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## **Agriculture and Employment Creation: Evidence from Nigeria**

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**Abstract:** In this study, an investigation has been made regarding nexus between agriculture and generated employment in Nigeria from 1990 to 2019, utilizing Dynamic Ordinary Least Squares. The summary of findings in this study could be stated as follows; agricultural value added (AVA) and rate of unemployment had a positive relationship which is significant at 10% level of significance in Nigeria. Government expenditure on agriculture and rate of unemployment had a significant positive relationship in Nigeria. Inflation rate (INF) and exchange rate (EXR) showed a positive and significant impact on unemployment except foreign direct. By and large, it could be submitted that agriculture did not contribute to employment generation in Nigeria. In view of the above findings, this recommendation is made for the Nigerian policy makers, revamping of agriculture via massive investment in this sub sector of the economy is urgently needed in Nigeria before it could ensure employment generation in the country.

**Keywords:** Agriculture; Employment; Valued Added; Nigeria

**JEL Classification:** N50

### **1. Introduction**

The role of agriculture in generating employment in Africa cannot be overemphasized because agriculture occupies an essential position in the economies of this continent. This sector portrays itself as a primary driver of growth, a source of wealth creation, a source of employment, and a method of poverty alleviation all at the same time. The agricultural industry is also the most important economic activity in Sub-Saharan Africa, accounting for about 20% to 30% of the continent's Gross Domestic Product (World Bank, 2017). Agriculture entails cultivating land for cash and food crops, as well as hunting, forestry, fishing, and other activities related to extracting natural resources from the ground. Agriculture is the most important activity in most West African nations, accounting for over 60% of total employment in 2009 (Matthew & Adegboye, 2010). However, employment in the agricultural sector in the West African region fell to 54% in 2016 due to a lack of motivation among young people to pursue agriculture as a career.

In Nigeria, a higher percentage of the population reside in the rural areas who mainly rely on agricultural related activities as a means of livelihood. Before the discovery of oil, Nigerian economy solely

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depended on agriculture that the sector brought about 71% of its GDP, over 70% of its employment and about 90% of its foreign earnings. (CBN, 1970). This argument was further buttressed by a research written by Ehui and Tsigas (2009) who attributed that agriculture is not only significant in Nigeria because of the ability of the sector to serve as the major employer of labour but also serves as the backbone in providing food to Nigeria's population, and input in the form of raw materials to the industrial sector amongst other benefits.

However, the diversion to the oil and gas sector has caused significant changes in the Nigerian economy in the past few decades. The rapid wealth associated with the oil business has caused the country to disregard agriculture to a greater extent. The latter impact of this has been a vast migration of young people from rural to urban area with the continuous decline in agricultural production and rising level of urban unemployment.

However, full employment is one of the most essential macroeconomic objectives of any serious nation. Unemployment is a critical problem in Nigeria currently. This is mostly due to the lack or insufficient manufacturing industries that make up a larger percentage of the real sector. Agriculture that would have served as an escape route to fight unemployment problem over the years, has witnessed a rapid decline in its contributions to the development of the nation's economy. It is unfortunate, Nigeria that used to be a major exporter of agricultural products some decades ago now depends largely on other countries for the same products. The result of this has led to a declining rate in the participation of the active population to economically engage in agriculture in the country. Hence, the perpetual increment in the unemployment level in the country.

In light of this, a study that examines how agriculture contributes to employment creation in Nigeria is in urgent need of attention. Meanwhile, few attempts in previous research to give actual data to substantiate the preceding subject matter have not achieved significant findings. For example, recent empirical works like those of Obanga (2018) and Aderemi *et al.* (2020) may be criticized in terms of methodology since they failed to employ a comprehensive approach to quantify agriculture's contribution to the economy. In contrast to previous research, this current study used agricultural value added as a proportion of GDP to quantify agriculture's contribution, which previous studies had neglected in recent times. As a result of this, investigation regarding how agriculture contributed to employment generation in Nigeria has been carried out within the period of 1990 and 2019.

## **2. Literature Review**

Ogbalubi and Wokocha (2013) examines Agricultural Development and employment generation with reference to Nigeria from This paper identifies some major factors impeding the development of Nigeria's agricultural sector, such as neglect of agriculture following the discovery of oil, insufficient infrastructure, insufficient extension services, labour shortages due to rural-urban migration, land degradation due to oil activities in the Niger Delta Region, policy inconsistency, and so on. To guarantee that agriculture takes its appropriate position in our economy, the paper advises providing finance to farmers, extension services, price stabilization, and making agriculture a priority, among other things.

Osabohien and Bamigbola (2017) investigated how agricultural investment sustainability could create employment generation in Nigeria within the framework of institution between 1981 and 2014. The



authors applied the regression analysis to argue that over 85% of piece of land in Nigeria is good for cultivation. Whereas, less than 40% of this arable land has been cultivated in the country. This implies that the agricultural restructure in the Nigerian agricultural sector via sustainable investment was needed to generate employment. Also, the framework of institution needed to be strengthened in order to improve the performance of the agricultural sector. In another paper, Adekanbi (2018) utilized regression analysis to examine employment creation via agriculture as a platform for the Nigerian nation building ranging between 1981 and 2010. The author posited that the influence of agriculture was prominent in providing job opportunities and the development of the Nigerian economy.

Ogbanga (2018) investigated the advancement of agriculture and job availability in the Nigerian economy from 2008 to 2017. Error correction model (ECM) and granger causality were embraced to explain the objectives of this research. However, the study's findings demonstrated that the agricultural sector and contribute considerably to job creation in Nigeria. As such, all stakeholders in agriculture should intensify strategies that catalyse the improvement of agricultural sector via the availability of credit facilities to practitioners in agriculture and at same time prioritize agriculture in the Nigerian economy.

Osabohien *et al.* (2019) assessed the contribution of agriculture to the availability of employment for the people in reducing the West African level of poverty from 2000-2017 using General Method of Moments (GMM) as a method of data analysis. The result showed that agriculture gives the poor to rise in their earnings thereby reducing poverty. The study recommended that effective policies should be included in agricultural plans which will help increase agricultural earnings in the long run and bridge the poverty gap.

Aderemi *et al.* (2020) appraised the impact of agriculture on employment generation in Nigeria; post SAP era from 1990-2017. The research data was sourced from CBN statistical bulletin and employed dynamic ordinary least square and granger causality as a method of analysis. The findings showed that agriculture has an insignificant impact on employment generation in the post SAP era. Also, inflation rate has a positive impact on employment generation in the economy. However, the impact of agricultural expenditure to the employment generation was negative in the country. Furthermore, one way causality flows from employment to agricultural expenditure and expenditure on agriculture granger causes inflation rate in the economy. The following recommendations were made based on the findings of this research. They are, agriculture has the ability to reduce the issue of unemployment among the youth and government should provide proper funding for the agricultural sector.

Ochada and Ogunniyi (2020) focused on agricultural sector performance, employment generation and per capita income in Nigeria from 1981-2016. The study employed vector auto-regressive (VAR) as a method of analysis and sourced its data from CBN bulletin and world bank development indicators. The study found that there is a positive dynamic interaction between agricultural performance, employment generation and per capita income in Nigeria. It recommended that more attention should be given to the agricultural sector as it helps to cause an improvement in the living standard of people and also create employment opportunities.

Obakiri *et al.* (2021) aimed at looking at issues, challenges and the way forward concerning agricultural development and employment generation in Nigeria. The study revealed that the agricultural sector is the most critical sector that has the potential to industrialize Nigeria, reduce poverty, increase food security and create jobs for the massive unemployed population. The study concludes that the

development of agricultural sector is still at its infant age despite the numerous policy efforts of successive government to develop the sector. Therefore, it is suggest that the only way forward for Nigeria agricultural sector to drive industrialization, guarantee food security and employment generation is by total and massive investment in the sector.

Orji *et al.* (2021) investigated the role of finance on agriculture in enhancing the advancement of agricultural output and job creation in Nigeria from 1981-2017. ARDL was used to analyse the study with the results showing that the immediate (the short run) and the aftermath effect (long run) of agricultural output growth equally lead to a rise in employment generation solely in the short run. The study suggests that policymakers should make every effort to ensure that every cash allotted for specific agricultural plans and interventions is properly utilized for its intended purpose. To enhance job possibilities, each plan and policy should be carefully monitored to ensure that its unique objectives are met.

Tochukwu *et al.* (2021) researched whether agriculture has aided the creation of job opportunities in Nigeria from 1990 to 2019. FMOLS and pairwise granger causality were the method of analysis used in this study. The result of the analysis showed that agriculture impacts employment generation significantly and also, public spending on agriculture does not aid in the creation of jobs in Nigeria. The result also showed that there is no causality flow from agricultural value added to employment generation. This study then recommended that policymakers should invest massively in agriculture as it will bring about employment generation.

### 3. Methodology

The use of secondary data was very important in this paper. The data ranges from 1990 to 2019, and the same time sourced from World Development Indicators (WDI) and CBN statistical bulletin.

#### 3.1. Model Specification

This study made use of dynamic ordinary least squares model to provide answer to the research question of this paper.

##### Model 1

The model for this study was adapted from the works of Ebere *et al.* (2021), Aderemi *et al.* (2020) and Aderemi *et al.* (2020). The model is written as follows;

$$EMP_t = F (AGP_t, GEA_t, INF_t) \quad (1)$$

Where;

EMP- Employment Level

AGP- Agricultural Output

GEA- Government Expenditure to Agriculture

INF- Inflation Rate

This model will therefore be modified to suit the objective of this study. It will be written as follows:

$$UNEMP_t = F (AVA_t, GEA_t, INF_t, EXR_t, FDI_t) \quad (2)$$

Mathematically, this can be written as:

$$UNEMP_t = F (AVA_t + GEA_t + INF_t + EXR_t + FDI_t) \quad (3)$$

The econometric model for the above equation is:

$$UNEMP_t = \alpha + \beta_0 AVA_t + \beta_1 GEA_t + \beta_2 INF_t + \beta_3 EXR_t + \beta_4 FDI_t + \mu_t \quad (4)$$

The transformation of equation (4) in logarithm form helps in facilitating the ease interpretation of coefficients in the regression. As such equation (5) is emerged in the standardized form as this:

$$UNEMP_t = \alpha + \beta_0 AVA_t + \beta_1 \ln GEA_t + \beta_2 \ln INF_t + \beta_3 \ln EXR_t + \beta_4 FDI_t + \mu_t \quad (5)$$

Where;

UNEMP- Unemployment Level which is proxy by unemployment rate

AGP- Agricultural output measured by agricultural value added

FDI- Inflows of foreign direct investment

GEA- Government expenditure on agriculture

INF- Inflation rate

EXR- Exchange rate

$\mu$  = Error Term

$\alpha$  = Intercept of the Model

$\beta_0$ , to  $\beta_4$ = Coefficient of Parameters

t = Aggregate Output Function with Time.

UNEMP= Dependent Variable

AVA and GEA= Independent Variables

INF, EXR and FDI = Control Variables

### **A Priori Expectation**

$\alpha, \beta_0, \beta_1, \beta_2, \beta_3, \beta_4 < 0$

### **3.2. Estimation Techniques**

The study employed Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit roots test to check how the data for this work behaved over the time. In addition, Johansen Cointegration test was equally applied in checking the existence of the convergence of the variables in the long run in case there is any. The existence of unit root in the data set variables could orchestrate only a short run relationship among the variables. Hence, the need for the cointegration test in order to check the relationship could converge

in the long run. The study also made use of Dynamic Ordinary Least Squares (DOLS) to check how agriculture generated employment in Nigeria.

**4. Result and Discussion**

**Table 1. Descriptive Statistics**

	UNEMP	AVA	GEA	INF	EXR	FDI
Mean	4.520067	24.33821	23.30735	18.25826	121.6749	1.699143
Median	3.994500	24.18453	17.10952	12.38637	127.2299	1.580200
Maximum	8.530000	36.96508	70.27454	72.83550	306.9210	5.790847
Minimum	3.700000	19.99025	0.208700	5.388008	8.038285	0.195183
Std. Dev.	1.459860	3.891879	21.92953	16.89387	88.82773	1.208423
Skewness	2.188740	1.497144	0.605893	2.076106	0.587832	1.810400
Kurtosis	6.033186	5.540280	2.133507	6.157526	2.781039	6.639756
Jarque-Bera	35.45318	19.27347	2.774047	34.01354	1.787665	32.94752
Probability	0.000000	0.000065	0.249818	0.000000	0.409085	0.000000
Sum	135.6020	730.1464	699.2205	547.7478	3650.247	50.97428
Sum Sq. Dev.	61.80456	439.2550	13946.22	8276.684	228820.6	42.34828
Observations	30	30	30	30	30	30

*Source; Authors` Computation (2022)*

The table above reveals the finding from the descriptive statistics of the estimated data set. Descriptive statistics is important to verify the possibility of the data set to agree with the normal distribution assumption. As observed from the table above, exchange rate (EXR) has the maximum value while foreign direct investment (FDI) has the minimum value. Also, exchange rate has the highest mean value while foreign direct investment has the lowest mean value. Also, exchange rate (EXR) has the highest median value and foreign direct investment (FDI) has the lowest median value. The mean value for all the variables are greater than their standard deviation. The meaning of the above scenario is that the data is moderately dispersed from its mean due to the fact that the standard deviation is not up to its mean. Also, the values of the skewness of the data set are positively skewed.

However, the kurtosis shows that some variables are platykurtic in nature because the variables are less than 3 and the others are leptokurtic because the values are greater than 3, this implies that they are highly peaked with a very high tail. The JarqueBera is a test for normality of the distribution for the variables.

**Table 2. Augmented Dickey-fuller Test and Phillips PerronTest**

Variables	Augmented Dickey-Fuller Test				Remark
	Level	Probability	1 <sup>st</sup> Diff	Probability	
UNEMP	-2.991878	0.8371	-2.991878	0.0000	I (1)
AVA	-2.976263	0.4284	-2.976263	0.0000	I (1)
GEA	-2.967767	0.2364	-2.971853	0.0000	I (1)
INF	-2.967767	0.2740	-2.971853	0.0019	I (1)
EXR	-2.967767	0.9883	-2.971853	0.0072	I (1)
FDI	-2.967767	0.0462			I (0)
Variables	Phillips Perron Test				Remark
	Level	Probability	1 <sup>st</sup> Diff	Probability	
UNEMP	-2.967767	0.9897	-2.971853	0.0039	I (1)
AVA	-2.967767	0.1884	-2.971853	0.0001	I (1)
GEA	-2.967767	0.3745	-2.971853	0.0000	I (1)
INF	-2.967767	0.1812	-2.971853	0.0020	I (1)
EXR	-2.967767	0.9867	-2.971853	0.0105	I (1)
FDI	-2.967767	0.0462			I (0)

Source: Authors' Computation (2022)

The presentation of the findings originating the Augmented Dickey-Fuller (ADF) and the Phillips Perron (PP) Tests was done in Table 2. These findings revealed that the variables such as UNEMP, AVA, GEA, INF and EXR possessed unit root because these variables were not stationary at level, but it is only one variable, FDI which was stationary at level. This attests to fact that all the data used for this empirical study are a mixture of I(0) and I (1).

**Table 3. Johansen Cointegration Test**

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Prob.	Max-Eigen Statistic	Prob.**
None *	0.794426	127.0793	0.0001	44.29452	0.0158
At most 1 *	0.772783	82.78480	0.0033	41.49176	0.0051
At most 2 *	0.637874	41.29304	0.1795	28.44138	0.0388
At most 3	0.301590	12.85166	0.8982	10.05055	0.7399
At most 4	0.091644	2.801110	0.9752	2.691335	0.9652
At most 5	0.003913	0.109775	0.7404	0.109775	0.7404

Source: Authors' Computation (2022)

Identification of unit root in the majority of variables could cause short run deviation among the variables in this study. In view of the above, efforts were made to use multivariate cointegration test by Johansen and Juselius (1990) to verify a long run relationship exists among these variables. It is important to reveal that the findings in this study established that at most 5 cointegrating vectors existed among the variables. Therefore, this is an evidence that the variables did possess a long run equilibrium relationship.

**Table 4. Agriculture Value Added and Employment Generation in Nigeria**

Dependent Variable: UEMP

Method: Dynamic Ordinary Least Squares (DOLS)

Variable	Coefficient	T-Statistic	Prob.
AVA	0.106021*	1.834911	0.1162
GEA	0.038358**	2.009619	0.0912
INF	0.087720***	5.482329	0.0015
EXR	0.009577**	3.137933	0.0201
FDI	-0.884989**	2.897971	0.0274
R-squared	0.972379		
Adjusted R-squared	0.880309		

\*Significant at 10%, \*\*Significant at 5%, \*\*\* Significant at 1%

Source: Authors` Computation (2022)

The table above shows the estimated result of the regression analysis used to check the impact of agricultural development on employment generation in Nigeria within the framework of Dynamic Ordinary Least Squares. The test shows that agricultural development variables and other control variables jointly explained about 97% of the systematic variations in dependent variable as indicated by the result of R-Squared. All variables did not possess the expected sign except foreign direct investment. The result showed that that agricultural value added (AVA) and unemployment rate had a positive relationship which is significant at 10% level of significance in Nigeria. This indicates that agriculture did not contribute to employment generation in the country. This finding is tandem with studies such as of Aderemi *et al.* (2020), Behera (2016) and Girard (2017) respectively. But the following studies such as Tochukwu *et al.* (2021), Frija *et al.* (2020), Huang and Rozelle (2018) contract the finding in this study. In the same vein, government spending on agriculture and unemployment rate had a significant positive relationship in Nigeria. This shows that expenditure on agriculture did not create employment in the country. Also, inflation rate (INF) and exchange rate (EXR) showed a positive and significant impact on unemployment except foreign direct investment (FDI) that showed a negative but significant impact unemployment in Nigeria.

## 5. Conclusion and Recommendation

In this study, an investigation has been made regarding nexus between agriculture and generated employment in Nigeria from 1990 to 2019, utilizing Dynamic Ordinary Least Squares. The summary of findings in this study could be stated as follows; agricultural value added (AVA) and unemployment rate had a positive relationship which is significant at 10% level of significance in Nigeria. Government expenditure on agriculture and unemployment rate had a significant positive relationship in Nigeria. Inflation rate (INF) and exchange rate (EXR) showed a positive and significant impact on unemployment except foreign direct. By and large, it could be submitted that agriculture did not contribute to employment generation in Nigeria. In view of the above findings, this recommendation is made for the Nigerian policy makers, revamping of agriculture via massive investment in this sub sector of the economy is urgently needed in Nigeria before it could ensure employment generation in the country.





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