

## UNEMPLOYMENT AND EDUCATIONAL ATTAINMENT IN NIGERIA

### ABSTRACT

The tragedy of jobless growth makes the increasing rate of unemployment among school leavers a cause of grave concern in Nigeria. Based on the human capital theory, this study examines the dependence of unemployment on educational attainment in Nigeria from 1990-2020 using the autoregressive bounds test approach. Data were sourced from National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN) and other secondary data sources. The study employed variables such as the primary graduation rate, secondary graduation rate, tertiary graduation rate, government expenditure on education and inflation rate. Our findings show that among other factors, government expenditure on education as well as primary, secondary and tertiary graduation rates significantly brought about a reduction in unemployment in Nigeria both in the short and long run. We therefore recommend that government should increase its budgetary allocation to the education sector, as well as monitor the utilization of such funds. Government should also sensitize the public on the importance of education both on the individual and society at large.

**Keywords:** educational attainment, government expenditure, Nigeria, school leavers, unemployment.

### 1. Introduction

Low unemployment is a desirable goal because maintaining full employment is one of the macro economic objectives of the government. Full employment involves low unemployment or zero unemployment. Economists suggest an unemployment rate of four percent is close to full employment. Thus, unemployment occurs when a person who is a participant in the labour force and who is actively searching for employment is unable to find a job. During periods of recession, an economy usually experiences high unemployment. Unemployment could be disguised unemployment and under employment. Disguised unemployment exists when part of the labour force is either left without work or is working in a redundant manner such that the workers' productivity is essentially zero, hence it is an employment that does not affect aggregate output. More so, under employment is a measure of employment and labour utilization in the economy that looks at how well the labour force is being used in terms of skills, experience and availability to work. People who are classified as underemployed include

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workers who are highly skilled but working in low-paying or low-skill jobs and part-time workers who would prefer to be full-time (National Bureau of Statistics [NBS], 2017).

**Nigeria** unemployment rate stood at 6.0% in 2011 and 10.4% in 2015. In the last quarter of 2019 and 2020, the rate of unemployment increased to 23.1 and 33.3 per cent respectively (Central Bank of Nigeria [CBN], 2020). Unemployment has been a major concern of government and their social partner throughout the region. Unemployment is a major problem among developing and developed countries of the world. The degree and extent however differ among countries. Unemployment increases the risk of being in poverty, crime rate, carriers of hard drugs, sexual crime, armed robbery, theft and so on. In the study of unemployment in Africa, Okonkwo (2005) identified three causes of unemployment; the educational system, the choice of technology which can be either **labour intensive** or **capital intensive** and inadequate attention to Agriculture.

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However, the link between educational attainment and unemployment cannot be overemphasized. Theoretically, it is believed that people with education be it primary, secondary or tertiary education, have **potentials** employment either in both formal and informal sectors. In Nigeria, education is a shared responsibility between the federal, state and local governments. The education sector is divided into three sub-sectors: primary, senior secondary and tertiary. According to the Federal Government of Nigeria (2004) on National Policy on Education, primary education covers six years of formal schooling, three years of junior secondary, three years of senior secondary and **minimum** of four years at tertiary level, depending on the course of study. Thus, education is the process of facilitating learning, or acquisition of knowledge, skills, values, morals, beliefs, habits and personal development. It is the action or process of educating or of being educated (NBS, 2015).

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In the same vein, educational attainment is a term used in reference to the highest level of education an individual has received. It does not take educational proficiency, quality or grades into account. It is believed that the level of educational attainment should help reduce the rate of unemployment since the educated would have been equipped with the requisite knowledge needed to be employed either by self, government or private organizations. According **to World Bank Development Indicator** (2020), Nigeria is still one of the poorest countries in the world and has one of the highest rates of youth unemployment in sub-Saharan Africa, despite its alleged strong economic growth.

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However, there are similarities in the trend of the employment rates within the educational level groupings, **their** concerns for policy differ. The trend shows that in 2001, 12.80 per cent of the unemployed were among those from higher education in the country. It however had its lowest unemployment rate of 7.5 per cent in 2003. In 2004 and 2005, it increased to 9.50 percent and 9.80 percent respectively. However, **the secondary** education graduates suffer more unemployment than other levels of educational attainment (NBS, 2008). The high rate of unemployment among **the secondary** school leavers are generally expected, as this category is engaged in low-skilled or part-time employment. This high rate of unemployment in this category of labour force can be linked to the non-friendly investment environment which has forced businesses to fold up and also **discouraging** new investors. As such, people could not be gainfully employed and **contributing** to the output growth of the economy. Majority of primary graduates do go into vocational training or apprenticeship, as such they are engaged and do not compound the problem of unemployment in Nigeria. This is evident from the statistics of NBS (2019), as the unemployment rate for primary school graduates stood at 3.10 in 1999, 9.4 per cent in 2016 and 19.8 percent in 2018, compared to the rate of the **unemployment** among secondary and tertiary graduates which were 9 percent for secondary graduates, 6.40 per cent for tertiary graduates in 1999. Also, in 2016 and 2018, the rate of unemployment among secondary school graduates stood at 12.1 and 21.4 percent respectively, while that of tertiary graduates in the same years stood at 21.1 and 30.8 percent respectively (NBS, 2019).

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Since 2012, the unemployment among the graduates of tertiary institutions has been higher than that of other levels of education. The reason is not far-fetched, as majority of these graduates lack entrepreneurial skills which could help them bring their ideas into reality. This is more reason why **government** emphasized the addition of entrepreneurial skills to school curricula to ease the search for white collar jobs upon graduation (National Bureau of Statistics, 2016).

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Unemployment is one of the developmental problems that face every developing countries and Nigeria is not exempted. Its impact is felt more on the youths, especially the graduates who are in search of white collar jobs. This is because the educational system of Nigeria is structured on certificate and what they can offer to the society. As of 2020, about 68 percent of the youth population in Nigeria had completed secondary education as their highest educational level, 17 percent had tertiary education level while 15.3 percent had completed primary education (NBS,

2020). This increased number of graduates in every calendar year outweighs the number of jobs available, which has caused the rate of unemployment to increase.

The issue of poor funding in the education sector is one of the problems that aggravates high unemployment rate in Nigeria. According to the UN educational, scientific and cultural organization (UNESCO) recommendation about educational funding, about 15 to 20 per cent of a country's annual budget should go to education. However, Nigeria has always fallen short of this recommendation as the allocation to education even as at 2020 was 6.7 per cent of the annual budget (World Bank, 2021).

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Policy interventions towards combating unemployment include the National Directorate of Employment (NDE) of 1986, Subsidy Reinvestment and Employment Programme (SURE-P) of 2012, the Naira-Power Programme (N-POWER) of 2016 and more recently, the Nigeria Economic Sustainability Plan of 2019, which aimed at creating jobs using labour intensive methods in key sectors including agriculture, facility maintenance, housing and direct labour interventions. We note that these policies have not helped to reduce unemployment in Nigeria, as the rates of unemployment is still high.

Several empirical studies have been carried out on this subject matter with mixed findings. For instance Abdalahi and Abolfazi (2017), Kenny (2019), and Afolayan, et al. (2019) found that educational attainment exerted negative impacts on unemployment rate in Nigeria while Ekeh (2020), and Izedonmi and Urhie (2015) established that educational attainment reduced unemployment in Nigeria. Based on these contradicting findings, the specific objectives of our paper are thus: to examine the impact of primary, secondary and tertiary educational attainments on unemployment in Nigeria, and to determine the impact of government expenditures on education on unemployment in Nigeria.

## **2. The Literature**

### **2.2 Theoretical Framework**

The human capital theory, propounded by Gray Becker (1964), establishes that education is the key to improving chances of being employable. The theory maintains that individuals and society

at large derive economic benefits from investing in people. Here, investment significantly differentiates human capital expenditures from consumption expenditures.

The human capital theory rests on **the two** basic assumptions. The first is that formal education is highly instrumental and necessary to improve the productive capacity of a population. Human capital theorists argue that an educated population is a productive population. Second, earned income reflects the **marginal productivities** of different categories of workers. Thus, the more educated one is, the more employable one will be (Becker, 1964).

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## 2.2 Empirical Literature

Samiullah (2014) examined the nexus between education and unemployment in Pakistan, using unemployment rate, literacy rate, gross school enrollment rate, **real** GDP as variables. He investigated the impact of the above mentioned explanatory variables on unemployment in case of Pakistan over the period 1981 – 2010. Using the Johanson co-integration and the vector error correction mechanism approach, the results showed that education attainment variables had strong impact in determining the employment status in Pakistan long run. Izedonmi and Urhie (2015) focused on the link between education, human capital, productivity and unemployment in Nigeria between 1988 and 2012, in their work titled **Educational Human Capital Development** and unemployment in Nigeria. The variables of the model include: primary education enrollment rate, secondary education enrollment rate, tertiary education enrollment rate, real GDP and unemployment rate. However, they employed the **granger** causality test so as to determine the causality relationship between the different education levels and unemployment in Nigeria. The results showed that primary education enrollment and unemployment had **independent** relationship, the causality between unemployment and secondary education was bi – directional, and the direction was however from tertiary education to unemployment. The OLS analysis was employed and the results revealed that tertiary education had the highest impact on unemployment as its coefficient was statistically significant. The model however explained about 95% of changes in unemployment rate in Nigeria. A careful examination of the diagnostics tests and signs as well as the explanatory variables showed that real GDP had the least impact.

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Adebayo (2017) studied the impact of education expenditure on unemployment in Nigeria between 1970 and 2015, using ordinary least square (OLS) method. The study showed that education expenditure was negative but statistically significant on unemployment rate in Nigeria. Abdalali and Abolfazi (2017) investigated the effect of educational attainment on unemployment in Indonesia between 2005 and 2013. Literacy rate, and expected years of schooling were selected as proxies for educational attainment. The study employed the ARDL technique. The results showed that there was a negative relationship between literacy rate and unemployment, but the effect of expected years of schooling, as well as, increase in mean years of schooling on unemployment was positively significant.

Using the auto regressive distributed lag ARDL approach, Adejumo (2017), conducted a quantitative analysis of the effect of educational attainment in stimulating employment in Nigeria for the period 1970–2014. **Variables** used in the study include: employment measured by unemployment rate, primary enrollment rate, secondary enrollment rate as measures of educational attainment, population growth, and inflation rate. However, it was discovered that the level of education attained was not sufficient to stimulate employment or reduce unemployment in Nigeria.

Adakoya (2018), investigated the impact of educational attainment on unemployment in Nigeria over the **periods** 1995 – 2017. The study employed the Granger causality test through a vector error correction mechanism, to determine causal relationship between educational attainment explicitly measured on tertiary graduation rate and its impact on unemployment over the period of time stated. The results indicated that there was no causality either uni-directional or bi-directional between graduation rate and unemployment. Using the Error Correction Method, Kenny (2019) studied the effect of education on unemployment volatility in Nigeria from 1981 to 2015. Unemployment rate, secondary school attainment rate, and inflation rate, were the variables used in the analysis. The results indicated that secondary school attainment rate had a negative and insignificant impact on unemployment rate.

Afolayan et al (2019), studied the role of electricity consumption and tertiary enrollment rate in reducing unemployment malaise in Nigeria between 1981 and 2017. The study employed the Johanson co-integration technique as well as the OLS technique. However, the results showed that electricity consumption negatively impacted unemployment and enrollment rate in Nigeria.

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Ekeh (2020) examined the effect of educational attainment on unemployment in Nigeria over the period 1990- 2018. The study employed the OLS technique, to determine the effect of literacy rate, school enrollment rate and graduation rate on unemployment in Nigeria. The OLS result was in contradiction with theory. All the variables had positive effect on unemployment in Nigeria. Specifically, literacy rate and school enrollment rate were statistically insignificant, while graduation rate showed significant.

## 2.4. Empirical Gap

The above literature exposes the available existing literature by different scholars and economists that tried to address the issue of unemployment in Nigeria and how educational attainment affects the level of unemployment. From the reviews, studies that focused on the impact of unemployment vis-à-vis educational attainment have always been using school enrollment, literacy rate to proxy educational attainment. Only few studies examined this impact using secondary and tertiary graduation rate. However, this study filled the gap in the literature by adding primary graduation rate which has never been included in any studies as one of the variables, since primary graduation rate forms part of educational attainment in Nigeria.

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## 3. Research Method and Procedure

### 3.1. Model specification

The essence of economic modeling is to represent the phenomenon under investigation in such a way to enable the researcher to attribute numerical values to the concept. Using the knowledge gained from the above theoretical framework, the study examined the Impact of educational attainment on unemployment in Nigeria by adopting the model as developed by Izedonmi and Urhie (2015). The model as developed by Izedonmi and Urhie (2015) is specified thus:

$$UM = f(SER, SGR, TER, TGR, INF) \quad 1$$

Where: UM = Unemployment rate, SER = Secondary school enrollment rate, SGR = Secondary school graduation rate, TER = Tertiary enrollment rate TGR = Tertiary graduation rate, INFR = Inflation rate.

However, the present study modified the above model to incorporate primary graduation rate (PGR), secondary graduation rate (SGR), tertiary graduation rate (TGR), total government

expenditure, and inflation rate as the explanatory variables, while unemployment was used as the dependent variable. Thus, the study's model is specified as:

The structural form of the model is:

$$UEM = f(PGR, SGR, TER, TGE, INFR) \quad 2$$

Where; UEM = Unemployment, PGR = Primary school graduation rate, SGR = Secondary school graduation rate, TGR = Tertiary school graduation rate, TGE = Government expenditure on education, INFR = Inflation rate.

The econometric form of the model is specified as:

$$UEM = \beta_0 + \beta_1 PGR + \beta_2 SGR + \beta_3 TER + \beta_4 TGE + \beta_5 INFR + \mu_t \quad 3$$

Where:  $\beta_0$  = Constant Term/ Parameter Intercept,  $\beta_1$  to  $\beta_5$  = Slope of the coefficients.,  $\mu_t$  = Error Term.

### 3.2. Estimation Technique and Procedure

In estimating unemployment in Nigeria, we first conducted the unit root test tests to determine whether our time series **variable** are stationary or not. In other words, we ensured that all the variables have constant mean, constant variance and constant covariance. The augmented dickey-fuller (ADF) test was used for this analysis since it adjusts for serial correlation.

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Our data analysis is based on the ARDL framework provided by Pesaran et al (2001). This procedure is adopted because it provides an alternative test for examining a long-run relationship regardless of whether the underlying variables are purely I(0) or I(1). In using the ARDL technique, we first test to determine whether the modeled variables are co-integrated, that is, whether long run relationship exists between the dependent and independent variables. Once the long run relationship or co-integration has been established, the next stage involves the estimation of the long run and short run coefficients. The **short run** coefficients are estimated using the error correction modeling which aims at reconciling the **long run** behavior of co-integrated variables with their short run responses. The econometric views (E-views) software version 10.0 was engaged for regression analysis.

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## 4. Data Presentation and Analysis

#### 4.1. Descriptive Statistics

The descriptive statistics presents the times series data and its properties. It shows the mean, median, mode, standard deviation, skewness, kurtosis, and jarque-bera as presented on Table 1.

**Table 1: Summary of Descriptive Statistics Result**

	UEM	PGR	SGR	TGR	TGE	INFR
Mean	11.93455	8.100455	20.91500	14.10727	22.65591	17.91500
Median	18.93500	8.190000	19.28000	14.06500	20.38500	16.92000
Maximum	38.28000	44.31000	39.11000	20.77000	27.24000	24.77000
Minimum	8.200000	13.13000	11.83000	7.690000	9.80000	11.35000
Std. Dev.	4.487705	9.34319	3.553178	2.338356	6.080068	0.893832
Skewness	0.620650	0.61537	1.200361	-0.011666	0.122219	0.459506
Kurtosis	1.698340	2.057715	1.251963	1.196827	1.653694	1.803749
JarqueBer	8.495839	5.269959	6.719971	2.980981	1.716267	1.366379
Probabilit	0.001350	0.002720	0.034736	0.025262	0.023953	0.005004
Sum	460.5600	178.2100	460.1300	310.3600	1818.430	394.1300
Sum Sq.						
Dev.	1177.380	3199.443	901.8270	598.4588	1731.400	175.8596
Observati						
ons	32	32	32	32	32	32

Table 1 shows the result of the descriptive statistics which examined the normality of the non-standardized variables of the study and the time series properties within the period under study. The mean values of all the variables showed the average values of the variables over the years which incidentally lied between the maximum and minimum values. The values of the standard deviation revealed the measure of variability of the variables from their respective long term mean values every year.

Skewness measures the degree of asymmetry of the series. Normal skewness implies that the distribution is symmetric around its mean and the skewness value is approximately zero (0); positive skewness has long right tail and implies higher values than the sample mean while negative skewness has long left tail with lower values than the sample mean. Thus from Table 1, government expenditure on education (TGE) and inflation rate (INFR) approximate zero, implying that they are symmetric around their respective mean values. Tertiary graduation rate (TGR) shows negative skewness implying lower value than the sample mean values. Secondary graduation rate (SGR), primary graduation rate (PGR), and unemployment rate (UEM) show positive skewness implying higher values than their sample mean values.

Kurtosis measures the peakness or flatness of the distribution of the series. A distribution with a value of approximately 3 is termed mesokurtic distribution and it suggests a normal distribution; a value higher than 3 is termed leptokurtic (positive kurtosis), suggesting that the distribution is a peaked-curve, having more higher values than the sample mean and a value smaller than 3 is termed platykurtic (negative kurtosis), suggesting that the distribution is a flatted-curve, having more lower values than the sample mean. Thus, from the table, all variables are platykurtic, having lower values than their sample mean values.

The Jarque-Bera test matches the skewness and kurtosis of the data to see if it matches a normal distribution. From the report, the probability of the Jarque-Bera test statistics for all the variables are significant, indicating the normality of these distributions.

#### 4.2. Unit Root Test (Stationarity Test)

We tested for stationarity using the augmented dickey-fuller (ADF) tests. The ADF test was done with the null hypothesis of non-stationarity of data and the result of the ADF unit root test is presented on Table 2.

**Table 2: Summary of ADF Unit Root Test Results**

Variables	ADF Statistic @ Level	ADF Critical Value @ 0.05 Level	ADF Statistic @ 1 <sup>st</sup> Difference	ADF Critical Value @ 0.05 Level	Order of Integration
UEM	-0.646724	1.958088	-2.950604	-1.959071	I(1)
PGR	-0.86343	1.958088	-8.861548	-1.960171	I(1)
SGR	-1.219893	1.958088	-10.52314	-1.959071	I(1)
TGR	-0.206893	1.958088	-3.237705	-1.959071	I(1)
TGE	0.216556	1.958088	-4.141190	-1.960171	I(1)
INFR	-1.147305	1.958088	-3.579583	-1.959071	I(1)

Since the decision rule is to reject the null hypothesis if the ADF statistic value exceeds the critical value, evidence from Table 2 shows that none of the variables was stationary at that level but at first difference when their ADF statistics became greater than the critical values, at 5%

level of significance. Therefore, we conclude that all variables were stationary at their first difference (integrated of order one). This leads to the rejection of the null hypothesis that the model has a unit root.

### 4.3 Cointegration Test

The aim of the cointegration test is to determine if some set of stationary time series variables have long-run equilibrium relationships or not. Thus, when cointegration is established, regression can proceed without generating spurious results. For the cointegration test, we engaged the ARDL bound testing approach and the results are reported on Table 3.

**Table 3: ARDL Bound Test Results**

Test Statistic	Value	Sig.	I(0)	I(1)
F-statistic	7.187477	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

On Table 3, the value of the F-statistic which shows the joint significance of the lagged level variables is 7.187477 and is significantly greater than the upper bond I(1)) at 5% level of significance. Therefore, we reject the null hypothesis of no cointegration among the variables and conclude that there exists a long-run relationship between unemployment and its explanatory variables. This means that the study can proceed in estimating the long-run coefficients based on the ARDL model.

### 4.5 Evaluation of Long Run and Short Run Estimates

Having verified the existence of long-run relationship among the study model, the study therefore subjects the model to auto-regression distributed lag (ARDL) models, to generate the coefficients of the long run relation of the regression model. The estimated long-run coefficients are summarized in Tables 4.

**Table 4: Summary of Long Run Coefficients**

Dependent Variable: UEM  
Method: ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PGR	-1.223176	0.353394	-5.434057	0.0006
SGR	-1.253555	0.092934	-4.728331	0.0069
TGR	-4.233081	0.308069	-5.021749	0.0021
TGE	-0.312873	0.111619	-3.907146	0.0125
INFR	-3.207403	0.729919	-4.394192	0.0034
C	15.43815	4.029279	8.831491	0.0000

Table 4 presents the estimated long run coefficients for the specified model. The result shows that all the explanatory variables conform to theoretical expectations and are statistically significant at 5% level of significance.

Specifically, the long run intercept coefficient is 15.43815, implying that holding constant the effects of the modeled regressors, unemployment rate in Nigeria will on the average, have a long run value of 15.43815%. The coefficient of primary graduation rate (PGR) is -1.223176, implying that 1% increase in graduation rate of primary school pupils from Nigeria, on the average, will lead to about 1.22% decrease in Nigeria's unemployment rate in the long run. Thus, primary graduation rate exerts negative effect on unemployment rate in Nigeria. The long run partial regression coefficient of secondary school graduation rate (SGR) is -1.253555, implying that in the long run, 1% increase in graduation rate of secondary school, on the average, will bring about 1.25% decrease in unemployment rate. Thus, the secondary school graduation rate exerts negative effect on unemployment rate in the long run in Nigeria.

Similarly, -4.233081 is the long-run partial regression coefficient of tertiary graduation rate (TGR) indicating that on the average, 1% increase in the tertiary graduation rate, will lead to about 4.23% decrease in unemployment rate in Nigeria. The long run partial regression coefficient of government education expenditure of -0.312873 indicates that a 1% increase in government expenditure on education, on average, will bring about 0.3% decrease in unemployment rate in the long run in Nigeria.

Finally the long run partial regression coefficients of inflation rate which stood at -3.207403 suggests that, on the average, 1% increase in inflation rate, will in the long run, bring about a decrease in Nigeria's unemployment rate by 3.2%.

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**Table 5: Summary of Short Run Coefficients (Error Correction Regression)**

**ARDL Error Correction Regression**

Dependent Variable: D(UEM)

Sample: 1990 2020

Included observations: 32

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UEM(-1))	1.824297	0.194544	9.377312	0.0026
D(PGR)	-1.423176	0.311534	-6.209288	0.0181
D(SGR)	-0.253555	0.034536	-7.341651	0.0052
D(TGR)	-1.233081	0.105081	-11.73457	0.0013
D(TGE)	-0.212873	0.030007	-7.094139	0.0058
D(INFR)	-1.117403	0.211561	-15.16062	0.0006
CointEq(-1)*	-0.514613	0.326098	-13.84435	0.0008
R-squared	0.963448			
Adjusted R-squared	0.934206			
F-statistic	7.187477			
Durbin-Watson stat	1.767425			

The aim of error correction modeling is to reconcile the long-run behaviour of cointegrated variables with their short-run responses. From Table 5, we observe that unemployment rate has a positive intercept value of 1.824297. This means that if all the variables are held constant or fixed (zero), unemployment will be valued at 1.83%. The result further showed that all the explanatory variables have negative impacts on unemployment rate in the short run in Nigeria, with the coefficients of -1.423176, -0.253555, -1.233081, -0.212873, -1.117403 respectively. Thus, 1% increase in primary graduation rate, secondary graduation rate, tertiary graduation rate, government education expenditure, and inflation rate, will on the average, decrease unemployment in the short run in Nigeria by 1.4%, 0.3%, 1.2%, 0.2%, 1.1% respectively. The result also shows that the error correction term satisfies a priori expectation as it assumed a value

between 0 and 1, which is correctly signed. Its co-efficient is -0.514613, suggesting that about 51% of the disequilibrium in the unemployment rate will be corrected for, annually. From the regression analysis, it is observed that all the variables conform to the a priori expectation of the study.

Also, from the ARDL regression result, the various tests ( $R^2$ , Adjusted  $R^2$ , F-statistic, and p-value) of significance on the model showed good results. The  $R^2$  of 0.96 indicated high explanatory power of the independent variables. The adjusted  $R^2$  value of the model also supported this fact with 0.93. F-statistic (7.187477) which measures the overall significance of the model suggests that all estimated regression models are jointly statistically significant, since the F-stat calculated is greater than F-stat tabulated.

Using Durbin-Watson (DW) statistics which the study obtains from the regression result in table 6, it is observed that DW statistic is 1.767425 or approximately 2. This implies that there is no autocorrelation since  $d^*$  is approximately equal to two. 1.767425 tends towards two more than it tends towards zero. Therefore, the variables in the models are not autocorrelated and that the model is reliable for predications.

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### Test for Heteroscedasticity

This test is conducted to see whether the error variance of each observation is constant or not.

**Table 6: Heteroskedasticity Test: White**

F-statistic	1.175513	Prob. F(15,3)	0.5123
Obs*R-squared	16.23739	Prob. Chi-Square(15)	0.3665
Scaled explained SS	0.366676	Prob. Chi-Square(15)	1.0000

The decision rule is to accept the null hypothesis that there is homoscedasticity (that is, no heteroscedasticity) in the residuals if the probability of the calculated F-test statistic (F) is greater than the 0.05 level of significance chosen in the study. Hence,  $P(F) = 0.5123$ . From the result on Table 6, the probability F statistic is greater than 0.05 per cent level of significance. Therefore, the study accepted the null hypothesis that the model has no heteroscedasticity in the residuals and therefore, the data is reliable for predication.

## 5. Conclusion and Recommendations

The study examined the dependency of unemployment on educational attainment in Nigeria from 1990-2020 using the auto-regressive distributed lag (ARDL) model. All data used are secondary data obtained from the National Bureau of Statistics and World Bank annual publications. Data were analyzed and results presented with the help of E-views software version 10.0 and the parameter estimates were subjected to some economic a priori, statistical and econometric tests.

Comment [FL27]: Were presented

In executing the study, we determined the stationarity of the variables using the ADF Statistic and it was discovered that the variables were stationary in their first difference  $I(1)$ . The study using ARDL bounds test, found that there is a long run and short run relationship between unemployment rate and the variables used in the study.

From the result of the ARDL, the study revealed that all the modeled explanatory variables have a negative effect on unemployment both in the short and long runs in Nigeria. Thus, an increase in rate of graduation in primary school level, secondary school level, tertiary education level, as well as, increase in government education expenditure, and inflation rate, will all bring about a decrease in unemployment rate in the short run and long runs in Nigeria. The results from the statistical and Econometric evaluation show that the estimated parameters of the model were both statistically reliable and econometrically justified.

Based on these findings, the following recommendations were made:

1. The Nigerian government should invest in human infrastructure in line with the current demands of society. This will make the people more employable, as well as stand the chance of competing even in the international labour market.
2. The government should sensitize the public especially the illiterates domicile in the rural area, on the importance of education both on the individual and the society at large. This will help boost the enrollment and attainment of educational qualifications within the economy, thus creating room for higher employment figures.
3. The Nigerian government should at all levels, increase its budgetary allocation to the education sector, as well as monitor the utilization of such funds, so as ensure that its negative effect on the unemployment rate will be achieved.

4. Finally, though inflation has a negative impact on unemployment, the government should only but allow for an inflation rate that will help control unemployment, owing to its negative implication on an economy if too high.

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Comment [FL28]: unemployment

Comment [FL29]: Country name should start with capital letter

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