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THE EFFICIENCY OF EDUCATION EXPENDITURE IN NIGERIA

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Abstract:
This study empirically probes the efficiency of education expenditure in Nigeria from 1990 to 2018. This study was specifically carried out to examine the impact of education expenditure on economic growth, human capital development and level of literacy rate in Nigeria. The study employed Augmented Dickey-Fuller (ADF) test, ARDL bounds cointegration test, and the short-run diagnostics and stability for ARDL model in the analysis. The research findings probe that education expenditure had significantly negative impact on economic growth in Nigeria. Also, education expenditure has significant positive impact on human capital development in Nigeria. Finally, education expenditure has positive but insignificant impact on literacy rate in Nigeria. Base on the findings, Government should constantly review an upward budgetary allocation to education sector in order to achieve a sustainable economic growth and reduced the level of literacy rate in Nigeria.

Keywords: education expenditure, economic growth, human capital development, literacy rate

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1. Introduction

Education plays a vital role in human capital formation. It raises the productivity and efficiency of individuals and thus produces skilled manpower that is capable of leading the economy towards the path of sustainable economic development (Zaman, 2008). Moreover, education is expected to act positively towards world economic development and poverty alleviation, both of which are the priorities of the world community. An investment in human capital, especially in education allows each person to contribute to their society in a productive way. It becomes an important factor of an economy's capability to achieve high level of growth with low unemployment, high wages and strong social unity. Therefore, along with elements such as low unemployment and balance of payments equilibrium, education is an important issue that each country's government deals with and strives to improve.

However, in many countries in Africa today, formal education is in a state of crisis. While curricular reform countries to serve as an ongoing source of public policy debate, African leaders are confronting increasing difficulty in allocating educational resources to meet present and future levels of demand. The paralysis that has been unfolding is one characterized basically by education's rising claim on public sector resources against a backdrop of widespread poor economic growth, mounting international debt, and rapidly growing populations whose demand for education cannot be met readily by traditional means. There has been a positive relationship between per capita GDP and education's share of GDP. Wide disparities suggest that since education must compete against other claims for investment resources, how efficiently education is delivered may be as important as the level of resources. Within this context, we ask what options are available to respond to Africa's growing educational demand, how can they be managed, and what role can these options play in promoting accelerated economic growth and development?

Education is both a private and social investment that is shared by individual students, their families, employers, government and other groups including international agencies. The sharing arrangement varies considerably from country both in the proportion of public and private funds allocated to education and in the mechanism by which the cost of education is funded. It thus yields direct and indirect benefits both to individuals and to the society. The most obvious direct benefit of education to individuals is higher lifetime earnings and for the society; is higher productivity of educated workers and the additional contribution to national income over their entire working lives (Psacharopoulos, 1994).

A major controversy among analysts and policy makers concerns the objectives of educational development. Some have suggested that education should be provided for its own sake, as a means of enriching individual's knowledge and developing their full personality. This concept of education has continually influenced policies in some advanced countries of the world. Others hold that education should seek to prepare people to perform functions that are essential for the transformation of their environment.

The two points of view can be considered in terms of regarding education as a consumer good or as a capital good. The notion of education as a capital good is rooted in the concept of human capital, which attaches high premium to human skills as a factor of production in the development process. A corollary of this is that human skills or productivity is just as important input in the process of development as finance, natural wealth and physical plant. Because education plays a most important role in the creation and improvement of human capital, its relevance and importance to economic growth and development are now well recognized in development planning. Experiences of developing countries during the past decades have indicated that shortage of talents and skills needed for development can decisively retard economic progress.

1.1 Statement of Problem

The rapid expansion of education system over the last three decades, compounded by the economic crisis and fiscal stringency due to over dependent on oil has left both the lower and higher education institutions in Nigeria short of funds for their operations in relation to the demand imposed on them.

The idea that education is a form of investment in human capital is one of the most important developments in economics in recent decades and it has considerable impact on educational planning both in developed and developing countries. For both governments and individuals, the choice between different ways of investing resources rests to a large extent on an evaluation of the costs and benefits associated with the investments.

In Nigeria, the decline in the quality of education at all levels has become a fact of national life. Indeed, the most significant event in the sector in the recent past has been the continuing crisis besetting the educational system. This crisis is rooted in the deteriorating conditions within the citadels of learning, in respect to teaching facilities and other infrastructural facilities, the welfare of those engaged in the teaching profession and the ever-increasing cost of education. This has culminated in student unrest and current industrial actions by lecturers and teachers through their respective umbrella associations such as Academic Staff of Nigerian Universities (ASUU) at the different levels of the educational system.

Owing to the failure of the state and local government to fund primary and secondary education appropriately, the Federal Government moved to take over the affairs of these tiers of the system at the expense of the higher education. Due to this shift in the government policy, the crisis in the Nigerian educational system, and their fundamental causes, that is, the gross under funding of the institutions, poor conditions of service for teachers among other issues have continued unabated.

The broad objective of the study is to examine efficiency of education expenditure, identifying the various alternative policy options available with a view to offer the best policy recommendation. Specifically, the study intends to:

1) Examine the impact of education expenditure on economic growth in Nigeria.
2) Investigate the impact of education expenditure on human capital development in Nigeria.

3) Assess the effect of education expenditure on the level of literacy in Nigeria.

This study would be of great importance – or relevance to the study would serve as a yardstick for appraising the policy shift of the government away from educational funding. This work would also be of great relevance to policy-makers, practitioners in the educational sector and other interested individuals and organizations in Nigerian education sector. However, this study is to examine efficiency of education expenditure in Nigeria 1990 – 2018 due to non-availability of needed data.

2. Empirical Literature

2.1 Conceptual Framework

Education is defined as any process by which an individual gains knowledge or insight or develops attitudes and skills (Anyanwu, *et al*., 1997). Education expenditure includes direct expenditure on educational institutions as well as educational-related public subsidies given to households and administered by educational institutions. This indicator is shown as a percentage of GDP, divided by primary, primary to post-secondary non-tertiary and tertiary levels. Public entities include ministries other than ministries of education, local and regional governments, and other public agencies. Education expenditure covers expenditure on schools, universities and other public and private institutions delivering or supporting educational services (OECD, 2019). However, economic growth is an important concept in Economics that is used to assess the performance of an economy. Though it is often used interchangeably with economic development in the literature, they do not mean the same thing in the strict sense (Ezeanyeji, Usifoh, Obi & Ejefobihi, 2020). According to Cvetanovic, *et al*., (2019) described economic growth as the "*increase in the value of a country's production over time*". According to them, the extent of growth that a country can achieved depends on its ability and capacity to accumulate the direct factors of production and invest in knowledge acquisition. They highlighted the most significant fundamental factors of growth to include: population growth, financial development, qualitative macroeconomic environment, income distribution, political and social environment etc.

2.2 Theoretical literature

(i) Wagner's Law of Increasing Public Expenditure

This theory was first associated to a German economist who based his law of increasing state activities on historical facts. The law states that there are inherent tendencies for the activities of different layers of governments to increase both intensively and extensively. It assumes the existence of an economy and the growth of the government activities in which the government sector grows faster than the economy.

(ii) Musgrave and Rostow Theory of Public Expenditure

Musgrave and Rostow put forward a development model under the causes for growth in public expenditure. They argued that public expenditure is a prerequisite of economic growth. The public sector initially provides economic infrastructures such as roads, railways, water supply and sanitation. As economic growth takes place, the balance of

public investment shift towards human capital development through increased spending on education, health and welfare services (Taiwo, 2011). They assumed that the state grows like an organism making decision on behalf of the citizens. Society demand for infrastructure facilities such as education, health, electricity, transport etc., grows faster than per capita income.

(iii) Neo-classical Theory

The proponents of the Neo-classical school include – Robert M. Solow, Edward Shapiro etc. Although these Neo-classical Economists admit that fiscal stimulus such as budget deficit could stimulate economic activities such as production and so on, they argue that such stimulation could have side-effects that could crowd out private investments (Hussain & Haque, 2017). Firstly, they submit that budget deficit would increase the level of investments which would increase labour demand, and consequently push up its cost i.e. wages. When this happens, the cost of production would be higher and therefore shrinks profitability which would discourage private investment. Secondly, they note that budget deficit would increase government debt stock which would lower their market price and then force up interest rates up (Hussain & Haque, 2017). High interest rates would discourage private investment as the investors would look elsewhere for cheaper fund. Thirdly, the neoclassical school of thought argues that budget deficit leads higher money supply which encourages consumption expenditure, and consequently reduces savings (Huseyin & Ayse, 2014). In a closed economy, when there is low savings, interest rate will increase and thereby deter investments and consequently hinders economic growth. Also, in an opened economy it is believed that budget deficit will attract capital inflows which will lead to rise in exchange rate. Appreciation of exchange rate will crowd out investments and reduces the net exports thereby resulting in low economic growth (Nwanna & Umeh, 2019).

2.3 Empirical Literature

Edeh, Obi and Obi (2018) explore the impact of education spending on poverty eradication in Nigeria from 1999 to 2017. The method of ordinary least square regression analysis was used to analyze the time series data. The research found that education expenditure has no significant impact on poverty reduction in Nigeria. In addition, human capital development is not yielding to poverty reduction in Nigeria. Healthcare and Vocational training should be encouraged by increased funding and monitoring to improve the quality of human resources. In the same vein, Ikram and Jawad (2018) examined the impact of education expenditure on literacy rate of Pakistan. Time series data from 2004 to 2016 has been used for analysis. The Design methodology approach was used in the analysis and the research findings revealed that expenditure on education percentage of GDP is found to have significant and positive and unemployment rate is found to have significant and negative impact on literacy rate. Similarly, Tomić (2015) examined a comparative analysis of investment funds in the education systems of the European Union and BRICS, and it is shown that there is a positive correlation between public expenditure on education and the value of GDP of the country.

Obi and Obi (2014) focused on the impact of education expenditure on economic growth as a means of achieving the desired socio-economic change needed in Nigeria from 1981 to 2012. The Johansen's co-integration analysis and ordinary least square (OLS) econometric techniques were used in the analysis. The research findings probe that though a positive relationship subsists between education expenditure and economic growth, but a long run relationship does not exist over the period under study. The study also revealed that this puzzle is attributable to labour market distortions, redundancy of the workforce, industrial dispute and job discontinuities as well as leakages in the Nigerian society such as brain drain, among others. In the same vein, Dauda (2011) probe the effect of government educational spending and macroeconomic uncertainty on schooling outcomes in Nigeria for the period from 1975 to 2007, using the econometric methods of cointegration and error correction mechanism together with the Vector Autoregression methodology. The result indicates that schooling outcome cointegrated with all the identified explanatory variables. The study indicates that public educational spending impacts positively on schooling outcome while macroeconomic instability impacts negatively. The variance decomposition analysis shows that "own shocks" constitute the predominant source of variation in schooling outcome. The impulse response analysis shows that any unanticipated increase in the macroeconomic uncertainty rate will have a contractionary impact on literacy rate.

Furthermore, Odubunmi (2009) examined the correlation between expenditure on education and human capital development in Nigeria. This study however reveals that there is no correlation between education expenditure and human capital development in Nigeria. Using Ordinary Least Square (OLS) method of analysis, Okuneye, Maku and Ayinla (2008) examined the impact of public on education on the economic growth and development in Nigeria. The research observes that misplacement of priority, poor budgetary allocation, and lack of political will to education has been the bane behind the dwindling fortune of the educational sector in Nigeria. Also, Anyanwu and Erhijakpor (2007) used a panel data for African countries from 1990 to 2002 to investigate the relationship between government expenditure on education and enrolment at the primary and secondary school levels with illustrations from the SANE countries (South Africa, Algeria, Nigeria and Egypt) find out that government expenditure on education has a positive impact on education attainment. Ogbu and Gallaghor (1991) in a study of five African countries, attempt to establish whether education outcome is affected by the composition of public education spending. The results indicated that enrolment rates are significantly affected by the composition of public education spending.

The previous studies research scholars investigated education expenditure on economic growth. This study gives insight into education expenditure on economic growth, human capital development as well as literacy rate in Nigeria from 1990 to 2018. This would be unique and very important contribution to the existing literature on this subject in the context of Nigeria.

3. Research Methods

3.1 Theoretical Framework

The theoretical framework of this paper anchored on Solow Growth Model. The model, which is part of the neoclassical growth theories, was designed by the American economist Robert Solow, to show how growth in the capital stock, growth in the labor force interact in an economy as well as how they affect a nation's total output of goods and services. In essence, Solow growth model is based on Cobb-Douglas production function that states the functional relationship between production output on one side, and the production inputs and their combinations on the other side. He assumes that a necessary condition for equilibrium in an economy is the equality of aggregate demand (AD) and aggregate supply (AS). As such, Solow and other scholar opposed government involvement in the economic activities rather, they advocate for complete control and allocation of productive resource by firms which are allowed to operate in a competitive market environment. The supply of goods in the Solow model is based on the Cobb-Douglas production function, which states that output depends on the capital stock and the labor force. Solow model assumes that capital and labour are subject to diminishing returns in the short-run; and also assumes constant returns to scale, which allows for the analysis of all quantities in the economy relative to the size of the labor force. Since output is produced with combination of capital, and labour, the production function is presented as:

$$Y_t = A_t(K_t)^{1-a}(L_t)^a \text{----------(3.1)}$$

Where;
Y = Output or Income
K = Capital
L = Labour
a = Income share of Labour
1-a= Income share of Capital

Since there is constant returns to scale, all the variables are divided by $(L_t)^a$, so that:
$Y_t/(L_t)^a = A_t/(L_t)^a\ (K_t)^{1-a}/(L_t)^a\ (L_t)^a/(L_t)^a$
Since $A_t/(L_t)^a$ is a constant, we can focus on:
$Y/L = K/L$
Y/L is the output per worker and can be represented by *y*
While K/L is capital per worker and can be represented by *k*
Therefore:

$$y = k \text{----------(3.2)}$$

This means that output is a function of capital per worker.
Since capital per worker is determined by the savings per worker i.e. savings rate, then:

k= s/n----------(3.3)

where s = Savings and n = population growth rate
If equation 6 is inserted into equation 5, then:

Therefore;

y= Y/L = s/n----------(3.4)

if the coefficients are brought back, then:

$y= (s/n)^{a/1-a}$----------(3.5)

The keynotes from the Solow growth model are that (1) since the growth rate of capital is a function of savings, then savings rate is major determinants of level of capital intensity. Therefore, a high savings rate produces larger capital stock and thus, higher production level and economic growth; (2) Population growth is also a key determinant of economic growth but must be accompanied by increased investments. This implies that a higher population growth rate than investment growth rate would lead to lower capital-labour ratio and consequently, lower economic growth. Based on the two assumptions that all countries have access to the same technology, and that all countries share similar savings (and investment) rates, Solow growth model predicts that developing economies will sooner or later catch up with developed economies.

3.2 Model Specification

Economic Models are formulated to understand and validate the relationships between two or more variables. It forces a researcher to think clearly about, and account for all the important interrelationships involved in a problem (Pindyck & Rubinfeld, 1997). Economic Modelling is usually based on economic theories. So, the specification of Economic Models presupposes knowledge of economic theory as well as the findings of related studies on the phenomenon being examined (Koutsoyannis, 1977). The main focus of this study is to examine efficiency of education expenditure, identifying the various alternative policy options available with a view to offer the best policy recommendation. Therefore, the model formulation was designed to capture this research focus. Three simple linear regression models would be used in the estimation. The first regression model shall seek to determine the relationship between education expenditure and economic growth of Nigeria. The second model seeks to investigate the impact of education expenditure on human capital development in Nigeria. The third model seeks to assess the effect of education expenditure on the level of literacy in Nigeria.

Model I:

The model adopted for this study is derived from the previous study carried out by Obi and Obi (2014) with some modifications to capture the objective one of this study. The implicit form of the model specified as follows;

GRGDP = *f*(EEXP, GCF, POPG, LAB) ----------(3.6)

The econometric form of the model can be expressed as:

$GRGDP = \beta_0+\beta_1 EEXP+\beta_2 GCF+ \beta_3 POPG +\beta_4 LAB +\mu_t$----------(3.7)

Where;
GRGDP = GDP growth rate
EEXP = Education expenditure (% GNI)
GCF = Gross fixed capital formation (% GDP)
POPG = Population growth
LAM = Labour force
β_0= Constant
β_1,… β_4 = Estimation parameters
μ = Stochastic error term.

Model II:

The model focused on objective two of the study, which is to investigate impact of education expenditure on human capital development in Nigeria. The model was adopted from the study of Odubunmi (2009) with some modifications. The functional form of the model is therefore specified as follows:

HCD = *f*(EEXP, GCF, POPG, LAB) ----------(3.8)

In econometrics, equation (3.8) above is insufficient due to the absence of error term. The functional relationship in the model can be expressed in linear regression model by introducing constant and error term. Hence, it is expressed thus:

$HCD= \alpha_0+ \alpha_1 EEXP+ \alpha_2 GCF + \alpha_3 POPG +\alpha_4 LAB+ + \mu_t$----------(3.9)

Where;
HCD = Human development index
EEXP = Education expenditure (% GNI)
GFC = Gross capital formation (% GDP)
POPG = Population growth
LAM = Labour force
α_0= Constant
$\alpha_1 - \alpha_4$ = Estimation parameters

μ = Stochastic error term.

Model III:

The model captured the objective three (3) of the study, which is to assess the effect of education expenditure on the level of literacy in Nigeria. In view of this, the model was adopted from the study of Ikram and Jawad (2018) with some modifications. The functional form of the model is therefore specified as follows:

LITR= f(EEXP, GCF, POPG, LAB)----------(3.10)

Econometrically, the above equation 3.10, becomes:

$LITR= \lambda_0 + \lambda_1 EEXP + \lambda_2 GCF + \lambda_3 GCF + \lambda_4 LAB + \mu$----------(3.11)

Where;
LITR = literacy rate
EEXP = Education expenditure (% GNI)
GCF = Gross fixed capital formation (% GDP)
POPG = Population growth
LAB = Labour force
λ_0 is the intercept
λ_1 to λ_4 represents the slope coefficients
μ is the stochastic term or the error term.

3.3 Method of Analysis

Firstly, to avoid spurious regression, a pretest for stationarity of variables is necessary (Osuala, 2010). Thus, it is possible that many series that you would have thought were stationary based on ARDL model regression were through random walks (Cochrane, 2005). All the variables shall be subjected to unit root test using the Augmented Dickey Fuller (ADF) test suggested by Gujarati (2004). The choice of lag will be determined by Akaike information criteria. The unit root test was evaluated using the Augmented Dickey-Fuller (ADF) unit root test.

Secondly, this study applied ARDL approach developed by Pesaran, *et al*., (2001) to estimate the link among the variables. The rationale behind the application of this method are that: firstly, it can be applied irrespective of whether the series are stationary at level I(0) or after first difference I(1) or combination of both. Secondly, it is capable of generating robust and reliable results regardless of whether the sample size is small or large. Finally, it generates long run and short run result at the same time (Pesaran, *et al*., 2001). The analysis in this study started with bound test of the ARDL to confirm the existence of long run relationship. The calculated F-statistics is compared with the Critical Value from the table produced by Pesaran, *et al*., (2001). If F-statistics is higher than the upper critical value, the null hypothesis would be rejected indicating that there is no long-run relationship; if it is lower than the lower critical value, the null hypothesis would not

be rejected; if it in-between these two critical bounds, the result would be inconclusive (Pesaran, *et al*., 2001).Furthermore, the unrestricted error correction model (UECM) seems to take satisfactory lags that captures the data generating process in a general-to-specific framework of specification (Laurenceson & Chai, 2003). However, Pesaran and Shin (1999) contented that "*appropriate modification of the orders of the ARDL model is sufficient to simultaneously correct for residual serial correlation and the problem of endogenous variables*". The UECM is being constructed to examine the long-run and short-run relationships among the variables:

Model I:

$$\Delta GRGDP_t = \alpha_0 + \alpha_1 T + \alpha_{EEXP} EEXP_{t-1} + \alpha_{GCF} GCF_{t-1} + \alpha_{POPG} POPG_{t-1} + \alpha_{LAB} LAB_{t-1} + \sum \beta_i \Delta GRGDP_{t-i} + \sum \delta_j \Delta EEXP_{t-j} + \sum \phi_K \Delta GCF_{t-k} + \sum \omega_l \Delta POPG_{t-l} + \sum \omega_m \Delta LAB_{t-l} + \mu_t \text{---------} (3.12)$$

Model II:

$$\Delta HCI_t = \beta_0 + \beta_1 T + \beta_{EEXP} lnEEXP_{t-1} + \beta_{GCF} lnGCF_{t-1} + \beta_{POPG} lnPOPG_{t-1} + \beta_{LAB} LAB_{t-1} + \sum \beta_i \Delta HCI_{t-i} + \sum \delta_j \Delta EEXP_{t-j} + \sum \phi_K \Delta GCF_{t-k} + \sum \omega_l \Delta POPG_{t-l} + \sum \gamma_m \Delta LAB_{t-m} + \mu_t \text{----------} (3.13)$$

where T is trend[c]

Model III:

$$\Delta LITR_t = \lambda_0 + \lambda_1 T + \lambda_{EEXP} EEXP_{t-1} + \lambda_{GCF} GCF_{t-1} + \lambda_{POPG} POPG_{t-1} + \lambda_{LAB} LAB_{t-1} + \sum \lambda_i \Delta LITR_{t-i} + \sum \delta_j \Delta EEXP_{t-j} + \sum \phi_K \Delta GCF_{t-k} + \sum \omega_l \Delta POPG_{t-l} + \sum \gamma_m \Delta LAB_{t-m} + \mu_t \text{----------} (3.14)$$

The decision about cointegration is based on the computed F-statistic. The critical bounds to compare with the F-statistic have been tabulated by Pesaran, Shin and Smith (2001) and later by Narayan (2005) for small samples. The upper critical bound (UCB) is based on the assumption that all variables are integrated at 1(1) and the lower critical bounds (LCB) variables should be integrated at level. If UCB is lower than the *f*-statistic, then the decision is in favor of cointegration among the variables. This indicates the existence of long run relationship among the variables. Ifthe *f*-statistic is less than LCB, then it favours no cointegration among the variables. The decision about cointegration will be inconclusive if the *f*-statistic falls between UCB and LCB. In such situation, we will have to rely on the finding of lagged error correction term (ECT) for cointegration to investigate the long run relationship. If there is long run relationship among the variables, the short run behaviour of variables is investigated by the following ECM:

Model I:

$$\Delta GRGDP_t = \delta_1 + \sum_{i=0}^{m} \delta_2 \Delta GRGDP_{t-i} + \sum_{m=0}^{n} \delta_3 \Delta EEXP_{t-j} + \sum_{j=0}^{o} \delta_4 \Delta GCF_{t-k} + \sum_{k=0}^{p} \delta_5 \Delta POPG_{t-l}$$

q

$$+\sum_{i=0}\delta_6\Delta LAB_{t-m}+\lambda ECM_{t-1} \text{----------} (3.15)$$

Model II:

$$\Delta \ln HCI_t = \delta_1 + \sum_{i=0}^{e}\delta_2 \Delta HCI_{t-i} + \sum_{m=0}^{f}\delta_3 \Delta EEXP_{t-i} + \sum_{j=0}^{g}\delta_4 \Delta GCF_{t-j} + \sum_{k=0}^{h}\delta_5 \Delta POPG_{t-k} + \sum_{i=0}^{i}\delta_6 \Delta LAB_{t-l} +$$

$$+\lambda ECM_{t-1} + \mu_t \text{----------} (3.16)$$

Model III:

$$\Delta LITR_t = \delta_1 + \sum_{i=0}^{r}\delta_2 \Delta LITR_{t-i} + \sum_{m=0}^{s}\delta_3 \Delta EEXP_{t-I} + \sum_{j=0}^{t}\delta_4 \Delta GCF_{t-i} + \sum_{k=0}^{u}\delta_5 \Delta POPG_{t-j} + \sum_{i=0}^{v}\delta_6 \Delta LAB_{t-k} +$$

$$+\lambda ECM_{t-1} + \mu_t \text{----------} (3.17)$$

Where, *m, n, 0, p, q,;e, f, g, h, i,* and *r, s, t, u, v,* are the lag length of the variables respectively which is selected following AIC criteria. It is documented that if the value of lagged ECM is between 0 and -1, then adjustment to the dependent variable in current period is the ratio of error in the previous period. In such situation, ECM causes the dependent variable to converge to long span equilibrium due to variations in the independent variables.

To ascertain the robustness of a model, the standard practice is to conduct stability and diagnostic test. The intent of the test is to probe the stability of the coefficient estimate as the sample size increases. The purpose for this is to find out whether the estimates will bedifferent in large samples and whether they will remain stable over. The stability of the estimated model is assessed using the methodology of Cumulative Sum (CUSUM) and the Cumulative Sum of Squares (CUSUMQ) test proposed byBrown, *et al*., (1975). If the plot of the CUSUM and CUSUMQ are within 5% significance level (represented by two lines), the coefficient estimates are adjudged stable. Furthermore, the diagnostic test includes serial correlation, Autoregressive Conditional heteroskedasticity (ARCH), normality of the residual, functional form specification, and heteroskedasticity test statistics.

The study employed secondary time series data which were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Development Indicator of World Bank (2018). It covers the period 1990 – 2018.

4. Presentation and Analysis of Results

4.1 Unit Root Test

The knowledge of the time series properties of the variables of interest is important in order to obviate the possibilities of spurious regression. This was implemented using the conventional – Augmented Dickey-Fuller (ADF) unit root test. For convenience, table 4.1

below shows the abridged of the computed Augmented Dickey Fuller unit root test for each of the variables of the respective models.

Table 4.1: Summary of Unit Root Test

Models	Variables	ADF-Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Order of Int.	Durbin-Watson stat
Model I	GRGDP	-7.664343	-3.699871	-2.976263	-2.627420	1(1)	1.991497
	EEXP	-5.541069	-3.699871	-2.976263	-2.627420	1(0)	2.024117
	GCF	-5.336234	-3.711457	-2.981038	-2.629906	1(1)	1.947787
	POPG	-4.771129	-3.711457	-2.981038	-2.629906	1(2)	1.990868
	LAB	-6.698943	-3.711457	-2.981038	-2.629906	1(2)	2.198654
Model II	HCI	-4.926434	-3.711457	-2.981038	-2.629906	1(2)	1.490228
	EEXP	-5.541069	-3.699871	-2.976263	-2.627420	1(0)	2.024117
	GCF	-5.336234	-3.711457	-2.981038	-2.629906	1(1)	1.947787
	POPG	-4.771129	-3.711457	-2.981038	-2.629906	1(2)	1.990868
	LAB	-6.698943	-3.711457	-2.981038	-2.629906	1(2)	2.198654
Model III	LITR	-9.018080	-3.699871	-2.976263	-2.627420	1(1)	1.401505
	EEXP	-5.541069	-3.699871	-2.976263	-2.627420	1(0)	2.024117
	GCF	-5.336234	-3.711457	-2.981038	-2.629906	1(1)	1.947787
	POPG	-4.771129	-3.711457	-2.981038	-2.629906	1(2)	1.990868
	LAB	-6.698943	-3.711457	-2.981038	-2.629906	1(2)	2.198654

Source: Author's Compilation using E-views 9 Output

From the result in the above table 4.1, the empirical test shows that education expenditure (EEXP) was stationary at level, that 1(0) in the respective models. Again, GDP growth rate (GRGDP), literacy rate (LITR), gross fixed capital formation (GCF) are integrated of order one, 1(1) in the respective models. Also, population growth (POPG) and labour force (LAB) are integrated of order two, that is, 1(2) in the respective models. The result indicates that variables were integrated of different orders. ADF Statistictest for each of the variable is less than the critical values at 1%, 5% and 10%. This suggests a need to examine the existence or otherwise of some pattern of long-run association among these variables. It has been argued, in the time-series literature, that there is a possibility that some linear combination of non- stationary variables may be mean-reverting. This result is consistent with other empirical work in macroeconomic literature. Hence, to confirm the reliability of this result, the Durbin Watson statistic value for each variable is significant at approximately 2.00, which means, confirms the absence of autocorrelation problem in the time series data in the respective models. Thus, we can now proceed to the second stage of testing for the long run relationship among the chosen variables using ARDL bounds testing approach to cointegration.

4.2 ARDL Bounds Test for Cointegration

The result of ADF unit root test showed that the series used in this study are either I(1),I(0) or 1(2), the consideration of ARDL Bounds test for cointegration is plausible. The model utilises both the *F*- and *t*-statistics to test the significance of lagged levels of the variables in a univariate error correction system when it is unclear if the data generating process

underlying a time series is trend or first difference stationary. The result for this Bound test is given as follows.

Table 4.2: Result for the Bound Test for the Respective Models

Models	Functional Form	F-statistic Value	K	Critical Values Bounds		
				Significance	10 Bound	I1 Bound
Model I	GRGDP = *f*(EEXP, GCF, POPG, LAB)	48.96048	4	10%		3.52
				5%	2.86	4.01
				2.5%	3.25	4.49
				1%	3.74	5.06
Model II	HCD = *f*(EEXP, GCF, POPG, LAB)	6.321319	4	10%	2.45	3.52
				5%	2.86	4.01
				2.5%	3.25	4.49
				1%	3.74	5.06
Model III	LITR= f(EEXP, GCF, POPG, LAB)	6.496074	4	10%	2.45	3.52
				5%	2.86	4.01
				2.5%	3.25	4.49
				1%	3.74	5.06

Source: Author's Compilation using E-views 9 Output

The bound test for co-integration test reveals that there is long run relationship associated with the dependent variable and independent variables in the respective models at 5% level of significance. This indicates that the *F*-statistic for this Bound test is 48.96048**,** 6.321319 and6.496074 respectively in the models, which is greater than the critical values of both the lower and the upper bounds at all levels of significance, respectively.

4.3 Long-run and Short-run ARDL Models

The findings for the long-run and short-run coefficient of the variables under investigation are estimated using the optimal ARDL model selection according to the AIC criterion. Thediscussion of results was based on research objective stated in section one. The long-run and short-run and its corresponding coefficients of the models are given below.

(i) Long-run and Short-run Discussion of Results based on Research Objective One

Table 4.3: Estimated Short-run and Long-run Coefficients based on ARDL Approach for the Model One (Dependent Variable: GRGDP)

	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	Long Run Coefficients				
Model I: ARDL (2, 2, 3, 3, 3)	EEXP	-1.922718	0.254562	-7.553047	0.0001*
	GCF	-0.102228	0.093481	-1.093565	0.3060
	POPG	-0.479978	0.050844	-9.440259	0.0000*
	LAB	10.986432	2.219323	4.950354	0.0011*
	C	-687.609950	129.758947	-5.299133	0.0007*

	Short Run Coefficients				
	D(GRGDP(-1))	0.874128	0.110288	7.925837	0.0000*
	D(EEXP)	-97.280089	16.514065	-5.890742	0.0004*
	D(EEXP(-1))	-77.695274	16.527670	-4.700921	0.0015*
	D(GCF)	0.372669	0.082745	4.503818	0.0020*
	D(GCF(-1))	0.120024	0.110416	1.087016	0.3087
	D(GCF(-2))	0.273673	0.099328	2.755245	0.0249*
	D(POPG)	162.805727	26.952139	6.040549	0.0003*
	D(POPG(-1))	185.113027	24.556841	7.538145	0.0001*
	D(POPG(-2))	-11.627546	5.804086	-2.003338	0.0801
	D(LAB)	-27.431793	3.816876	-7.186975	0.0001*
	D(LAB(-1))	-12.348497	3.929232	-3.142725	0.0137*
	D(LAB(-2))	-19.651906	4.958343	-3.963402	0.0042*
	CointEq(-1)	-2.469876	0.217555	-11.352885	0.0000*
	R-squared = 0.991176	Adjusted R-squared = 0.972425	F-statistics = 52.86004	Prob (F-statistics) = 0.000002	Durbin Watson = 2.662838

Source: Author's Compilation using E-views 9 Output
Note: * denote statistical significance at the 5% level.

The long-run behaviour of the variables in the model one (1) is presented in table 4.3 above. The education expenditure (EEXP), gross fixed capital formation (GCF) and population growth (POPG) has an estimated value of -1.922718, -0.102228 and -0.479978 respectively and this indicates it is negatively related to economic growth in Nigeria. A plausible explanation is that increased EEXP, GCF and POPG leads to decline in economic growth by 192.27%, 10.22% and 47.99% respectively. This implies that education expenditure and population growth have negative but significant impact on economic growth in Nigeria. The outcome of this result is not surprising as education expenditure in Nigeria has not only dwindled but has been minimal and this has serious implication for the quality of manpower, thus having implication on economic growth in Nigeria. Again, gross capital formation has negative insignificant impact on economic growth in Nigeria. In the contrary, labour force (LAB) found to be positive and significant impact on economic growth at 5 percent level of significance. The coefficient suggests that a unit change in LAB will lead to an increase in economic growth by 10.98% in the long-run.

In the short-run, the coefficient of education expenditure (EEXP) and lagged one value of education expenditure ($EEXP_{-1}$) have negative and significant impact on economic growth in Nigeria. This implies that one percent change in EEXP and $EEXP_{-1}$ will lead to decline in economic growth in Nigeria by 97.28% and 77.69% respectively. The coefficient of gross capital formation (GCF) and lagged two value of gross capital formation (GCF_{-2}) have significant positive impact on economic growth. Again, lagged one value of gross capital formation (GCF_{-1}) has positive but insignificant impact on economic growth in Nigeria. This indicates that 1% increase in GCF, GCF_{-1} and GCF_{-2} will improve economic growth by 37.26%, 12% and 27.37% respectively. Again, population growth (POPG) and lagged one value of population growth (POPG-1) had significant

positive impact on economic growth in Nigeria. This shows that 1% increase in POPG and POPG-1 will lead to increase in economic growth in Nigeria by 162.8% and 185.1% respectively. Also lagged two value of population growth ($POPG_{-2}$) has insignificant negative impact on economic growth in Nigeria. This implies that 1% increase in $POPG_{-2}$ will lead to decline in economic growth in Nigeria. Finally, the coefficient of labour force (LAB), lagged one value of labour force (LAB_{-1}) and lagged two value of labour force (LAB_{-2}) had negative but significant impact on economic growth in Nigeria. This probe that, 1% increase in LAB, LAB_{-1} and LAB_{-2} will lead to decline on economic growth by 27.43%, 12.34 and 19.65% respectively. Remarkably, the estimate of short-run dynamics shows the coefficient of ECM−1 is negative and statistically significant in the model with a probability value of 0.0000. This result confirms the convergence of short-run to the long-run equilibrium. The coefficient is approximately --2.469876, indicating that, 246.98% of the deviations or disequilibrium in economic growth from the previous shocks will converge back to the long-run equilibrium in the following period. In relation to the relative adjustment, the speed of adjustment shows a very strong convergence towards the equilibrium period within the system. According to Bannerjee, Dolado and Mestre (1998) "*a highly significant lagged CointEq(-1) is further proof of the existence of stable long-run relationship*". This implies that the adjustment to restore long-run equilibrium is reasonably high. A cursory look multiple determinations (R_2) show that about 99% of variation in economic growth is explained by the independent variable. This implies that the model exhibited high explanatory power, and is a good fit. The adjusted R-squared (R^2 = 0.972425) shows high explanatory power still after adjustment for degree of freedom. The F-statistics value of 52.86004 indicates significant at 1% level and also revealed that there is a considerable harmony between the economic growth and the explanatory variables put together. This result is reliable as the Durbin-Watson statistic value of 2.662838. This implies that there is no evidence of a first order serial autocorrelation.

(ii) Long-run and Short-run Discussion of Results based on Research Objective Two

Table 4.4: Estimated Short-run and Long-run Coefficients based on ARDL Approach for the Model Two (Dependent Variable: HCI)

	Variable	Coefficient	Std. Error	t-Statistic	Prob.
Model II: ARDL (2, 3, 2, 3, 2)	**Long Run Coefficients**				
	EEXP	0.096545	0.003048	31.674388	0.0000*
	GCF	-0.001871	0.001806	-1.036144	0.3272
	POPG	0.016451	0.000649	25.361374	0.0000*
	LAB	-0.162504	0.027498	-5.909666	0.0002*
	C	8.470084	1.686461	5.022402	0.0007*
	Short Run Coefficients				
	D(HCI(-1))	1.512833	1.054833	1.434193	0.1853
	D(EEXP)	0.240266	0.734129	0.327281	0.7509
	D(EEXP(-1))	-1.092095	0.515753	-2.117478	0.0633
	D(EEXP(-2))	0.263166	0.121556	2.164986	0.0586

	D(GCF)	0.002509	0.005748	0.436408	0.6728
	D(GCF(-1))	0.005483	0.003284	1.669745	0.1293
	D(POPG)	0.156075	1.224210	0.127490	0.9014
	D(POPG(-1))	1.784912	0.913863	1.953151	0.0825
	D(POPG(-2))	-0.386164	0.269124	-1.434890	0.1851
	D(LAB)	-0.671864	0.238608	-2.815760	0.0202*
	D(LAB(-1))	-0.239164	0.126026	-1.897740	0.0902
	CointEq(-1)	-5.393942	1.085573	-4.968753	0.0008*
	R-squared = 0.903321	Adjusted R-squared = 0.731447	F-statistics = 5.255720	Prob (F-statistics) = 0.007958	Durbin Watson = 2.270932

Source: Author's Compilation from E-views 9 Output
Note: * denote statistical significance at the 5% level.

The long-run coefficient of education expenditure (EEXP) and population growth (POPG) have positive significant impact on human capital development in Nigeria. This implies that 1% increase in EEXP and POPG will improve human capital development by 9.6% and 1.6% respectively in Nigeria. In the contrary, the negative sign (-0.001871) showed that the impact of gross capital formation (GCF) over the years has somewhat retarded growth of human capital development. However, the coefficient was not significant (0.3272), indicating that the negative relationship in the period under review could not have been so severe. Similarly, the coefficient of labour force (LAB) has significant negative impact on human capital development. Thus, this probed that 1% increase in labour force will decline human capital development by 16.25% in Nigeria.

In the short-run, the coefficient of education expenditure (EEXP), lagged two value of education expenditure ($EEXP_{-2}$), gross capital formation (GCF), lagged one value of gross capital formation (GCF_{-1}), population growth (POPG), lagged one value of population growth ($POPG_{-1}$) have insignificant positive impact on human capital development. Thus, this indicates that 1% increase in EEXP, $EEXP_{-2}$, GCF, GCF_{-1}, POPG, and $POPG_{-1}$, will improve human capital development by 24.02%, 26.31%, 0.25%, 0.54%, 15.6% and 178.49% respectively. In the contrary, the coefficient of lagged one value of education expenditure ($EEXP_{-1}$), lagged two value of population growth ($POPG_{-2}$) and lagged one value of labour force (LAB_{-1}) have insignificant negative impact on human capital development. In the vein, labour force (LAB) has negative but significant impact on human capital development. This implies that 1% increase in $EEXP_{-1}$, $POPG_{-2}$, LAB and LAB_{-1}, will decline human capital development in Nigeria by 109.2%, 38.61%, 67.18% and 23.91% respectively. Finally, the result of the error correction model indicates that the error correction term CointEq(-1) is well specified and the diagnostic statistics are good. The CointEq(-1) variable has the correct sign and statistically significant. The speed of adjustment of -5.393942 shows a very level of convergence. In particular, about539.39% of disequilibrium or deviation from long run of economic growth in the previous period is corrected in the current year in model.

The coefficient of determination R^2 is 0.903321 which implies that 90% of the variation in human capital development is explained by the independent variables included in the model, while the error term (e) accounted for the remaining 10% of the

variations unexplained by the explanatory variable used in the study. Coincidentally, the goodness of fit of the regression remained high after adjusting for the degree of freedom as indicated by the adjusted R^2 (R^2 =0.731447). The D-W statistics (2.270932) revealed no autocorrelation while the F-statistics (5.255720) showed that in the long run, variation in the dependent variable is due to the joint effect of the explanatory variables.

(iii) Long-run and Short-run Discussion of Results based on Research Objective Three

Table 4.5: Estimated Short-run and Long-run Coefficients based on ARDL Approach for the Model Three (Dependent Variable: LITR)

	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	Long Run Coefficients				
	EEXP	0.047925	0.593568	0.080741	0.9370
	GCF	0.037810	0.087419	0.432510	0.6730
	POPG	0.403126	0.103336	3.901109	0.0021*
	LAB	-0.611731	2.757380	-0.221852	0.8282
	C	95.074751	155.280485	0.612278	0.5518
	Short Run Coefficients				
	D(LITR(-1))	0.558505	0.300286	1.859908	0.0876
Model III: ARDL (2, 3, 0, 1, 3)	D(EEXP)	60.203717	28.650521	2.101313	0.0574
	D(EEXP(-1))	-8.312895	9.288384	-0.894978	0.3884
	D(EEXP(-2))	12.145255	6.792662	1.787996	0.0990
	D(GCF)	0.109683	0.254457	0.431046	0.6741
	D(POPG)	-94.068786	46.476564	-2.024005	0.0658
	D(LAB)	-14.865611	21.369130	-0.695658	0.4999
	D(LAB(-1))	-13.484920	11.566562	-1.165854	0.2663
	D(LAB(-2))	12.553465	7.118712	1.763446	0.1032
	CointEq(-1)	-2.900912	0.649655	-4.465310	0.0008*
	R-squared = 0.827909	Adjusted R-squared = 0.641477	F-statistics = 4.440812	Prob (F-statistics) = 0.007186	Durbin Watson = 1.652734

Source: Author's Compilation using E-views 9 Output
Note: * denote statistical significance at the 5% level.

The long-run coefficients of education expenditure (EEXP) and gross capital formation (GCF) and have positive but insignificant impact on literacy rate in Nigeria. In the same vein population growth (POPG) has significant positive impact on literacy rate in Nigeria. Thus, 1% increase in EEXP, GCF and POPG will increase literacy rate in Nigeria by 4.79%, 3.78%, 40.31% respectively. In the contrary, labour force (LAB) has insignificant negative impact on literacy rate in Nigeria. This implies that 1% increase in LAB will decline literacy rate in Nigeria by 61.17%. This may be as a result of the level of corruption in the country which gives room for leakages of funds in most public academic institutions in Nigeria.

In the short-run, the coefficients of education expenditure (EEXP), lagged two value of education expenditure ($EEXP_{-2}$), gross capital formation (GCF) and lagged two value of labour force (LAB_{-2}) have insignificant positive impact on literacy rate in Nigeria.

Thus, this indicates that 1% increase in EEXP, $EEXP_{-2}$, GCF, LAB_{-2} will increase literacy rate by 6020.03%, 1214.5%, 10.96%, and 1255.34% respectively. In the contrary, lagged one value of education expenditure ($EEXP_{-1}$), population growth (POPG), labour force (LAB), and lagged one value of labour force (LAB-1) have insignificant negative impact on literacy rate in Nigeria. This probed that 1% increase in $EEXP_{-1}$, POPG, LAB, LAB_{-1} will reduce literacy rate in Nigeria by 831.28%, 9406.87%, 1486.56% and 1348.49% respectively. Finally, the t-value of the CointEq(-1) compared to the table of value calculated by Pesaran, *et al*., (2001) is statistically significant and carries the expected sign. The speed of adjustment between the short and the long run is about 290% as indicated by the coefficient.

The R-square of 0.827909 shows that in the short run, the explanatory variables explain about 82.79% of literacy rate. The *f*-statistics value of 4.440812 in the model, which are a measure of the joint significance of the explanatory variables, is found to be statistically significant at 5% level as indicated by the corresponding probability value of 0.007186.The computed Durbin-Watson statistic in the model one is 1.652734, which reveals to us that there is some degree of positive autocorrelation in the residual. As a result of this, our model estimated can be confidently relied upon for making inferences.

4.5 Diagnostics and Stability Test for ARDL Models

The above estimated error correction models were further subjected to serial correlation, Autoregressive Conditional heteroskedasticity (ARCH), normality of the residual, functional form misspecification and heteroskedasticity test statistics and stability test. The test results are reported in table 4.6 below.

Table 4.6: Diagnostics Test Result for the Models

Model(s)	Test	F-statistic	Degree of Freedom	Probability
Model I	Breush-Godfrey Serial Correlation LM Test	1.167303	F(2,6)	0.3731
	Heteroskedasticity Test	0.979950	F(17,8)	0.5423
	ARCH Test	3.139957	F(1,23)	0.0896
	Ramsey RESET Test	0.083812	(1, 7)	0.7806
	Normality Test	0.821794	Not applicable	0.663055
Model II	Breush-Godfrey Serial Correlation LM Test	0.932211	F(2,7)	0.4376
	Heteroskedasticity Test	0.441442	F(16,9)	0.9264
	ARCH Test	0.007806	F(1, 23)	0.9304
	Ramsey RESET Test	4.192844	F(1, 8)	0.0602
	Normality Test	0.486855	Not applicable	0.783936
Model III	Breush-Godfrey Serial Correlation LM Test	0.120782	F(2, 10)	0.8875
	Heteroskedasticity Test	2.251476	F(13,12)	0.0850
	ARCH Test	2.504103	F(1, 23)	0.1272
	Ramsey RESET Test	3.342771	F(1, 11)	0.5581
	Normality Test	9.341501	Not applicable	0.099365

Source: Author's Compilation using E-views 9 Output

The results are validated by a battery of diagnostic tests reported in table 4.6. For example, the Jarque-Bera (J-B), ARCH LM and Breusch-Godfrey (B-G) LM tests all conclude that the stochastic error terms are normally distributed, homoscedastic, and not serially correlated and model specification were insignificant, confirming the absence of serial correlation in the residual of the regression estimate. The implication is that the regression estimate was appropriately estimated. This gives us assurance that the results from the model are reliable, efficient and will be suitable for forecasting and policy and decision making.

However, to probe the stability of the long-run and short-run efficiency of education expenditure, the CUSUM and CUSUM-squared tests are applied at 5% level of significance. When the CUSUM line lies in-between the lines of the significant level, it shows the model is stable. However, variables are unstable when the CUSUM line is out of these two lines.

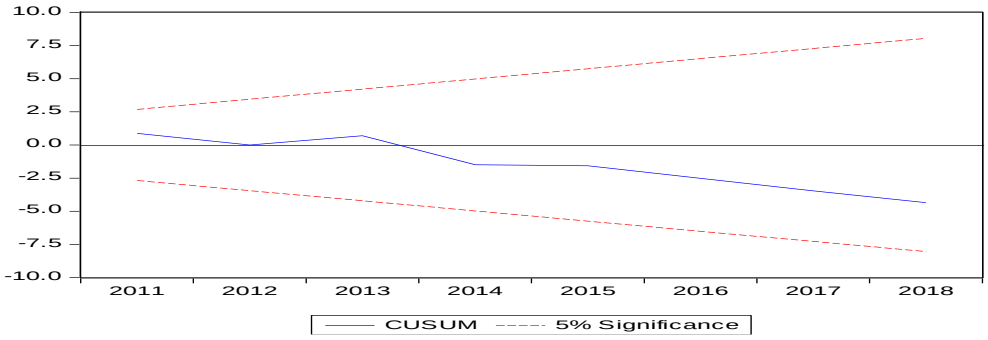

Figure 4.1a: Cumulative Sum (CUSUM)
Plot of Recursive Residuals for model one

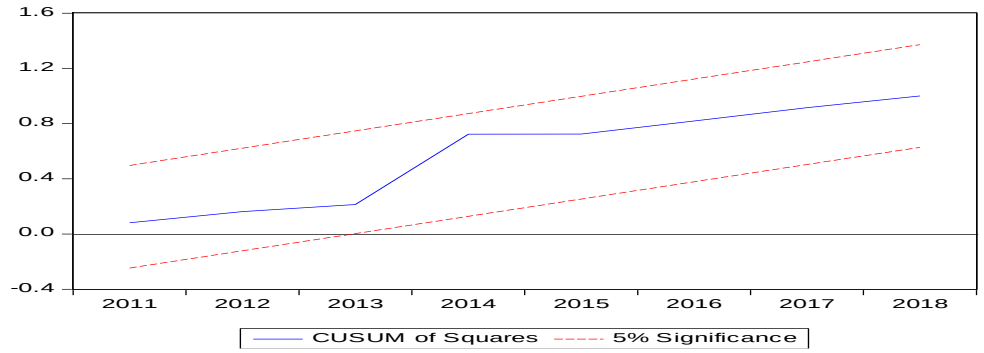

Figure 4.1b: Cumulative Sum of Squares (CUSUMQ)
Plot of Recursive Residuals for model one

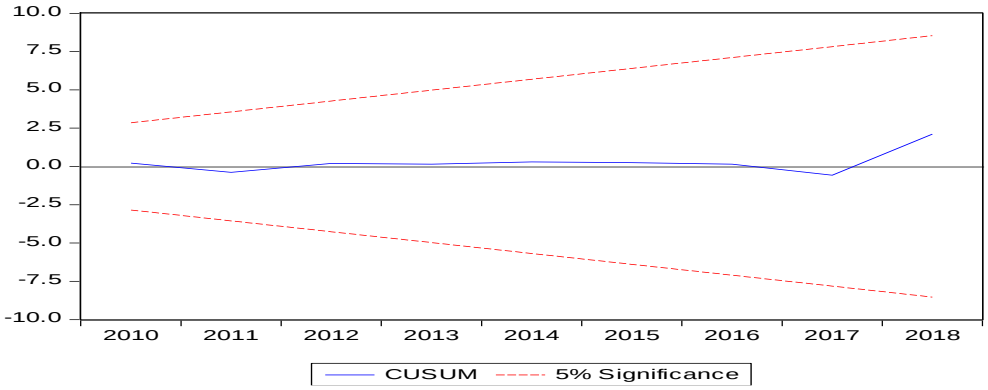

Figure 4.2a: Cumulative Sum (CUSUM)
Plot of Recursive Residuals for model two

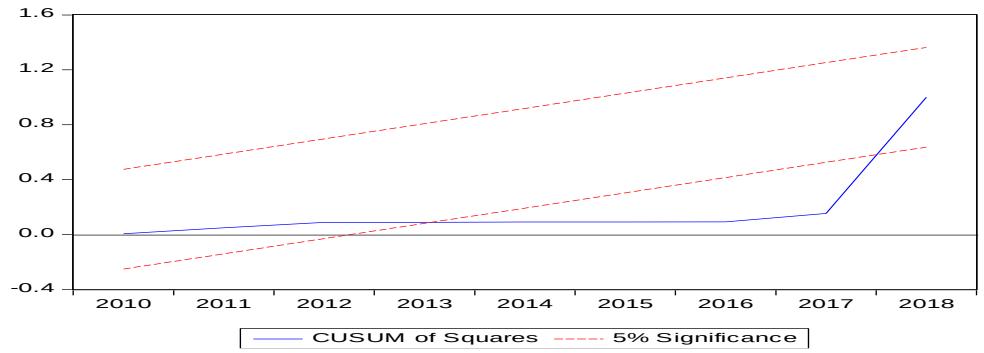

Figure 4.2b: Cumulative Sum of Squares (CUSUMQ)
Plot of Recursive Residuals for model two

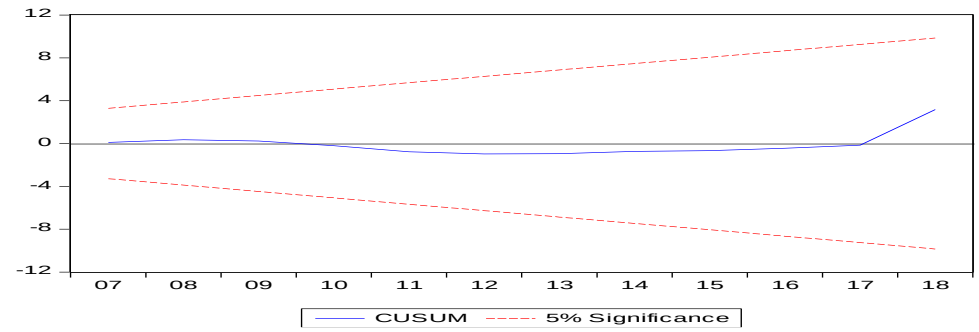

Figure 4.3a: Cumulative Sum (CUSUM)
Plot of Recursive Residuals for model three

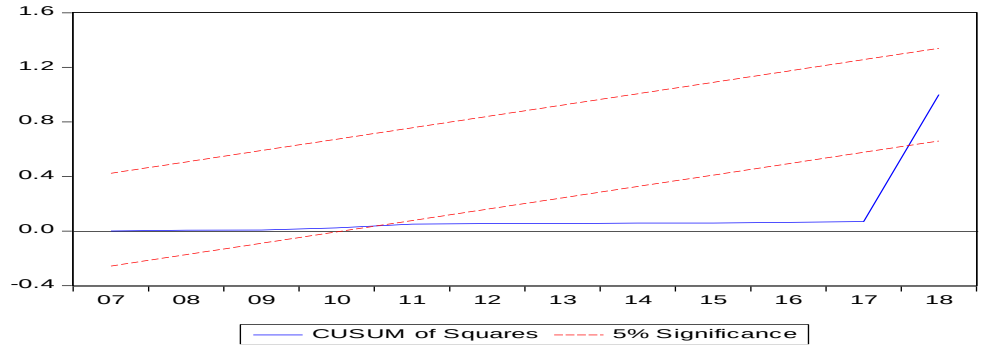

Figure 4.3b: Cumulative Sum of Squares (CUSUMQ) Plot of
Recursive Residuals for model three

Pesaran, *et al*., (2001) suggested that test of cumulative sum of recursive residuals (CUSUM) and cumulative sum of square of recursive residuals (CUSUMsq) whose equations are detail in Brown, *et al*., (1975) should be performed to ensure that the model is valid for inferences. Thus, the CUSUM and the CUSUMSQ plots lie within the 5% critical bound showing that our model is stable.

5. Conclusion and Recommendations

This study was undertaken to empirically evaluate the efficiency of education expenditure in Nigeria from 1990 to 2018. This study was specifically carried out to examine the impact of education expenditure on economic growth in Nigeria; investigate the impact of education expenditure on human capital development in Nigeria; assess the effect of education expenditure on the level of literacy in Nigeria.In order to achieve these objectives of the study, three econometric models were specified. The Augmented Dickey-Fuller (ADF) test, ARDL bounds cointegration test, and the short-run diagnostics and stabilityfor ARDL Model were employed in the analysis. Education expenditure had significantly negative impact on economic growth in Nigeria. Also, education expenditure has significant positive impact on human capital development in Nigeria. Finally, education expenditure has positive but insignificant impact on literacy rate in Nigeria. By implication the negative impact of education expenditure may not be unconnected with the fluctuating nature of Nigeria's pattern of education sector expenditure. However, schools at all level in Nigeria are characterized with humiliating features where schools lacks teachers, basic infrastructures and suffers from poor management, poor sanitation, overcrowding, poor intra sectoral allocation, inadequate funding, poor conditions of service among others, therefore leads to current ASUU strike which consequently manifest in low economic quality of the labour force. However, the study concludes that education at all levels has not gained its adequate attention to boost economic growth and improved human capital development as well as to reduced literacy rate in Nigeria. It is therefore recommends that Government should constantly review upward of budgetary allocation to education sector in Nigeria. This will pertinent looks into increase in the number of people seeking formal education most importantly the tertiary levels because only trained labour force can meaningfully and optimally contributes to societal development and economic growth in Nigeria at large.

References

Anyanwu, J. C. & Erhijakpor, A. E. O. (2007). Education expenditures and school enrolment in Africa: Illustrations from Nigeria and the other SAWE Countries. Paper presented at the 50th Anniversary and Annual Conference of the Nigerian Economic Society, Abuja, Nigeria.

Anyanwu, J. C., Dmowho, D., Hassan, O. & Oyefusi, S. A. (1997). *The structure of Nigerian economy (1960-1997)*. Nigeria: Joanne Education Publishers.

Banerjee, A., Dolado, J., Galbraith, J. W. & Hendry, D. (1998). Cointegration, Error Correction and the econometric analysis of non-stationary data. Oxford: Oxford University Press.

Brown, R. L., Durbin, J. & Evans, J. M. (1975). Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society, Series B (Methodological)*, 149-192.

Cvetanovic, S. Mitrovic, U. & Jurakic, M. (2019). Institutions as the driver of economic growth in Classic, Neoclassic and Endogenous Theory. *Economic Themes*, 57(1),111-125.

Dauda, R. O. S. (2011). Effect of public educational spending and macroeconomic uncertainty on schooling outcomes: Evidence from Nigeria. *Journal of Economics, Finance and Administrative Science*, 16(31), 7-21.

Edeh, C. E., Obi, A. & Obi, C. O. (2018). Impact of education spending on poverty reduction in a democratic dispensation in Nigeria. *International Journal of Economics and Financial Management*, 3(3), 1-9.

Ezeanyeji, C. I., Usifoh, K. S., Obi, C. O. & Ejefobihi, U. F. (2020). Microfinancing, poverty alleviation and Nigeria's economic growth: the nexus. *European Journal of Economic and Financial Research*, 4(1), 1-43.

Gujarati, D. N. (2004). Basic Econometrics, 4th Edition, The McGraw-Hill Companies.

Hussain, M. E. & Haque, M. (2017). Empirical analysis of the relationship between money supply and per capita GDP growth rate in Bangladesh. *Journal of Advances in Economics and Finance*, 2(1), 54-66.

Ikram, U. & Jawad, R. K. (2018). Impact of education expenditure on literacy rate: empirical evidence from Pakistan 2004-2016. Conference: 1st International Conference on Management, Business & Leadership At: Sindh Madressatual Islam University, Karachi.

Koutsoyannis, A. (1997). Theory of econometrics. An introductory exposition of econometric methods. London: Macmillan Press Limited.

Laurenceson, J. & Chai, J. C. H. (2003). *Financial reform and economic development in China*. Cheltenham, UK, Edward Elgar.

Narayan, P. K. (2005). The Savings and Investment Nexus for China: Evidence from Co-Integration. Tests. *Applied Economics,* 37, 1979-1990.

Nwanna, I. O. & Umeh, G. N. (2019). Deficit financing and economic growth: the Nigerian experience. *International Journal of Economics and Financial Management*, 4(1), 28-49.

Obi, Z. C. & Obi, C. O. (2014). Impact of government expenditure on education: The Nigerian experience. I*nternational journal of Business and Finance Management Research*, 2, 42-48.

Odubunmi, A. S. (2009). Education expenditure and human capital development in Nigeria. *The International Journal of Knowledge, Culture, and Change Management: Annual Review*, 9(9), 149-162.

OECD (2019). *Education at a Glance: OECD Indicators 2019* (Paris, OECD).

Ogbu, O. M., & Gallagher, M. (1991). Public Expenditures and Health Care in Africa. *Social Science and Medicine*, 34(6), 615-624.

Okuneye, B. A., Maku, O. E. & Ayinla, A. T. (2008). Public expenditure on education and economic growth in Nigeria. *Journal of Research in National Development* , 6(1), 1-1.

Osuala, E. C. (2010). *Introduction to Research Methodology.* Onitsha: Africana-First Publishers Ltd.

Pesaran, M. H. & Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. In *Econometrics and EconomicTheory in the 20th Century*, edited by S. Storm, 371–413. Cambridge: Cambridge University Press.

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16(3), 289–326.

Pindyck, R. S. & Rubinfeld, D. L. (1997). *Econometric models and economic forecasts, 4th edition*. Singapore: Irwin/McGraw-Hill.

Psacharopoulos, G. (1994) Returns to investment in education: a global update, *World Development*, 22(9), 1325–1343.

Taiwo, M. (2011). Government Expenditure and Economic Development: Empirical Evidence from Nigeria. *European Journal of Business and Management*, 3(9), 18-28.

Tomić, Z. (2015). Analysis of the impact of public education expenditure on economic growth of European Union and BRICS. *Economic Analysis, 48(1-2), 19-38.*

Zaman K. (2008). An Investigation for pro-poorness of government educational policy in Pakistan (1991 - 2007). *2nd International Conference on Assessing Quality in Higher Education*, 1st – 3rd December, 2008, Lahore, Pakistan.

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