product and balance of trade. In African economies, agriculture has been identified as the largest sector in the generation of earnings from export. The reduction of agricultural contribution in gross domestic product (GDP) would bring an inevitable consequence in terms of economic progress (Osabohien et al., 2019). With respect to balance of trade, international trade is considered a significant source of economic growth worldwide. Abendin & Duan (2021) affirms that despite the recurring trade barriers, many countries still seek international trade because of the large, favorable externalities associated with the trade, of which processed agro products stand to be exported to the benefit of the national economy. Substantial attention has been paid to

trade balance effects on economic growth as it becomes a vital indicator of a country's competitiveness, which is important in assessing the country's economy. International trade's position as a driver of economic growth is fast becoming crucial, particularly in African countries, since the region is endowed with natural resources. Therefore, external trade in these resources is necessary to complement the local processing industries, and to promote economic growth (Manwa & Wijeweera, 2016).

## Theoretical Framework

### Financial Intermediation Theory

This study is theoretically framed on the Financial Intermediation Theory which was primarily developed by Franklin Allen and Anthony Santomero in the early 1990s. The theory explains the role financial institutions play in transferring savings from investors to borrowers or debtors, in the form of credits (Onu & Obasikene, 2023). Financial credit is important as it provides funds to economic entities who can put them into productive usage. The relevance of the theory in the context of this study, is anchored on the theory's emphasis on financial institutions (private and government owned) commitment towards effective financial intermediation in different sectors of the economy including the agricultural sector, by helping to mobilize savings and then allocate them efficiently amongst the borrowers. Considering that agricultural financing can lead to increased agricultural output and overall economic growth, financial institutions can therefore effect production growth by efficiently carrying out their credit provision functions, to the benefit of the agricultural sector as well, while leveraging on credit guarantees by the A.C.G.S.F.

## Empirical Review

Ademola (2019) investigated the impact of agricultural finance on the growth of Nigerian economy. The study employed secondary data and as well as the Ordinary Least Square (OLS) econometric techniques of multiple regression estimates. The research findings showed that the productivity of investment will be more appropriately financed with resources administered by the commercial and specialized financial institutions. And also, that there are urgent and sincere needs to expand the credit size to the agricultural sector in order to enhance the productivity growth of the sector.

Ayodele (2019), employed secondary data and econometric techniques of Ordinary least square (OLS) of multiple regression estimates in order to determine the impact of Agricultural Financing on Nigeria Economy. The result of the model used suggested that the productivity of investment will be more appropriately financed with resources administered by the commercial and specialized financial institutions. The study therefore recommended the urgent and sincere need to expand the credit size to the agricultural sector in order to enhance productivity growth of the sector.

Adeshina et al. (2020) examined the impact of Agricultural Financing on Economic Performance in Nigeria within the sampled period of 1978-2017. Analyzing using the unit root test, bound co-integration test and error correction modelling. the result indicated that in the long-run, Agricultural Credit Guarantee Scheme Fund (ACGSF) is the most influential agricultural financing variable (as compared to government expenditure on agriculture and commercial bank credit to agriculture) that contributed to economic performance, as it revealed that (ACGSF) had strong positive impact on the growth rate of the Nigerian economy. The study concluded and strongly maintained that agricultural financing contributed poorly to the economic performance of Nigeria within the sampled period basically because of inadequate funding.

Blavasciunaite et al. (2020), in a research investigated the impact of the trade balance on economic growth as well as to evaluate it during the periods of trade deficit. The estimations were based on the European Union (EU) 28 countries panel data over the period of 1998–2018, using the OLS method, the results indicated that deterioration of trade balance reduces average economic growth, which suggest a stronger negative impact on economic growth when the trade balance deteriorates.

Oyetoun and Oni (2020) studied the contribution of agricultural export products to economic growth in Nigeria. The study analyzed the relationship between Gross Domestic Product (GDP) and agricultural exports for Nigeria by employing Johansen co- integration technique and General Method of Moment (GMM) for the period 1960 - 2016. The findings showed that agricultural exports have negative and insignificant effect on economic growth. It was suggested that agriculture should be given sustainable attention to promote productivity, for increased foreign exchange earnings, via increased exports that is needed for sustainable economic growth.

Peprah et al. (2020) studied on improving productivity among smallholder farmers in Ghana. The study examined the effects of access to credit on farmer's productivity. Using a pooled data, the result from the study indicated that financial inclusion significantly enhances productivity. Moreover, credit influence productivity at various degrees. Thus, it was recommended that, expanding the scope of financial services among smallholder farmers is crucial for inclusive finance and sustainable agricultural production

Usio and Enemona (2020), conducted a study to examine the impact and relationship between agricultural exports and economic growth in Nigeria for the period of 1981 to 2017. The study was guided by two research questions and objectives. The Ordinary Least Square (OLS) and Johansen Co-Integration test were employed, and the results

showed that agricultural exports had a positive and significant relationship on economic growth. It was recommended that the government should provide funds to acquire sophisticated farm tools and increase the country's budgetary allocation to the agricultural sector in a consistent manner, initiate programmes and policies that will ensure adequate partnerships between research institutions and higher institutions of learning to breach the widening gap between theory and practice.

Eleje et al. (2021) in an article investigated development finance strategies and their effects on agriculture in Nigeria. The study concluded that agro-finance does not have significant positive effect on agricultural development in Nigeria. The study recommended that government should place higher priority on directed credit control scheme such as ACGSF to enable such schemes yield the desired result of improving the agricultural sector and poverty reduction. Lastly, proactive surveillance should be activated by government to checkmate unhealthy practices by lending institutions which could impinge lending integrity and dampen the trust of investors.

Rosyadi et al. (2021) in a study, investigated how various factors affect Indonesia's crude palm oil (CPO) export intensity and competitiveness by employing - The panel data used were a 20-year time series with cross-sections from five major importers from 1999 to 2018. The results showed that the importer's gross domestic product (GDP) and quantity of export significantly and positively affect Indonesia's CPO export intensity.

Runganga and Mhaka (2021) in a paper, tried to ascertain the impact of agriculture on economic growth in Zimbabwe using the Autoregressive Distributed Lag (ARDL) estimation technique, employing data from 1970 to 2018. In both the short run and long run, the study found that government expenditure has a positive impact on economic growth. The study also found that agricultural production has a positive impact on economic growth in the short run, and no impact on economic growth was found in the long run. Thus, it was concluded that the agricultural sector plays an important role in the early stages of economic development, and when the economy has developed, agriculture plays a minimal role. Evidence from the results of the paper therefore showed that agriculture is an engine for growth in the short run and should eventually be supported by other macroeconomic policies to promote economic growth in the long run.

Okpala et al. (2022) assessed the effect of agricultural credit guarantee scheme fund and government total expenditure on agriculture and agricultural sector’s contribution to real gross domestic product. Time series data from 1990 to 2020 were collected from the Central Bank of Nigeria (CBN) statistical bulletin while the Ordinary Least Square (OLS) technique was employed in estimating the models. The OLS result revealed that agricultural credit guarantee scheme fund has a positive significant effect on

agricultural sector's contribution to real gross domestic product. On the other hand, the effect of government expenditure on agriculture on agricultural sector's contribution to real gross domestic product was positive but not significant. Amongst the recommendation was that government should inject more funds into agricultural financing schemes, especially the agricultural credit guarantee scheme fund, and also ensure that the funds are effectively disbursed for agricultural activities.

Raufu et al. (2025) examined the significance of the Agricultural Credit Guarantee Scheme (ACGS) funds in improving agricultural performance in Nigeria. Quantitative research design, descriptive statistics and trend analysis were utilized to analyze the relationship between ACGS funds and agricultural output in Nigeria, assessing its impact on crop production, livestock, and fishery sectors. Time series data spanning a period of 41 years (1981-2021) were collected specifically from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). This study's findings revealed that Nigeria's Agricultural Credit Guarantee Scheme Fund (ACGSF) has had a significant impact on the agriculture sector, particularly in livestock, crops, and fisheries. The study recommended an increased investment in livestock, crop, and fishery sectors to diversify the economy, improve GDP, and reduce dependency on other countries. Loans should be timely made available to qualified individuals by participating banks, and more funds should be made available to cash crops and other sectors to earn more foreign exchange.

**Methodology**

This research work made use of *ex-post facto* research design in carrying out the study. A true experiment in *ex post facto* attempt to say that an independent variable is causing changes in a dependent variable. Because of the nature of this research work, the researcher used secondary and quantitative data which were collected from the Central Bank of Nigeria (CBN) archives for the years under review (1986 – 2020). This research study was conceptualized, planned, developed, and comprehensively conducted in Nigeria. The data for the study were secondary data generated from the Central Bank of Nigeria (CBN) Statistical Bulletin 1986 – 2020.

**Model Specification**

In this study, the fundamental model was Autoregressive Distributed Lag (ARDL) model generally specified thus:

$Y_t = \delta_o + \beta_1 Y_{t-1} + \ldots + \beta_q Y_{t-q} + \theta_1 X_{t-1} + \ldots + \theta_k X_{t-k} + \gamma_1 A_{t-1} + \ldots + \gamma_p A_{t-p} + \mu_t$.. Eqn 1.

Where,

$Y_t$ = Dependent variable (explained variable) at time t,

$Y_{t-1}$ = Dependent variable at time lag 1,

$X_{t-1}$ = Independent variable (explanatory variable) at time lag 1,
$A_{t-1}$ = Control variable at time lag 1,
$\delta_o$ = Constant term (i.e., value of Y when X is zero),
$\beta_1, \ldots, \beta_q, \theta_1, \ldots, \theta_k, , \& \gamma_1, \ldots \gamma_p$ = Coefficients of the parameter estimates.
$\mu_t$ = error term (residual term)

Curling from the above into the context of this particular study, and in line with the research variables and specific objectives of the study, the model is expressed thus:

**Hypothesis I**

For hypothesis one, which states that there is no significant impact of agricultural credit guarantee scheme fund on real gross domestic product in Nigeria for the studied period, it is represented by the equation:

$$LnRGDP_t = \delta_0 + \beta_i \sum LnRGDP_{t-i} + \theta_i \sum LnACGSF_{t-i} + \gamma_i \sum LnDCF_{t-i} + \mu_t \quad (2)$$

Where:
RGDP = Real Gross Domestic Product (Dependent variable)
ACGSF = Agricultural Credit Guarantee Scheme Fund (Independent variable)
DCF = Domestic Capital Formation (Control variable)
$\delta_0$ = Coefficient (constant) to be estimated
$\theta_i$ and $\gamma_i$ = Regression coefficients
$Ln$ = Log-transformational operator
$\mu_t$ = Error term
t-i = Time at lag i, i=1,2,3,…

**Hypothesis II**

For hypothesis two, which states that there is no significant effect of agricultural credit guarantee scheme fund on balance of trade in Nigeria for the studied period, it is represented by the equation

$$LnBOT_t = \delta_0 + \beta_i \sum LnBOT_{t-i} + \theta_i \sum LnACGSF_{t-i}$$

$$+ \gamma_i \sum LnDCF_{t-i} + \mu_t \qquad (3)$$

Where:
BOT = Balance of Trade (Dependent variable)

**Data Analysis and Discussions**

**Data Description**

Table 1: Summary of Description of the variables under study, 1986-2020

| Parameters | RGDP | BOT | ACGSF | DCF |
|---|---|---|---|---|
| Mean | 38574.98 | 1370220. | 3601861. | 7724.175 |
| Maximum | 71387.83 | 6235242. | 12456251 | 44187.03 |
| Minimum | 15237.99 | -8168416. | 68417.40 | 108.87 |
| Std. Dev. | 20476.78 | 2770357. | 4005730. | 10046.67 |
| Skewness | 0.438826 | -0.73 | 0.707659 | 2.12 |
| Kurtosis | 1.576325 | 5.27 | 2.040509 | 7.50 |
| Jarque-Bera | 4.079136 | 10.60 | 4.263797 | 55.73 |
| Probability | 0.130085 | 0.0050 | 0.1186 | 0.0000 |
| Observations | 35 | 35 | 35 | 35 |

*Source: Author's Extract from E-views 10.0 output*

The descriptive statistics result as presented in table 1 shows that the mean value of Real Gross Domestic Product (RGDP) stood at N38574.98 billion with a corresponding standard deviation of N20476.78 billion. The standard deviation indicates that the data series of RGDP is volatile for the period under review. The skewness estimate of 0.439 indicates that the distribution of the data series of RGDP is more on the right tail of normal curve. However, the distribution is positively skewed (Sk>0). The kurtosis estimate value of 1.576<3.00 indicates that there is no excess kurtosis in the series of RGDP, for which course, the Jarque-Bera statistics (J-B stat. = 4.079, p=0.1301>0.05) confirmed that the data series is symmetrical (i.e., normal). In other words, the mean, median and mode of the data series lie on the same plane.

Balance of Trade (BOT) stood at average value of N1370220 million with a standard deviation of N2770357 million. Result of the standard deviation shows that the data series are volatile. The data series are negatively skewed (Sk = -0.727<0) while there is excess kurtosis (K=5.270>3.00). As confirmed by the Jarque-Bera estimate with

statistic value of 10.596 and associated probability value of 0.0050<0.05, the series are symmetrically distributed; hence, they are not normally distributed.

Finally, the mean value of domestic capital formation (DCF) was 7724.18 with a standard deviation of 10046.67. The skewness and kurtosis estimates are Sk=2.118 and K=7.502 respectively. It shows that the data series are skewed to the right (i.e., positively skewed) and with excess kurtosis (i.e., k>3.00). The Jarque-Bera statistic value of 55.731 and associated probability value of 0.0000<0.05 confirmed that the data series of domestic capital formation for the period of study is not normally distributed.

**Unit Root Test**

The researcher performed stationarity test on the variables to determine the right estimation model and also forestall the production of spurious estimates. For this estimation, Augmented Dickey-Fuller (ADF) test approach of stationarity was adopted and decision taken on the benchmark of 5% level of significance.

Table 2: Summary of ADF unit root test

| Variable | ADF-Stat | Critical Value @ 5% | p-value | Order of Integration | Inference |
|---|---|---|---|---|---|
| LRGDP | -3.58 | -3.57 | 0.0487 | I(0) | Stationary |
| LBOT | -4.36 | -3.00 | 0.0027 | I(1) | Stationary |
| LACGSF | -5.15 | -3.55 | 0.0011 | I(1) | Stationary |
| LDCF | -4.33 | -3.55 | 0.0086 | I(1) | Stationary |

*Source: Author's Extract from E-views 10.0 output*

The stationarity test result above shows that the variables are not stationary at same level. The data series of log-transformed values of real GDP (LRGDP) is stationary at level form (order zero) while other variables in the study are stationary at first differencing (order one). Hence, the study variables are integrated of mixed orders (i.e., order zero (I(0)) and order one (I(1))). As a result, the appropriate statistical method for testing the research hypotheses is Autoregressive Distributed Lag (ARDL) mechanism. This is because, the ARDL mechanism is usually suitable when the study variables are stationary at first differencing (i.e., I(1)), or when there is a mixture of order one [I(1)] and order zero [I(0)] variables.

**Test of Hypotheses**

**Hypothesis One**

$H_{o1}$: There is no had no positive impact agricultural credit guarantee scheme fund on real gross domestic product in Nigeria for the studied period.

Level of significance ($\alpha$) = 0.05

**Decision rule:** Reject the null hypothesis if the p-value is less than 0.05 otherwise, do not reject.

Table 3: Empirical Result of long-run effect of LACGSF on LRGDP

| | | | | |
|---|---|---|---|---|
| Dependent Variable: LRGDP | | | | |
| Method: ARDL | | | | |
| Sample (adjusted): 1990-2020 | | | | |
| Included observations: 31 after adjustments | | | | |
| Model selection method: Akaike info criterion (AIC) | | | | |
| Dynamic regressors (4 lags, automatic): LACGSF LDCF | | | | |
| Fixed regressors: C | | | | |
| Number of models evaluated: 100 | | | | |
| Selected Model: ARDL(4, 2, 4) | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.*** |
| C | 1.588328 | 0.282633 | 5.619757 | 0.0000 |
| LRGDP(-4) | 0.405751 | 0.125715 | 3.227540 | 0.0047 |
| LACGSF(-2) | 0.032952 | 0.013869 | 2.376034 | 0.0288 |
| LDCF(-4) | 0.082544 | 0.034181 | 2.414942 | 0.0266 |
| R-squared | 0.999263 | | | |
| Adjusted R-squared | 0.998771 | | | |
| F-statistic | 2032.454 | | | |
| Prob(F-statistic) | 0.000000 | | | |
| Durbin-Watson stat | 2.166531 | | | |
| **Long-run bound test estimate** | | | | |
| F-statistic = 12.19 | | | | |
| Lower bound (I(0)) = 3.10 | | | | |
| Upper bound (I(1)) = 3.87 | | | | |
| ECM(-1) | -0.229362 | 0.030407 | -7.542996 | 0.0000 |

*Source: Researcher's extract from E-views 10 output*

Result of the Autoregressive Distributed Lag (ARDL) as presented in table 3 indicates that using Akaike Information Criterion (AIC) model selection procedure, the optimal ARDL model selected was ARDL (4, 2, 4). The ARDL estimate indicated that government agricultural credit guarantee scheme (LACGSF) with a coefficient value of 0.033, t-statistic value of 2.376 and associated probability value of 0.0288<0.05 has a long-run positive and significant impact on real gross domestic product in Nigeria for the period of study. The null hypothesis is therefore rejected at 5% level of significance and hence conclude that government agricultural credit guarantee scheme fund (ACGSF) has a long-run positive and significant impact on real gross domestic product in Nigeria for the period of study.

R-squared estimate of goodness of fit of the model is high (R=0.999), indicating that about 99.9% of the changes in real gross domestic product in Nigeria is caused by changes in agricultural credit guarantee scheme fund and domestic capital formation for the period. The 0.1% unexplained variation is attributable to other macroeconomic

indices not present in the model. Furthermore, the Durbin Watson statistic of 2.166531 following the rule of thumb is not significantly above 2, hence, the model is free from serial autocorrelation problem.

Moreover, the ARDL bound test with F-stat. = 12.19 > lower bound [I(0)] critical value of 3.10 and upper bound [I(1)] critical value of 3.87 confirmed a long-run level relationship between government agricultural credit guarantee scheme fund (LACGSF) and the growth of real Gross Domestic Product (RGDP) in Nigeria. Following the presence of a long-run relationship between government agricultural credit guarantee scheme fund (LACGSF) and the growth of real Gross Domestic Product (RGDP), the short-run error correction term was estimated. The ECM estimate (speed of adjustment) appeared with expected negative sign (coeff. = -0.229) indicating that about 22.9% of disequilibrium in the system would be corrected every year. This implies that for a long-run equilibrium to be restored in the system, it would take about four years and four months.

Table 4: Residual Diagnostic Tests

| **Type of Test** | **Test statistic** | **P-value** |
|---|---|---|
| Residual Normality test | J-B stat. = 2.015 | 0.3651>0.05 |
| Residual Heteroskedasticity test | F-stat.(12, 18) = 0.486 | 0.8973>0.05 |
| Residual Serial Correlation LM test (B-G LM test) | F-stat.(2, 16) = 1.481 | 0.2570>0.05 |
| Ramsey RESET Test | F-stat.(1, 17) = 0.029 | 0.8672>0.05 |

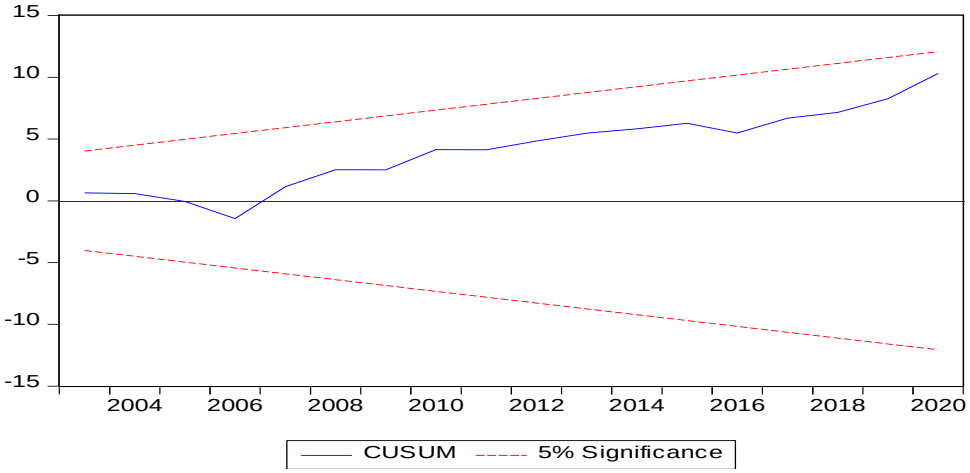
*Source: Author's extract from E-views 10 output*

The normality diagnostic test presents that the Jarque-Bera statistic and associated probability value. As shown in the result, the J-B stat. = 2.015 while the p-value = 0.3651>0.05. It therefore indicates that the series of the residuals are normally distributed. Hence, the normality assumption of the error term is fulfilled. The heteroskedasticity test result however shows that the variances of the residual series are homoscedastic (i.e., equal). Thus, equal variance (homogeneity) is assumed and the assumption of linear regression for constant variance is not violated by the model.

Result of the Breusch-Godfrey Serial Correlation Langrangian Multiplier (B-G LM) test with F-statistic value of 1.481 and associated probability value of 0.2570>0.05 indicates that the residual series are serially uncorrelated; hence, there is no higher autocorrelation problem.

Finally, estimate of Ramsey Regression Error Specification Test (Ramsey RESET test) confirmed that the model is correctly specified (F-stat. = 0.029, p=0.8672>0.05).

Figure 1: Stability Graph of the Model Estimate




Source: Researcher's E-views 10 computation

The cumulative sum (CUSUM) stability test result as presented in figure 1 above shows that the regression model is stable and thus can be used for prediction. This is because, the cumulative sum values are within the 5% significance series.

**Hypothesis Two**

$H_{o2}$: There is no significant effect of agricultural credit guarantee scheme fund on balance of trade in Nigeria for the studied period.

Level of significance ($\alpha$) = 0.05

**Decision rule:** Reject the null hypothesis if the p-value is less than 0.05 otherwise, do not reject.

Table 5: Empirical Result of long-run effect of LACGSF on LBOT

| | | | | |
|---|---|---|---|---|
| Dependent Variable: LBOT | | | | |
| Method: ARDL | | | | |
| Sample (adjusted): 1990-2014 | | | | |
| Included observations: 20 after adjustments | | | | |
| Model selection method: Akaike info criterion (AIC) | | | | |
| Dynamic regressors (4 lags, automatic): LACGSF LDCF | | | | |
| Fixed regressors: C | | | | |
| Number of models evaluated: 100 | | | | |
| Selected Model: ARDL(4, 0, 4) | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.*** |

| | | | | |
|---|---|---|---|---|
| C | 1.661207 | 2.514868 | 0.660554 | 0.5254 |
| LBOT(-4) | -0.373870 | 0.190416 | -1.963439 | 0.0812 |
| LACGSF | 0.548523 | 0.248908 | 2.203714 | 0.0550 |
| LDCF(-4) | -1.932690 | 0.882820 | -2.189222 | 0.0563 |
| R-squared | 0.980572 | | | |
| Adjusted R-squared | 0.958986 | | | |
| F-statistic | 45.42562 | | | |
| Prob(F-statistic) | 0.000002 | | | |
| Durbin-Watson stat | 2.332256 | | | |
| **Long-run bound test estimate** | | | | |
| F-statistic = 6.82 | | | | |
| Lower bound (I(0)) = 3.10 | | | | |
| Upper bound (I(1)) = 3.87 | | | | |
| ECM(-1) | -0.694719 | 0.281020 | -6.030597 | 0.0002 |

*Source: Researcher's extract from the E-Views 10 output*

The Autoregressive Distributed Lag (ARDL) regression result as presented in table 5 indicates that using Akaike Information Criterion (AIC) model selection procedure, the optimal ARDL model selected was ARDL (4, 0, 4). The regression estimate indicated that government agricultural credit guarantee scheme (LACGSF) with a coefficient value of 0.549, t-statistic value of 2.204 and associated probability value of 0.0550>0.05 has a long-run positive but insignificant impact on balance of trade in Nigeria for the period of study. The null hypothesis is therefore not rejected at 5% level of significance and thus conclude that government agricultural credit guarantee scheme fund (ACGSF) has a long-run positive but insignificant effect on balance of trade in Nigeria for the period of study.

R-squared estimate of goodness of fit of the model (R=0.981) indicates that about 98.1% of the changes in balance of trade in Nigeria is caused by changes in agricultural credit guarantee scheme fund and domestic capital formation for the period. The 1.9% unexplained variation is attributable to other macroeconomic variables not present in the model. Furthermore, the Durbin Watson statistic of 2.332256 which is not significantly greater than 2 indicates that the model is free from first order serial autocorrelation problem.

Moreover, the ARDL bound test with F-stat. = 6.82 > lower bound [I(0)] critical value of 3.10 and upper bound [I(1)] critical value of 3.87 confirmed a long-run level relationship between government agricultural credit guarantee scheme fund (LACGSF) and balance of trade in Nigeria. With the presence of a long-run relationship between government agricultural credit guarantee scheme fund (LACGSF) and balance of trade in Nigeria, the short-run error correction term was estimated. The ECM estimate (speed of adjustment) appeared with expected negative sign (co-eff. = -0.695) indicating that

about 69.5% of disequilibrium in the system would be corrected every year. This implies that for a long-run equilibrium to be restored in the system, it would take only about one year and four months.

Table 6: Residual Diagnostic Tests

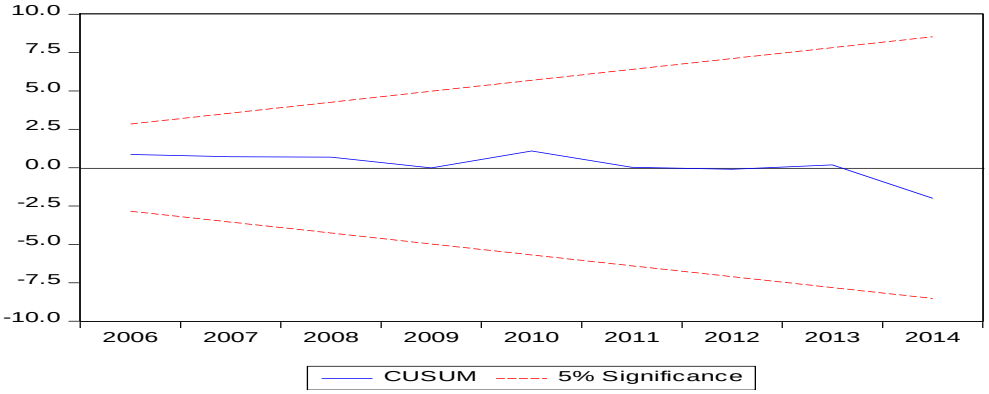
| **Type of Test** | **Test statistic** | **P-value** |
|---|---|---|
| Residual Normality test | J-B stat. = 0.983 | 0.1304>0.05 |
| Residual Heteroskedasticity test | F-stat.(10, 9) = 0.263 | 0.9755>0.05 |
| Residual Serial Correlation LM test (B-G LM test) | F-stat.(2, 7) = 2.803 | 0.1276>0.05 |
| Ramsey RESET Test | F-stat.(1, 8) = 1.599 | 0.2417>0.05 |

*Source: Author's extract from E- views 10 output*

The normality diagnostic test presents the Jarque-Bera statistic and associated probability value. As shown in the result, the J-B stat. = 0.983 while the p-value = 0.1304>0.05. It therefore indicates that the series of the residuals are normally distributed. Hence, the normality assumption of the error term is fulfilled. The heteroskedasticity test result (F-stat. = 0.263, p=0.9755>0.05) however shows that the variances of the residual series are homoscedastic (i.e., equal). Thus, equal variance (homogeneity) is assumed and the assumption of linear regression for constant variance is not violated by the model.

Result of the Breusch-Godfrey Serial Correlation Langrangian Multiplier (B-G LM) test with F-statistic value of 2.803 and associated probability value of 0.1276>0.05 indicates that the residual series are serially uncorrelated; hence, there is no higher autocorrelation problem. Finally, estimate of Ramsey Regression Error Specification Test (Ramsey RESET test) confirmed that the model is correctly specified (F-stat. = 1.599, p=0.2417>0.05).

Figure 2: Stability Graph of the Model Estimate




*Source: Researcher's E-views 10 computation*

The cumulative sum (CUSUM) stability test result as presented in figure 2 above shows that the regression model is stable and thus can be used for prediction. The evidence is shown as the cumulative sum values are within the 5% significance series.

**Summary of Findings**

The summary of the findings of this study are highlighted based on the result of the test of hypothesis one to five. Thus the findings are that;

1. Government agricultural credit guarantee scheme fund (ACGSF) has a long-run positive and significant impact on real gross domestic product in Nigeria for the period of study.
2. Government agricultural credit guarantee scheme fund (ACGSF) has a long-run positive but insignificant impact on balance of trade in Nigeria for the period of study.

**Conclusion**

In line with the findings, the study concludes that the A.C.G.S.F if well-articulated, funded and managed, remains the most viable channel for government in financing agriculture in Nigeria.

**Recommendations**

Based on the findings from this study, the researcher recommends that;

1. The Nigerian Government should come up with long term agricultural financial development plan which will aid the agricultural sector towards increasing and maintaining a high level of real gross domestic product (RGDP).
2. The government and the Central Bank of Nigeria, must show more practical commitment in the development of SME's and cottage industries through extensive credit guarantee, specifically in the area of agro products processing and packaging, as this will help to boost export trade and consequently enhance the country's balance of trade. Increased publicity about the scheme is also recommended.

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