

AGRICULTURAL SECTOR FINANCING AND EMPLOYMENT GENERATION IN NIGERIA

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ABSTRACT

This study empirically evaluated the effect of financing the Nigeria's agricultural sector on employment generation from 1990 to 2021. Theories adopted include: Financial Development Theory, Supply Leading Theory and Classical Theory of Unemployment. Annual time series data extracted from Central Bank of Nigeria's statistical bulletin and World Bank's World Development Indicators were used. The methodological processes of the ordinary technique of Least Squares (OLS) and the vector technique of Error Correction (VECM) Modelling were applied for estimations. The results from unit root's tests showed all variables as stationary at I(1), that is orders one. Following this, the OLS and VECM estimates' results established that agricultural sector received bank credits, government's expenditures in the sector, Credit Guarantee Scheme Fund in agriculture and foreign aids in agricultural sector had short-run and long-run positively significant influences on employment generation while foreign direct investment in agricultural sector is insignificantly positive on employment generation. Sequel to the results, it is concluded that agricultural financing significantly contributes to employment generation in Nigeria. Therefore, suggested recommendations among others are that government's expenditures in agricultural sector should be increased and other sources of financing for the sector be intentionally encouraged as such action will sustainably deepen agricultural sector's performance, and consequently boost employment generation in Nigeria.

Keywords: Agricultural Financing, Employment Generation, Agricultural Credits Guarantee Scheme Funds, Foreign Direct Investments, Foreign Aid

1.0 INTRODUCTION

One prominent goal of human societal dynamics in modern history has been the significance of economic expansion. Every economy, less or more developed, has placed a high priority on achieving macroeconomic objectives like stable general prices, economic growth sustainability, full employment as well as stable and sustainable international transactions balance, since time immemorial. Achieving such objectives will not be by impulse, but through deliberate actions and policies directions (Olawunmi and Ayinla, 2017). However, one important way to achieve the broad economic goals especially, the attainment full employment is through sentient financing of agriculture. The agriculture sector has been very vital in the Nigerian economy irrespective of oil boom. Chiefly, it employs about 70 per cent the country's population, and has poverty reduction and growth enhancing potentials for the economy (Idoko and Jatto, 2018). Other advantages of the agricultural sector derivable by the nation include food production, supplies primary inputs for agro-allied businesses, earning foreign currency for countries and strengthening entrepreneurship potentials.

Conscious of the possible benefits, Nigerian governments have over time designed various agricultural development programmes aimed at advancing the sector (Ogbonna and Osondu, 2015). To this effect, different agricultural credit related policies and programmes to enhance the sector's growth, create more jobs and improve production through provision of affordable financial resources to existing farmers and potential farmers at a lower interest rate had been initiated in the past. One of the key measures is the Guaranteed Agricultural Credit Scheme Funds (ACGSF). Further, Nigeria Agricultural and Cooperative Bank (NACB), People Bank of Nigeria (PBN), Agricultural Credit Support Scheme (ACSS), Economic Advancement Programme (EAP), National Economic Reconstruction Fund (NERFUND) and Nigerian Industrial Devotement Bank (NIDB) are measures. The goal is to derive important macroeconomic ramifications in Nigeria, as the expectations have led to improvement in agricultural financing and consequent thrust in agricultural production, employment generation and growth in the sector's contribution.

Consequently, funding the sector is one very essential goal of Nigeria's budgetary and other economic policies efforts targeted at entrenched growth and job creation. The sector requires financing for the acquisition of land, building construction, labor hires, buying of machinery and equipment, and the installation of irrigation facilities. In addition to removing financial barriers, Obansa and Maduekwe, (2013) opined that financing could hasten the adoption of new technology, increasing agricultural productivity, creating jobs, and result in economic growth. Agricultural financing entails receiving and utilizing funds across all possible sources to boost productivity and output while also improving the capacity to produce. Agricultural financing denotes private and/or public funds like loans, gifts, or equities, used to improve well-being of the society through agricultural development. Thus, financing is critical for agricultural production as it is capable of bolstering food production for the citizenry and raw materials for industries, and thus contribute significantly to curbing the rate of unemployment in Nigeria.

Sadly, the various agricultural credit related schemes and programmes initiated by the Federal government of Nigeria over the years have not produced expected growth and development from the sector as inadequate funding still remains a foremost problem confronting farmers and agro-allied business owners in Nigeria. Consequently, shortage of financing capital for agricultural projects has served the economy with significant decline in the sector's performance as well as high unemployment rate, which remains one of the greatest challenges, given its relatively sustained rising trend over the years.

Interestingly, significant amount of conducted empirical studies exist on the effect of agricultural financing in the Nigerian economy. Based on such studies, content and time gaps have been identified, which this research intends to bridge. In terms of content, majority of the existing research centered around agricultural financing and economic growth and some on agricultural financing and the sector's outputs nexus while very few of the studies focused on finance to the agricultural sector and employment generation in Nigeria. Also, hardly are there existing associated studies that disaggregated agricultural financing into local and foreign financing nor made use of the same proxies of agricultural financing as adopted in this study. Further, at the time of this study, hardly is there a related previous study that utilized existing yearly data covering to 2021.

Therefore, the point of departure here is that the study adopted as independent variables; banks' agricultural sector credits, government's expenditures in the sector and Guaranteed Agricultural Credit Scheme Fund to proxy local sources of financing while direct foreign agricultural productive investments and foreign aid in agricultural sector are proxies for foreign sources. Thus, the specific purposes of this study examined how the explanatory variables affected job creation for Nigerians within the period of thirty-two years (1990 - 2021), which is more updated as it captures recent policy events mostly of the sustained democratic period of the country compared to other research conducted in similar area.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

Following the need for relevant theoretical underpinning, this study's model is reliant on Shaw and McKinnon (1973) known as 'theory of financial development'. It postulated that liberalization of finance stimulates growth by deepening investments through market friendly cost of credits and currency rates of exchange geared towards market stability when resources are efficiently distributed. They contended that increasing rates of nominal deposits encourage greater savings from surplus spending units; boost investments, deepen financial operations and consequently, the health condition of the economy. The theory is introduced to explain finance-growth relation in the economy. To clearly explain the link, two main propositions were proposed by Shaw (1973) and McKinnon (1973). Firstly, the "demand leading" hypothesis which explains that financial growth accumulates with advances in the economy. Secondly, the "supply-leading" hypothesis, that describes the economy as rising resulting from general expansion among financial institutions. In light of the demand for financial services, financial development is bidirectionally related with economic growth (Patrick, 1966). Moreso, Mckinnon (1973) postulated that a more unified financial market is predicated on financial development and the most appropriate strategy is by liberalizing the currency exchange and interest rates. To Kisaka, Adhiambo, Ndege and Muin (2015), they put forward that leading finance-oriented reforms such as the financial liberalization determines how effective the Financial Development theory may be. This theory is a suitable foundation for this study because with liberalized financial system, unfettered interplay between the financial market forces would enhance stability in the market, help sectoral investments, particularly deepen agricultural sector's investments and boost contribution to general economic performance. This if attained, would transmit to general improvement in economic aggregates.

2.2 Empirical Literature

Author	Year	Title	Time Scope/ Data	Methodology	Outcome
Achumu, Ezirim, Chinedu and Chekwa	2022	Financing the agricultural sector and economic growth in Nigeria: A Bayesian VAR examination	Annual data from 1981 to 2019	Bayesian VAR methodology	Credits guaranteed scheme fund for the agricultural investors had positively significant influence on Nigeria's aggregate national output.

Obi-Nwosu, Ananwude and Ezeaku	2022	Analysis of agricultural financing on Nigeria's economic growth	Annual data spanned over 1986-2020	Autoregressive Distributive Lag (ARDL)	Agricultural credits issued by commercial banks did not significantly boost agricultural sector's contributions to real gross domestic outputs
Orji, Ogbuabor, Alisigwe and Anthony-Orji	2021	Agricultural financing, outputs growth and employment generation in Nigeria.	Yearly data over 1981 and 2017	The Auto-Regressive Distributed Lag (ARDL) Method	Agricultural funding boosts job creation in the short and long runs.
Ivongbe, Oyatayo and Atu	2021	Agricultural financing and Nigerian economic growth	Data collected annually, 1981-2019	Vector Correction Model (ECM), and Autoregressive Distributed Lag Model	Agricultural output significantly and positively affected RGDP
By Adeshina, Tomiwa and Eniola	In 2020	Effect of financing Agricultural sector on Nigeria's economic performance	Annual time series data from 1978-2017	Tests for Unit roots, Bounds Cointegration and error correction mechanism	Guaranteed credits scheme fund for Agriculture mostly influenced economic performance positively.
Onoh	2020	Agricultural financing and growth of Nigerian economy	Yearly data; 1981 - 2016	Auto Regressive Distributed Lag (ARDL) processes and Granger causality test	Guaranteed credits scheme fund for Agriculture, commercial banks' loans to agriculture investors, interest rate and agricultural output had significant long and short runs influence on the rate of growth of gross domestic product.
Ademola	2019	Agricultural financing and Nigeria's economic growth	Annual data from 1990 - 2009.	Least Squares (LS) regression technique of the Ordinary type.	Investment productivity is more effectively funded with resources from commercial and specialist financial institutions.

By Ekine and Onukwuru	In 2018	Deposit money banks' credits and performance of Nigeria's agricultural sector	Yearly time series data (1986 – 2016)	Applied the ECM methodological processes	Credits from deposit taking banks to agricultural investors directly and substantially boosted performance of the agricultural sector.
Olorunsola, Adeyemi, Valli, Kufre and Ochoche	2017	Credit to agricultural investors and Nigeria's agricultural outputs	Secondary annual data spanning 1992Q1 to 2015Q4	Autoregressive distributed lag model of the Nonlinear type	Short-run established no evidence of asymmetric influence of credit on output growth of agriculture (negative changes), while long-run result revealed distinct equilibrium relationship.
By Ayeomoni and Aladejana	In 2016	How agricultural credits and impacted growth of the Nigerian economy	Time series data (1986-2014)	The processes of Auto-Regression Distributed Lag (ARDL) approach were applied	In the short and long runs, agricultural credits significantly related with economic growth in Nigeria

3.0 METHODOLOGY

3.1 Research Design

In this research, the ex-post-facto design is adopted. It is deemed appropriate for the study because the study is non-experimental in nature, which empirically evaluated how implicative agricultural sector financing has been on employment generation, using secondary data that cannot be manipulated. Thus, annual secondary data series from the Apex Bank of Nigeria's Statistical Bulletin and indicative data of World Development from the World Bank covering 1990 to 2021 were utilized.

3.2 Specification of Model

The theory of financial development is adopted as the theoretical underpinning for this study, and empirically adapted the model of Adeshina, Tomiwa and Eniola (2020). The empirical base is slightly modified to integrate those variables selected for this study in order to be in agreement with the principal and specific objectives. Therefore, the functional specification of the model is as follows:

The model Expressed in functional form is:

$$EMPG = f(BCAG, GAXP, ACGSF, FDIA, FAAG) \quad (3.1)$$

Expressed econometric form, the model is:

$$EMPG_t = \beta_0 + \beta_1 BCAG_t + \beta_2 GAXP_t + \beta_3 ACGSF_t + \beta_4 FDIA_t + \beta_5 FAAG_t + \varepsilon_t \quad (3.2)$$

And the lo- linear form of model is expressed as:

$$\ln EMPG = \beta_0 + \beta_1 \ln BCAG_t + \beta_2 \ln GAXP_t + \beta_3 \ln ACGSF_t + \beta_4 \ln FDIA_t + \beta_5 \ln FAAG_t + \varepsilon_t \quad (3.3)$$

The theoretical expectations are: $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are > 0 .

Where:

EMPG = employment generation, BCAG = Agricultural sector received banks' credits, GAXP = Agricultural sector's expenditures by government, ACGSF = Guaranteed Credit Scheme Fund for agricultural investors, FDIA = Foreign direct investment in agricultural sector, FAAG = Foreign aid in agricultural sector, β_0 = Regression Intercept, $\beta_1 - \beta_5$ = Parameters of explanatory variables (proxies of agricultural financing), ε_t = error or disturbance term.

However, in order to determine the variables' relationships in the short-run, Vector Error Correction Model approach is employed in this study. Thus, the specified VECM's models are presented as follows:

$$\begin{aligned} \Delta \ln(EMPG_t) = & \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(EMPG_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(GAXP_{t-1}) + \\ & \sum_{t=1}^q \beta_{4t} \Delta \ln(ACGSF_{t-1}) + \sum_{t=1}^q \beta_{5t} \Delta \ln(FDIA_{t-1}) + \sum_{t=1}^q \beta_{6t} \Delta \ln(FAAG_{t-1}) + \delta ECT_{t-1} + \varepsilon_{1t} \end{aligned} \quad (3.4)$$

$$\begin{aligned} \Delta \ln(BCAG_t) = & \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(EMPG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(GAXP_{t-1}) \\ & + \sum_{t=1}^q \beta_{4t} \Delta \ln(ACGSF_{t-1}) + \sum_{t=1}^q \beta_{5t} \Delta \ln(FDIA_{t-1}) + \sum_{t=1}^q \beta_{6t} \Delta \ln(FAAG_{t-1}) + \delta ECT_{t-1} + \varepsilon_{2t} \end{aligned} \quad (3.5)$$

$$\Delta \ln(GAXP_t) = \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(GAXP_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(EMPG_{t-1})$$

$$\begin{aligned} \Delta \ln(ACGSF_t) = & \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(ACGSF_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(GAXP_{t-1}) \\ & + \sum_{t=1}^q \beta_{4t} \Delta \ln(EMPG_{t-1}) + \sum_{t=1}^q \beta_{5t} \Delta \ln(FDIA_{t-1}) + \sum_{t=1}^q \beta_{6t} \Delta \ln(FAAG_{t-1}) + \delta ECT_{t-1} + \varepsilon_{4t} \end{aligned} \quad (3.7)$$

$$\Delta \ln(FDIA_t) = \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(FDIA_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(GAXP_{t-1})$$

$$+ \sum_{t=1}^q \beta_{4t} \Delta \ln(ACGSF_{t-1}) + \sum_{t=1}^q \beta_{5t} \Delta \ln(EMPG_{t-1}) + \sum_{t=1}^q \beta_{6t} \Delta \ln(FAAG_{t-1}) + \delta ECT_{t-1} + \varepsilon_{5t} \quad (3.8)$$

$$\Delta \ln(FAAG_t) = \beta_0 + \sum_{t=1}^p \beta_{1t} \Delta \ln(FAAG_{t-1}) + \sum_{t=1}^q \beta_{2t} \Delta \ln(BCAG_{t-1}) + \sum_{t=1}^q \beta_{3t} \Delta \ln(GAXP_{t-1})$$

$$+ \sum_{t=1}^q \beta_{4t} \Delta \ln(ACGSF_{t-1}) + \sum_{t=1}^q \beta_{5t} \Delta \ln(FDIA_{t-1}) + \sum_{t=1}^q \beta_{6t} \Delta \ln(EMPG_{t-1}) + \delta ECT_{t-1} + \varepsilon_{6t} \quad (3.9)$$

From the preceding equations, $\beta_{1t} - \beta_{6t}$ define the parameters of short-run dynamics convergence of the model to long-run equilibrium, δ defines adjustment speed and it is usually negative, the notation ECT_{t-1} implies lagged error correction term derived from the long-run model, ε_t means random term at time t .

3.3 Description of Variables in the Model

To conducting a reliable study, the variables' measurements as operationally used and their quantitative values are clarified.

3.3.1 Dependent (Explained) Variable

Employment Generation: This refers to the numbers of generated job opportunities for paid employment, especially for those who are unemployed but qualified, willing and able to work at the prevailing wage rate within the sampled data period.

3.3.2 Independent (Explanatory) Variables

Bank Credits to Agricultural Sector: They are captured as the annual total monetary facilities advanced by deposit money banks to agricultural sector investors, usually on collateral for the period under review.

Government Agricultural Sector Expenditures: This is the annual total of the Nigerian governments' spendings including those of their agencies and financial transfers to agricultural sector.

Agricultural Credits Guaranteed Scheme Funds: This is a guaranteed scheme initiated by the Nigerian federal governments. It is the annual total credits guaranteed by the apex bank for those engaged in agriculture in Nigeria.

Foreign Direct Investments in Agricultural Sector: This is the annual aggregate investments from cross-border direct investments ownership in the agricultural sector of Nigeria.

Foreign aid to Agricultural Sector: This refers to the yearly sum of movement of money, services, or goods from foreign governments or institutions for the benefit of agricultural sector in Nigeria.

3.4 Data Analysis Techniques

To avoid having spurious regression estimates, the yearly series stochastic properties tested. The pre-estimation approaches of Augmented Dickey-Fuller's (ADF) unit root's test is applied to establish the stability status of the quantities, lag selection criteria for optimum lag selection and Johansen Cointegration test for long-run association were used. The Ordinary Least Squares approach to ascertaining long-run relationship among the included variables is utilized, the Vector method of Error Correction Model (VECM) is adopted for the dynamic analysis and various post-diagnostic tests were also conducted to verify results reliability.

4.0 RESULTS AND DISCUSSIONS

4.1 Descriptive Statistics' Test

This part of the analyses is applied to ascertain the idiosyncratic behaviours of the adopted time series, and its results are as exhibited in Table 4.1.

Table 4.1: Descriptive Statistics' Test Result

	EMPG	BCAG	GAXP	ACGSF	FDIA	FAAG
Mean	1642.290	207.2219	23.28452	4.003548	737.0452	67.70258
Median	1113.000	62.10000	16.30000	3.310000	476.9000	44.00000
Maximum	3905.000	1049.680	76.60000	13.00000	8432.100	261.7900
Minimum	115.0000	4.220000	0.210000	0.080000	40.40000	9.530000
Std. Dev.	1431.942	264.8723	22.95845	4.016308	1453.350	66.31921
Skewness	0.362970	1.555527	0.789896	0.660789	5.005006	1.559411
Kurtosis	1.436760	4.753371	2.522458	2.180723	27.07995	4.639348
Jarque-Bera	3.837163	16.47258	3.518226	3.122969	878.3904	16.03540
Probability	0.146815	0.000265	0.172198	0.209824	0.000000	0.000330
Sum	50911.00	6423.880	721.8200	124.1100	22848.40	2098.780
Sum Sq. Dev.	61513774	2104721.	15812.71	483.9219	63366748	131947.1
Observations	32	32	32	32	32	32

Source: Authors Computed, 2023.

As shown in Table 4.1, from 1990 to 2021, the employment generation (EMPG) recorded a mean average of 1642 while its standard deviation of approximately 1432 indicates low level of dispersion from the mean. In addition, bank credits to agricultural sector (BCAG) had a mean (average) of 207.22 with standard deviation 264.87, indicating moderate level of dispersion from the mean over the sampled period. Also, government's agricultural sector expenditure (GAXP) had an average of 23.28 with standard deviation 22.96, indicating high level of dispersion from the mean. On its part, Guaranteed Agricultural Credits Scheme Fund (ACGSF) had an average of 4.0 with respective maximum and minimum values as 13.0 and

0.08. However, its revealed standard deviation is 4.016308 which indicates low level of dispersion from the mean. In addition, foreign direct investment in agricultural sector (FDIA) had a mean value of 737.0452 with 8432.1 and 40.4 as the respective maximum and minimum values. However, the deviation from the mean of foreign direct investment in agricultural sector (FDIA) which is 1453.35 is evidently high. Lastly, foreign aid in agricultural sector (FAAG) appeared having an average of 67.70 as its respective maximum and minimum values are 261.7 and 9.53. However, its standard deviation of 66.32 indicates high level of dispersion from the mean.

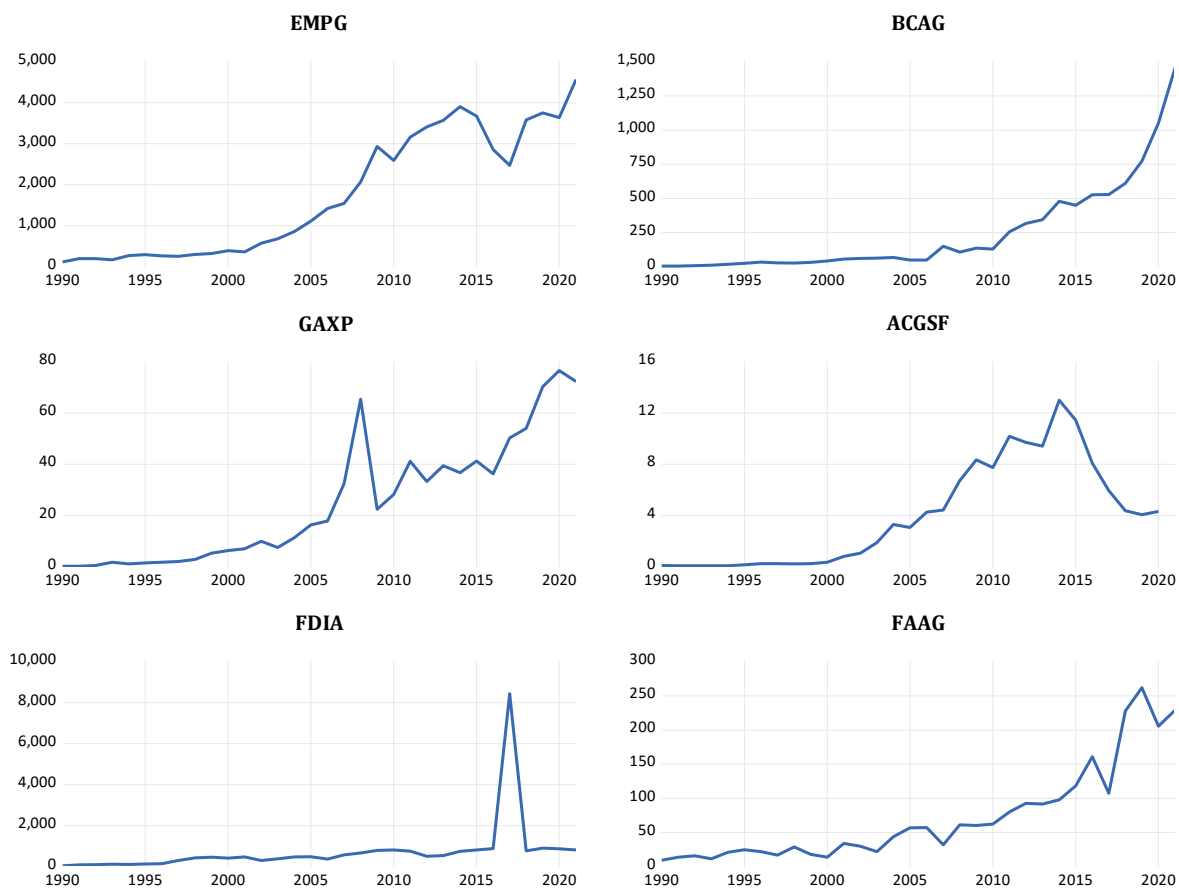


Figure 4.1: Trend Analysis in Employment Generation and Agricultural Financing Variables

Figure 4.1 shows the data trends of employment generation (EMPG), bank credits received by agricultural sector (BCAG), government’s expenditure in agricultural sector (GAXP), Guaranteed Agricultural Credit Scheme Funds (ACGSF), foreign direct investment in agricultural sector (FDIA) and foreign aid in agricultural sector (FAAG) in Nigeria, spanning a sampled period of 1990 to 2021. As shown in the graphs, movements in Figure 1 revealed that there are some degrees of instabilities in the trends as reflected in the inconsistent upward and downward movements, characterized by slow growths, more downward trends and fewer periods of increased job creation and the sector financing in all the graphs representing employment generation, agricultural sector received bank credits, the sector expenditures by

government, Guaranteed Credit Scheme Funds for Agriculture, foreign direct investment in agricultural sector and foreign aid in agricultural sector throughout the research period.

4.2 Pre-Estimation (Diagnostic) Tests

4.2.1 Results for Unit Roots Diagnosis

The individual data sets were tested to ascertain their level of integration. Adopted for this, is the popular ‘Augmented Dickey Fuller’s unit roots testing method. Thus, the below Table 4.2 presented the outputs therefrom.

Table 4.2: Augmented Dickey-Fuller’s Tests Results

Variables	At I(0)		At I(1)		Order of Integration
	ADF	Mackinnon Critical Value @ 5%	ADF	Mackinnon Critical Value @ 5%	
LOG(EMPG)	-1.359423	-2.960411	-6.207118	-2.963972	I.(1)
LOG(BCAG)	-0.825526	-2.960411	-6.275395	-2.963972	I(1)
LOG(GAXP)	-2.040584	-2.960411	-6.483890	-2.963972	I.(1)
LOG(ACGS)	-1.831620	-2.967767	-3.513763	-2.967767	I(1)
LOG(FDIA)	-2.782973	-2.960411	-8.469866	-2.963972	I(1)
LOG(FAAG)	0.425334	-2.967767	-8.998400	-2.967767	I(1)

Source: Authors Computed, 2023.

As displayed in the Table 4.2 above, it is shown that the individual variables (employment generation, bank credits received by agricultural sector investors, expenditures of governments in the sector, Guaranteed Credit Scheme Funds for Agriculture, direct foreign investments flows to agricultural sector as well as foreign aid in agricultural sector) individually contained unit root at their levels but are stationary at first differencing, suggesting that each variable got integrated at order one, i.e., I(1). In conclusion, the results indicate that the data are expected be free from spurious and misleading regression estimates, thus followed by the Johansen’s cointegration diagnosis to establish whether or not stable long-run association will be evident among the included variables in the specified model.

4.2.2 Lag Selection Criteria

The optimum lag selection results are as displayed in Table 3:

Table 4.3: Optimum Lag Selection Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-123.4651	NA	0.000304	8.928626	9.211515	9.017223
1	4.752527	194.5371*	5.57e-07*	2.568791*	4.549013*	3.188972*
2	40.44371	39.38338	8.10e-07	2.590089	6.267643	3.741853

Source: Authors Computed, 2023.

The optimum lag selected in the results of Table 4.3 indicated that all the criteria selected lag one as the optimal lag length. Following this, all subsequent analyses in this study were carried out using the optimal lag length of one.

4.2.3 Cointegration Test

The results of the Johansen’s cointegration analysis are shown in Table 4.4 below:

Table 4.4: Johansen’s Cointegration Test Results

Hypothesized No. of CE(s)	Statistic	Trace		Maximum Eigen Value		
		0.5 Critical Value	Prob.**	Statistic	0.5 Critical Value	Prob.**
None*	129.2632	95.75366	0.0000	46.33997	40.07757	0.0087
At most 1*	82.92327	69.81889	0.0032	30.09610	33.87687	0.1324
At most 2*	52.82717	47.85613	0.0159	21.40895	27.58434	0.2523
At most 3*	31.41822	29.79707	0.0322	14.95725	21.13162	0.2919
At most 4*	16.46097	15.49471	0.0357	11.01009	14.26460	0.1537
At most 5*	5.450884	3.841465	0.0196	5.450884	3.841465	0.0196

Source: Authors Computed, 2023.

Following the co-integration analysis results applying the Johansen Juselius (1990) framework, it is apparent in Table 4.4 that the Trace and the Max Eigen statistics values are higher relative to the 0.05 critical values thus, suggesting existence of five co-integrating long-run equations in both cases. This signifies sufficient statistical evidence to reject the null hypothesis stating no cointegration among the employed variables. This therefore necessitate the need for estimating the research model by applying the techniques of Ordinary Least Squares (OLS) and Vector Error Correction Model (VECM) estimations aimed at converging the short-run dynamics disequilibrium to long-run equilibrium.

4.3 Model Analyses Results

Following the specified model estimation, the long and short runs’ results are tabulated below:

Table 4.5: Estimated Long-Run OLS Results

Variables	Coefficients	Std. Errors	t-Statistics	Probs.*
Regressand = LOG(EMPG)				
C	5.103983	0.479929	10.63488	0.0000
LOG(BCAG)	2.148709	0.336266	6.389910	0.0000
LOG(GAXP)	7.060539	1.829310	3.859674	0.0007
LOG(ACGSF)	0.381874	0.060046	6.359642	0.0000

LOG(FDIA)	0.079265	0.081525	0.972280	0.3402
LOG(FAAG)	0.361655	0.122795	2.945195	0.0069
Adj. R ² = 0.966608; F-stat. = 174.6858; Prob (F-stat.) = 0.000000; D-W. Stat. = 1.744258				

Source: Authors Computed, 2023.

Sequel to the produced long-run estimates so tabulated in Table 4.5, it revealed positive and significant impacts from bank credits received by the agricultural sector investors, expenditures in the sector by governments, guaranteed credit scheme funds for agriculture and foreign aid in agricultural sector to employment generation but foreign direct investment in agricultural sector positively and insignificantly influenced the regressand over the sampled period. These are substantiated by the respective positive coefficients' values (2.148709, 7.060539, 0.381874 and 0.361655) of the regressors and their p-values (0.0000, 0.0007, 0.0000 and 0.0069) are less than 0.05 as the coefficient value of foreign direct investment in agricultural sector is (0.079265) and its p-value is (0.3402). The results suggested that a unit increase in all explanatory variables improved employment generation in Nigeria by the percentage values of their coefficients in the long run.

The adjusted R-squared in Table 4.5 is 0.966608, which showed that approximately ninety-seven percent (97%) of the changes in employment generation are attributable to changes in the utilized determinants while the remaining three percent (3%) changes in the model is due to the error term(s) (unknown factors not included in the model). Lastly, the F-statistic prob. value is 0.0000000 which obviously is less than 0.05, indicating that all the employed factors have joint significant effects on employment generation in Nigeria over the considered sample period.

Table 4.6: Analyzed Short-run VECM Results

Variables	Coefficients	Std. Errors	t-Statistics	Probs.*
Regressand = LOG(EMPG)				
C	0.061253	0.075758	0.808531	0.4306
DLOG(EMPG(-1))	-0.058160	0.252435	-0.230395	0.8207
DLOG(BCAG)	0.210444	0.086738	2.426205	0.0274
DLOG(BCAG(-1))	0.236729	0.082807	2.858812	0.0097
DLOG(GAXP)	3.210542	0.832904	3.854635	0.0010
DLOG(GAXP(-1))	0.165154	0.091804	1.798982	0.0909
DLOG(ACGSF)	0.120181	0.051798	2.320197	0.0296
DLOG(ACGSF(-1))	0.026679	0.141372	0.188717	0.8527
DLOG(FDIA)	0.078468	0.078868	0.994925	0.3346

DLOG(FDIA(-1))	0.025507	0.067512	0.377819	0.7105
DLOG(FAAG)	0.518412	0.142939	3.626799	0.0017
DLOG(FAAG(-1))	0.124223	0.053187	2.335604	0.0286
VECM(-1)	-0.343199	0.134648	-2.54886	0.0187
Adj. R ² = 0.605630; F-stat.: 6.317701; Prob. (F-Stat.) = 0.000982; D.W. Stat. = 2.188039				

Source: Authors Computed, 2023.

Table 4.6 revealed that at the initial and lag one levels, agricultural sector received bank credits (BCAG) and foreign aid for the sector (FAAG) produced positively significant short-run influence on employment generation (EMPG). Government’s agricultural sector expenditure (GAXP) and guaranteed credit scheme funds for agricultural investment (ACGSF) at their initial levels are positively significant in enhancing short-run employment generation (EMPG). However, foreign direct investment in agricultural sector (FDIA) impacted positively but insignificantly in inducing employment generation (EMPG) for the short-run at both initial and lag one levels.

Relative to the long-run’s, the adjusted R-squared (Adj. R2) came out 0.605630 in the short-run, suggesting 61 percent systematic variations in the employment generation (EMPG) model is caused by the independent variables and the Prob. F-stats. value of 0.000982 is highly significant at the conventional 5 percent level. This validates the existence of joint significant effect of the regressors on the regressand. Additionally, the D. W. stat. came out as 2.188039, indicating that no problem of autocorrelation for the model. Finally, the VECM analysis as expected established negative sign and statistically significant error correction term, and its coefficient of -0.343199, portrays that the speed of adjustment from short to the long run stable equilibrium is quite low at 34.3 percent annually.

4.4 Post-Estimation (Diagnostic) Tests

This section presented the pre-diagnostic tests which aim to certify that the research outputs are in conformity with the basic assumptions of the classical linear regression, reliable and not error prone. Thus, the results are exhibited and discussed below:

Table 4.7: Diagnostic Tests Results

Test	F-Statistic	Probability	Null Hypothesis	Decision
Serial Correlation LM Test	0.060159	0.9418	H ₀ : There is no serial correlation	reject not H ₀
Normality Test	0.152264	0.926694	H ₀ : Normal distribution	reject not H ₀
Heteroskedasticity Test	1.552393	0.2040	H ₀ : There is homoscedasticity	reject not H ₀
Ramsey RESET test	0.007293	0.9329	H ₀ : Correctly specified	reject not H ₀

Source: Authors Computed, 2023.

The post-tests' analyses outputs of the employment generation model as tabulated in Table 4.7 specifically evidenced that there is no problem of autocorrelation, the model's residuals are normally distributed, heteroscedasticity test is homoscedastic and the model was correctly specified as all their probability values are greater than 0.05.

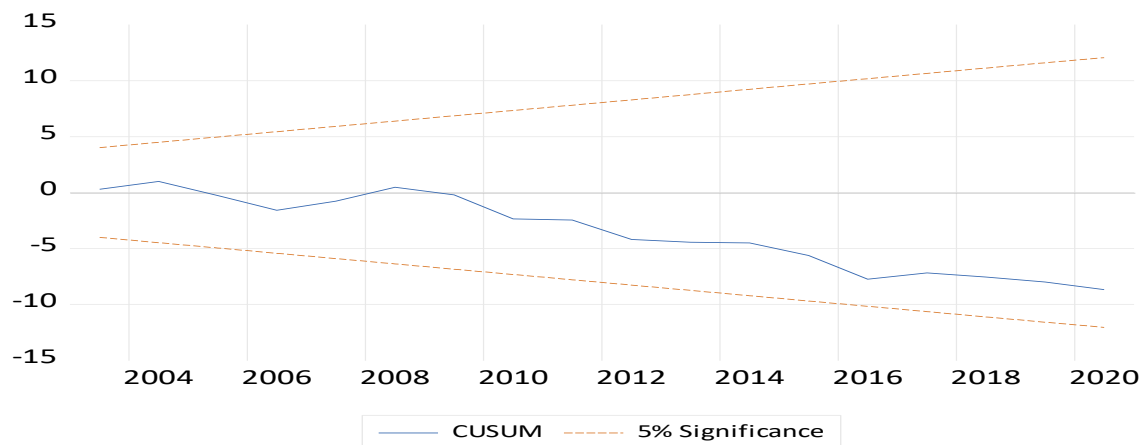


Fig. 2: CUSUM's Stability Graph

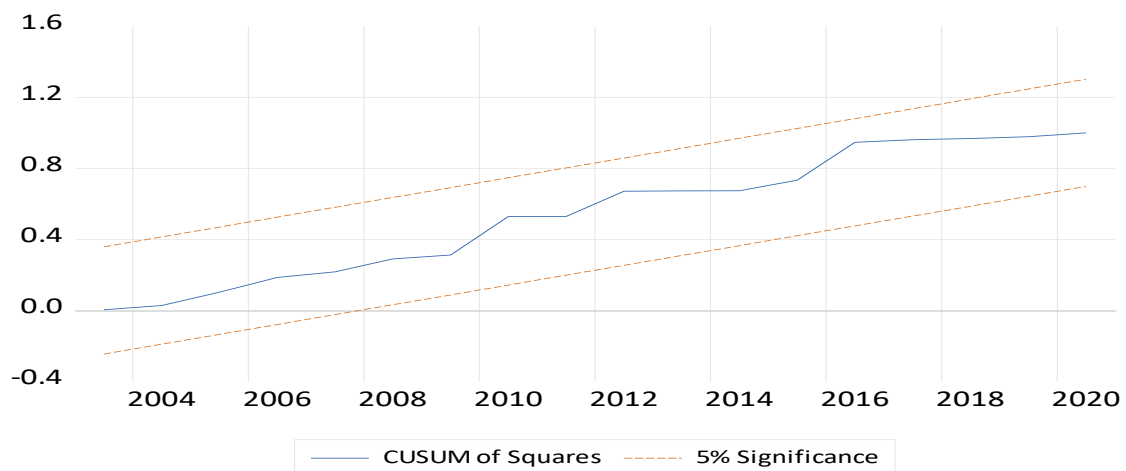


Fig. 3: CUSUM of Squares' Stability Graph

The stability tests' results in Figures 2 and 3 revealed the existence of coefficient stability for the estimated parameters. This is because the plots stayed within 5% critical bounds.

Conclusively, the results of the post-estimation tests showed that the research findings are reliable because they passed all the major tests in the forms of serial correlation, normality, heteroscedasticity, function form, and stability. Thus, the model estimated has a good fit and is adequate for conclusion and policy recommendation.

4.6 Discussion of Findings

Examined in this study, is the empirical effects of agricultural sector's financing sources on employment generation for Nigerians over 1990 to 2021. The techniques of estimation adopted include descriptive statistic and the Vector Error Correction Modelling (VECM) procedures.

Relevant data used for the study were gathered from the Nigeria's apex monetary authority's statistical bulletin and the Development Indices of the World Bank. Analysis the data was facilitated using the Econometric Views (EViews) statistical software 12. The findings for long-run and short-run tests are as discussed below:

Bank credits to agricultural sector positively and significantly enhanced Nigeria's employment generation. This suggests an agreement with Ekine and Onukwuru (2018) result, which established that banks' credits from deposit financial intermediaries to the agricultural sector exerted positively significant effects on the sector and employment. Government's agricultural sector expenditure exerted significantly positive influence on the dependent variable (employment generation) in Nigeria. This outcome is follows that of Adeshina, Tomiwa and Eniola (2020) which stated that government expenditure on agriculture contributes to economic performance in Nigeria. Further, the guaranteed credit scheme funds for agricultural investment produced positively significant contribution to creation of gainful employment. The result followed that established by Achumu, Ezirim Chinedu and Chekwa (2022) who also established that agriculture credit guarantee scheme financing positively and significantly affects Nigeria's aggregate national output. Foreign direct investment in agricultural sector had positive but insignificant effects on employment generation, which is related to that of Orji, Ogbuabor, Alisigwe and Anthony-Orji (2021) who established that finances for the agricultural sector and outputs growth have positive implication on generation of employment. Finally, foreign aid in agricultural sector exerted positive and significant effect on employment generation, which is in agreement with the finding of Orji, Ogbuabor, Alisigwe and Anthony-Orji (2021) who established that financing agriculture sector and outputs growth from the sector had positive effect on the job creation in Nigeria.

5.0 CONCLUDING REMARK AND RECOMMENDATIONS

5.1 Concluding Remark

Agricultural sector financing is considered to be an essential ingredient in propelling agricultural activities since proper funding for farmers facilitates all farm activities and leads to a growth in agricultural sector investments, outputs, and employment generation. Based on this awareness, this study diagnosed how agricultural sector financing had influenced Nigeria's employment generation pursuit. Following yielded empirical evidence of the study, it is concluded that agricultural sector financing plays significant role in generating employment chances in Nigeria.

5.2 Recommendations

Sequel to the empirical outcomes and consequent conclusion, the following suggestions are recommended: Banks should redouble efforts at extending more credits at market friendly rate to consistently encourage agricultural sector investments and hence generate sustainable jobs for Nigerian fast-growing population. The government should sustain Agricultural Guarantees Loans Scheme and continue the use of the credit finance from the Guaranteed Credits Scheme Funds as incentive for motivating farmers to continue investing their best efforts in agricultural production chains in order to resuscitate their productive potentials and create more jobs for

the Nigerian economy. In addition, increasing government's outlays in this sector is also vital for oiling the wheels of agricultural production for employment generation and other derivable. Also. Policies for attracting foreign aid and foreign direct investments to the agricultural sector should be pursued as such will boost agricultural production and generate more employment in Nigeria.

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