

Relationship Between Educational Expenditure and Unemployment Rate on Economic Growth in Nigeria

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Abstract:

This paper work on relationship between Educational Expenditure and Unemployment rate on Economic Growth in Nigeria using a yearly data from 1970 to 2017 years from the website of CBN and NBS. The aim of the paper is to investigate individual relationship with respect to Economic Growth and also considered the multiple regressions with respect to Economic Growth. From the descriptive statistic, it shows that the distributions of the dataset are positively skewness to the right and the distribution of the variables is exhibit high kurtosis which evidence of leptokurtic. The Jarque-Bera statistic shows very high values with it probability values indicating that the distribution on Gross Domestic Product (GDP), Educational Expenditure (EE) and Unemployment Rate (UR) are not normally distribution. The result of the correlation shows that there is a positive relationship between educational expenditure, unemployment rate and Gross Domestic product in Nigeria. The regression results show that there is a significant relation between GDP and EE, we therefore reject the null hypothesis that conclude that there is relationship. The coefficient of EE is obtained to be 1.15E-05 which is positive and the probability value is significant meaning that Educational expenditure has great impact on economic growth that a unit increase in GDP will increase the output of educational expenditure to a positive increase and also between EE and UR on Economic Growth shows that both the independent variables has positive impact on the dependent variable (GDP), we therefore reject the null hypothesis and conclude that there is a significant relationship between GDP and EE and UR. The coefficient of EE is obtained to be 1.05E-05 and UR is 717.6737. This result shows that an increase in GDP will increase EE in a small significant increases while that of UR, will increase unemployment rate to a high significant amount of 718%.

Keywords:

Educational Expenditure, Unemployment, Regression, Correlation

1. Introduction

The structure of Nigerian expenditure can broadly be categorized into capital and recurrent expenditure. The recurrent expenditure are government expenses on administration such as wages, salaries, interest on loans, maintenance etc., whereas expenses on capital projects like roads, airports, education, telecommunication, electricity generation etc., are referred to as capital expenditure. One of the main purposes of government spending is to provide infrastructural facilities [1].

Furthermore, a major controversy among many analysts and policy maker concerns on the objectives of educational development. Some however suggest that education should be given its own stand, as a means of enriching individual knowledge and developing their full potential without limitation of obstruction because education plays a significant role in the creation and improvement of human capital which is relevance and very importance to economic growth and development of the Nation and his people.

Moreover, education has a correlation to unemployment rate to any given nation or countries of the world that is why one of the greatest challenges facing the Nigeria economy is also unemployment rate which has maintained a rising trend over the years. The total labor force in Nigeria is made up of all persons aged 15-64 years excluding students, home keepers, retired persons and stay-at-home to work or not interested. Unemployment in Nigeria is defined as the proportion of labour force that was available for work but did not work in the week preceding the survey period for at least 39hours. Official figures from the Bureau of Statistics puts the figure of unemployed at 19.70 per cent, about 30 million, but this figure still did not include about 40 million other Nigerian youths captured in World Bank statistics in 2009. By implication, it means that if Nigeria's population is 140 million, then 50 percent of Nigerians are unemployed.

In addition, one can tell that an increase in educational expenditure reduced unemployment rate. According to the official figure from bureau of statistics of unemployment in Nigeria, one can conclude that both are associated as twice variable that cannot be separated but need to examine critically in order to come out with a solid result. That is why this paper will examine the educational expenditure, unemployment rate on the Economy growth of Nigeria and see the relationship of both variables on economic growth.

2. Conceptual Framework

2.1. Education

[2] Defined education as the process for the development of an independent and integrated personality. It entails training and acquisition of skills, knowledge, attitudes and values needed by an individual to be responsible. It also gives him room to contribute one's own quota to the growth of the society of which he is a member. Education is therefore seen as a sound economic investment that raises the quality of life, improve health and productivity in market and non-market work, increase individual's access to paid employment and often facilitate social and political participation [3] According to [3] Education is the conscious effort to prepare students through mentoring, teaching and training for their role in the future. [4] Suggests it is a process of inviting truth and possibility. It can be defined as the wise, hopeful and respectful cultivation of learning undertaken in the belief that all should have the chance to share in life.

[5] Argue that education is capable of enhancing the productive capacity of women and make them better informed about the value of health and life expectancy of their children and create incentives for reducing the family size to the level the nation would be able to manage. Besides, education reduces inflation by the provision of more skilled workers to alleviate shortages. It also induces reduction in unemployment of certain groups and alleviates poverty by increasing the skills of individuals [6]. [7] Posits that for impact to be made on the rate of growth in the economy there is need for human capital development and human capital formation and this can be achieved through the development of education sector of the economy.

2.2. Public Education Expenditure

Public education expenditure refers to expenditures on schools, universities and other public institutions delivering or supporting educational services. At the tertiary, spending on research and development can also be significant and included in public education expenditures to the extent that the research is performed by educational institutions. In principles, public expenditure on education includes both direct expenditure on educational institutions and educational related public subsidies to households administered by educational institutions.

2.3. Education Policies in Nigeria

The education sector is guided by the national policy on education and several coordinating Mechanism have been put in place to ensure that the highest standards are maintained in curriculum, infrastructure and manpower development. In Nigeria education policy at independence was aimed at using the available schools to develop manpower for economic growth and development.

2.4. Unemployment

Unemployment reflects someone who is not working but is searching for work. Thus the unemployment rate measure people looking for work. Unemployment is defined by the Bureau of Labor Statistics as people who do not have a job, have actively looked for work in the past four weeks, and are currently available for work. Also, people who were temporarily laid off and were waiting to be called back to that job are included in the unemployment statistics. Those who have not looked for work within the past four weeks are no longer counted among the unemployed.

2.5. Unemployment in Nigeria

Nigeria since the attainment of political independence in 1960 has undergone various fundamental structural changes. These domestic structural shifts have however not resulted in any significant and sustainable economic growth and development. Available data show that the Nigerian economy grew relatively in the greater parts of the 1970s, with respect to the oil boom of the 1970s; the outrageous profits from the oil boom encouraged wasteful expenditures in the public sector dislocation of the employment factor and also distorted the revenue bases for policy planning. According to the Central Bank of Nigeria [8] as reported by [10], the national unemployment rate, rose from 4.3 percent in 1970 to 6.4 percent in 1980. The high rate of unemployment observed in 1980 was attributed largely to depression in the Nigerian economy during the late 1970s.

2.6. Economic Growth

The term Economic growth is described as the positive and sustained increase in group products (that are bought and sold) and services produced in a (process of people making, selling, and buying things) within a given time period. When measured clever humor with the population of a given country, then Economic or money-based growth can be stated in terms of per person income according to which the group production of products (that are bought and sold) and services in a given year is divided by the population of the country in the given period. Economic growth can also be stated in (in name only/very small amount) or in real terms. Because of this, when the increase overall level of products (that are bought and sold) and services is (lowered/flattened from losing air) by the rate of inflation, we have the real money-based growth, otherwise when measured without (lowering/flattening from losing air); it is called Economic growth.

2.7. Unemployment and Economic Growth

According to [11] the simple, but wrong argument is: there can be no negative relationship between economic growth and unemployment, because GDP and unemployment are both rising in the long run. It is evident that employment will only increase if GDP is rising faster than productivity. Other things being equal, the greater the amount of goods and services produced, the greater the labor required for production; because economic growth and employment go hand in hand. But there is also the notion that higher productivity could mean fewer jobs.

2.8. Review of Related Studies

Investigate the impact of government capital expenditures on economic growth in Nigeria during 1970 and 2012. A multiple regression model based on a modified endogenous growth framework was utilized to capture the interrelationships among capital expenditures on agriculture, education, health economic infrastructure and economic growth. Drawing on error correction and cointegration specifications, an OLS technique was used to analyze annual time series. According to their result shows that the impacts were negative and insignificant. Expenditures on economic infrastructure had significant positive impacts on growth of 0.28 in the short-run and 0.32 in the long-run. Moreover, these expenditures do not crowd-out private investment. These results indicate that government expenditure on human capital development through the social services sector tended to promote economic growth unlike that on Agriculture [12].

Investigated the long run relationship between education and economic growth in Nepal between 1995 and 2013 through application of Johansen Cointegration technique and OLS. The results from OLS show that secondary and higher education contributes significantly to the Real GDP Per Capita in Nepal. The elementary education also positively influences economic growth but the results are statistically less significant [13].

Public expenditure on educational infrastructural facilities and economic growth in Nigeria based on time series data on variables considered relevant indicators of economic growth and public expenditure. A public expenditure model was constructed and tested using the ordinary least squares (OLS) technique. A dummy variable was introduced to test the expenditure variability between regime changes (military and civilian) to ascertain which regime allocated more funds to the educational sector in Nigeria during the period under the study. Data for the study was obtained from the Central Bank of Nigeria, NBS and the World Bank. Results of the

analysis showed that public expenditure on education has a significant impact on economic growth. But expenditure on education is different between regimes but not significant. Consequently, in model (1), Adult Enrolment ratio (AER) influenced Real Gross Domestic Product (RGDP) [14].

The impact of education expenditure on economic growth as a means of achieving the desired socio-economic change needed in Nigeria. The study uses time series data from 1981 to 2012. The Johansen's co-integration analysis and ordinary least square (OLS) econometric techniques were used to analyze the relationship between gross domestic product (GDP) and recurrent education expenditure. Findings indicate that though a positive relationship subsists between education expenditure and economic growth [15].

The impact of government expenditure on economic growth in Nigeria. They investigate the effects of public expenditure in education on economic growth in Nigeria over a period from 1977 to 2012. The objective of their study was to determine the effect of public expenditure on economic growth in Nigeria using Error Correction Model (ECM). Their results indicate that Total Expenditure Education is highly and statistically significant and have positive relationship on economic growth in Nigeria in the long run. The result has an important implication in terms of policy and budget implementation in Nigerian [16].

Examines the impact of education on economic growth using primary and secondary annual data ranging from 1985 to 2007. The findings show that only recurrent expenditure has significant effects on economic growth as the academic qualifications of teachers also have significant impact on students' academic performance. Among other, this paper recommends that the government should increase its expenditure on education especially, the capital expenditure, while a good salary scheme with other incentives for teachers' motivation should be implemented [17].

Examine unemployment and Nigerian Economic growth from the period of 1985 to 2009. They look into the relationship between unemployment and growth in Nigeria in that period. And one major findings of the study is that the economy grew by 55.5 percent between 1991 and 2006; and the population increased by 36.4 percent. All things been equal, this should have resulted to a decrease in the rate of unemployment but rather, unemployment increased by 74.8 percent [18].

An empirical investigation on the relationship between investment in education and economic growth in Nigeria, using annual time series data from 1977 to 2007. The paper employs Johansen co-integration technique and error correction methodology. Empirical results indicate that there is indeed, a long-run relationship between investment in education and economic growth. All the variables used including gross fixed capital formation and educational capital are statistically significant (except labour force) in the Nigerian economy. The findings have a strong implication on educational policy in Nigeria [19].

Investigate education expenditure trend, high education student enrolment and linkage with unemployment and economic growth in Nigeria. Data for the study came from CBN annual reports and statement accounts. The results show that government funding is unstable and unpredictable [20].

The relationship between expenditures on education and health, and economic growth. The study estimated a parsimonious error correction model and found that

expenditures on education impacts positively on economic growth. The study recommended that more resources should be channeled towards the level of education where the benefits are higher for the individual and the society at large. The study did not investigate the direction of the link between educational expenditures and economic growth. Investigate the impact of government educational expenditure on economic growth. Their result showed a statistically significant positive relationship between economic growth and recurrent expenditure on education while the capital expenditure was wrongly signed and not significant in its contributions.[20]. The determinants of federal government expenditures in the education sector in Nigeria using the ordinary least squares (OLS) methods. The study revealed that the trend in education expenditure in Nigeria is unstable which reflects the instability in government earning. Government revenue was the only significant determinant of education expenditures as revealed by the results of the regression. [20]

3. Methodology

3.1. Data for the Study

The data were sourced from the Central Bank of Nigeria Bulletin (CBN) of the Department of Statistics [21-23] and National Bureau of statistics [24] from the period of 1970 to 2017 years. The GDP and the Educational Expenditure is measure in Naira while the Unemployment rate is measure as number of unemployed person per labour

3.2. Analysis Procedure

3.2.1. Simple Linear Regression

$$y = \beta_0 + \beta_1 x_1 + \varepsilon \quad (1)$$

Where β_0, β_1 are regression coefficients (unknown model parameters), and ε is the error due to variability in the observed responses. We estimate them by the least squares method. When we do this we get the function:

$$\beta_0 = \frac{\sum Y_i - b_1 \sum X_i}{n} \quad (2)$$

$$\beta_1 = \frac{n \sum X_i Y_i - \sum X_i \sum Y_i}{n \sum X_i^2 - (\sum X_i)^2} \quad (3)$$

3.2.2. Multiple Regression Model

The formal model for multiple regression is:

$$Y_i = \beta_0 + \beta_1 z_{i1} + \beta_2 z_{i2} + \varepsilon_i, \quad i = 1, \dots, n, \quad (4)$$

Where the error terms are assumed to have the following properties:

1. $E(\varepsilon_i) = 0$;
2. $Var(\varepsilon_i) = \sigma^2$;
3. $Cov(\varepsilon_i, \varepsilon_j) = 0, i \neq j$;

The above data can be represented as the matrix form.

Let

$$Y = \begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{bmatrix}, Z = \begin{bmatrix} 1 & z_{11} & \cdots & z_{1r} \\ 1 & z_{21} & \cdots & z_{2r} \\ \vdots & \vdots & \ddots & \vdots \\ 1 & z_{n1} & \cdots & z_{nr} \end{bmatrix}, \varepsilon = \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{bmatrix}, \beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_r \end{bmatrix} \quad (5)$$

Then,

$$Y = \begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{bmatrix} = \begin{bmatrix} \beta_0 + \beta_1 z_{11} + \cdots + \beta_r z_{1r} + \varepsilon_1 \\ \beta_0 + \beta_1 z_{21} + \cdots + \beta_r z_{2r} + \varepsilon_2 \\ \vdots \\ \beta_0 + \beta_1 z_{n1} + \cdots + \beta_r z_{nr} + \varepsilon_n \end{bmatrix} = \begin{bmatrix} \beta_0 + \beta_1 z_{11} + \cdots + \beta_r z_{1r} \\ \beta_0 + \beta_1 z_{21} + \cdots + \beta_r z_{2r} \\ \vdots \\ \beta_0 + \beta_1 z_{n1} + \cdots + \beta_r z_{nr} \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{bmatrix} =$$

$$\begin{bmatrix} 1 & z_{11} & \cdots & z_{1r} \\ 1 & z_{21} & \cdots & z_{2r} \\ \vdots & \vdots & \ddots & \vdots \\ 1 & z_{n1} & \cdots & z_{nr} \end{bmatrix} \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_r \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{bmatrix} = Z\beta + \varepsilon \quad (6)$$

Where the error terms become

1. $E(\varepsilon) = 0$;
2. $Cov(\varepsilon) = E(\varepsilon \varepsilon^t) = \sigma^2 I$;

3.2.3. Jarque-Bera Test for normality

Jarque-Bera test is the commonly used diagnostic statistic to test for normality of the residuals.. The test statistic is computed as:

$$JB = \frac{N - k}{6} \left[S^2 + \frac{(K - 3)^2}{4} \right] \quad (7)$$

is approximately χ^2_2 . S is the skewness and K is the kurtosis (Agboola, 2015)

$K = \frac{\mu_4}{\mu_2^2} - 3 = \frac{\mu_4}{\sigma^4} - 3$, if $K < 0$, platykurtic, $K > 0$, excess kurtosis, leptokurtic and

$K = 0$, mesokurtic. We reject the null hypothesis of normality if the Jarque-Bera statistic exceeds the corresponding critical value.

4. Results and Discussion

4.1. Analysis of Data Variable

From the empirical results in table 1, it shows that the distributions of the dataset are positively skewness to the right and the distribution of the variables is exhibit high kurtosis which evidence of leptokurtic. The Jarque-Bera statistic shows very high values with it probability values indicating that the distribution on GDP, EE and UR are not normally distribution.

Table 1. Descriptive Statistic on GDP, EE and UR.

	GDP	EE	UR
Mean	11789.18	1.38E+09	7.897917
Std. Dev.	19579.66	1.43E+09	5.721125
Skewness	1.726006	1.207791	0.943082
Kurtosis	4.791226	3.092697	3.010917
Jarque-Bera	30.24976	11.68726	7.115466
Probability	0.000000	0.002898	0.028503
Sum	565880.5	6.64E+10	379.1000
Observations	48	48	48

Table 2. Correlation between Educational Expenditure, unemployment rate and GDP.

Correlation	EDU	UR	GDP
EDU	1.000000		
UR	0.446710	1.000000	
GDP	0.858793	0.551488	1.000000

Table 2 shows the correlation between Educational expenditure, unemployment and Gross Domestic Product. From the result shows the correlation between educational expenditure and unemployment rate with the correlation statistic $r=0.446710$ indicating that there is a positive correlation between them but is not high while that of education and GDP shows a clear evidence of highly positive correlation between them with $r=0.858793$. In conclusion to this association, it shows clearly that there is a positive relationship between educational expenditure, unemployment rate and Gross Domestic product in Nigeria.

Table 3. Regression Analysis between GDP and EE.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EDU	1.18E-05	1.04E-06	11.36904	0.0000
C	-4510.300	2048.732	-2.201508	0.0328
R-squared	0.737525	Mean dependent var		11789.18
Adjusted R-squared	0.731819	S.D. dependent var		19579.66
S.E. of regression	10139.55	Akaike info criterion		21.32705
Sum squared resid	4.73E+09	Schwarz criterion		21.40502
Log likelihood	-509.8492	Hannan-Quinn criter.		21.35651
F-statistic	129.2550	Durbin-Watson stat		0.304075
Prob(F-statistic)	0.000000			

Table 3 above, shows the relationship between Gross Domestic Product (GDP) and Educational Expenditure (EE). From the results it shows that there is a significant relation between GDP and EE, we therefore reject the null hypothesis that conclude that there is relationship. The coefficient of EE is obtained to be 1.15E-05 which is positive and the probability value is significant meaning that Educational expenditure has great impact on economic growth that a unit increase in GDP will increase the output of educational expenditure to a positive increase. The R-square shows 74% of coefficient of determination of important of the independent variable to the dependent variable.

Table 4 shows the relationship between Gross Domestic Product (GDP) and Educational Expenditure (EE and Unemployment rate). From the results it shows that both the independent variables has positive impact on the dependent variable (GDP),

we therefore reject the null hypothesis and conclude that there is a significant relationship between GDP and EE and UR. The coefficient of EE is obtained to be 1.05E-05 and UR is 717.6737. This result shows that an increase in GDP will increase EE in a small significant increases while that of UR, will increase unemployment rate to a high significant amount of 718%. The R-square for both independent variables shows 77% of coefficient of determination of important of the independent variable to the dependent variable.

Table 4. Regression Analysis between GDP, EE and UR.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EDU	1.05E-05	1.09E-06	9.632202	0.0000
UR	717.6737	271.8478	2.639984	0.0114
C	-8400.499	2426.228	-3.462369	0.0012
R-squared	0.772725	Mean dependent var		11789.18
Adjusted R-squared	0.762624	S.D. dependent var		19579.66
S.E. of regression	9539.451	Akaike info criterion		21.22472
Sum squared resid	4.10E+09	Schwarz criterion		21.34167
Log likelihood	-506.3933	Hannan-Quinn criter.		21.26892
F-statistic	76.49911	Durbin-Watson stat		0.377169
Prob(F-statistic)	0.000000			

5. Conclusions

From the descriptive statistic, shows the respective statistic of the three variables such as the mean, Standard Deviation (STD), skewness, kurtosis, Jarque-Bera (JB), Probability Value (P-Value) and sum. From the initial result of the data set in Table 1; GDP gives the following results of 11789.18, 1.726006, 4.791226, 30.24976 and 0.0000 which represent the mean, STD, skewness, kurtosis, JB and P-value respectively. The GDP results shows that the distribution of the is positively skewed with high kurtosis value of 4.791226 that is it is leptokurtic and the p-values is less than 1%, 5% which means that the distributions of GDP is not normally distributed. The EE gives 1.38E+09 of mean, 1.43E+09 of STD, 1.207791 of skewness, 3.092697 of kurtosis, 11.68726 of JB and 0.002808 of p-values meaning that the distribution is positively skewed with high kurtosis and the distribution of EE is not normally distributed also the result of UR gives the value of 7.897917 for mean, 5.721125 for STD, 0.943082 for skewness, 3.010917 for kurtosis, 7.115466 for JB and 0.028503 for p-values, meaning that the descriptive statistic for UR is that the distribution is positive and leptokurtic and the distribution is not normally distributed since the p-value is less than 5% confident interval (CI).

The hypothesis one showed that there is a significant relation between GDP and EE, we therefore reject the null hypothesis that conclude that there is relationship. The coefficient of EE is obtained to be 1.15E-05 which is positive and the probability value is significant meaning that Educational expenditure has great impact on economic growth that a unit increase in GDP will increase the output of educational expenditure to a positive increase.

Null hypothesis two showed that there is a significant relationship between GDP and EE and UR. The coefficient of EE is obtained to be 1.05E-05 and UR is 717.6737. This result shows that an increase in GDP will increase EE in a small significant

increases while that of UR, will increase unemployment rate to a high significant amount of 718%.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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