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Government Expenditure on Education and Nigeria Economic Growth

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Abstract
This study examined the relationship between Government Expenditure on Education and Nigeria Economic Growth. The main objective is to find out the effect of government expenditures on education in Nigeria towards achieving sustained economic growth. The study employed a time series data obtained from Central Bank of Nigeria Statistical Bulletin and World Bank indicator. The methodology employed in the study was multiple regression analysis using ordinary least square (OLS). Gross Domestic Product (GDP) as dependent variable which was regressed against government expenditure on education (GEE) Life expectancy (LEXP) and Government Expenditure on Health (GEH) (independent variables). The unit root test revealed that all the variables were stationary at level except for Real Gross Domestic Product which was stationary at first difference given the 5% level of significance. The ARDL Bound test revealed a sustainable longrun relationship between Government Expenditure on Education and Nigeria Economic Growth. Based on the findings; the study recommends that government should increase its expenditure on education in order to ensure sustainable economic growth in the country, as government expenditure on education and health is very low as compared to UNESCO recommendation of 26% of the total budgetary allocation. It is also the view of this study that government should through its expenditures boost employment by increasing expenditure on skills acquisition Centres, symposiums and investing in industry that can train and employ the teeming unemployed youths in the country.

Keywords: ***Government Expenditure, Economic growth, Ordinary least square (OLS), Auto regressive distributed lag (ARDL), Augmented Dickey-Fuller (ADF), Unit Root Test***

Introduction

Outside the contribution of education on national economic growth, it also plays significant role in reducing income inequality. Aigbedion, Iyakwari, & Gyang (2017) are of the view that educational achievement as well as human capital development would positively reduce income inequality. In general, there is a consensus among researchers that education influenced economic growth by reducing poverty incidence, social imbalances as well as income equality. Moreover, it gives a positive impact to the poor and needy to improve their live. The authors noted that education is an age long phenomenon in all societies although it may take various forms from one society to another. In Nigeria two forms of education were in existence before the advent of colonialism; indigenous education and Islamic education.

Traditional education as was practiced in the southern and some parts of the middle belt Nigeria, consisted essentially of general but informal training in character, norms, agriculture, fishing intellectual and other ways of life as approved by society. Islamic education on the other hand was practiced mainly in Northern part of Nigeria. It is based on the Quran. Both forms of education preceded the Western education which was introduced to Nigeria in the 19th century by the European Christian missionaries. The advent of colonialism brought about formal education in Nigeria. The colonialists had to organise the training of the indigenous

people to understand the Queen's language. The Christian missionaries organised schools and trained Nigerians in the art of reading and writing. The initial persons that were trained in the communities became the first indigenous persons to be employed by the colonial government as interpreters, clerks and teachers (Adegbite, 2015).

It did not take long before the benefits of formal western education became manifest in Nigeria. The regional governments of independent Nigeria expanded educational opportunities, building more schools and providing grant-in-aid to missionary schools in their respective regions especially in the southern regions. Expanded educational facilities were seen as the panacea to the manpower needs and overall development in post-colonial Nigeria. The role of human capital formation in economic development has long been recognised in the literature. According to Harbison (1973 cited in Noko, 2016), "human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organisations and carry forward national development. Clearly, a country which is unable to develop the skills and knowledge of its people and utilize them effectively in the national economy will be unable to develop anything else". Several other theoretical and empirical studies have found a positive correlation between human capital development and economic growth (Owusu, 2012).

Education; formal and informal, contributes to skill acquisition. Informal education begins at the household level where children are taught how to sweep, clean their environment, fish or farm. By participating in these activities they learn how to do things by themselves and contribute to family income growth. Although such incomes are not recorded in national income accounting, they nevertheless amount to substantial family income. Human capital development through schooling is often associated with access to big jobs and higher incomes. This helps to explain the phenomenon of the Kuznets inverse "U" curve hypothesis (Owusu, 2012). The higher the incomes of the educated class and the more educated persons we have, the higher would be tax revenues which could be used for pro-poor growth projects and programmes. Due to the education - high income link, there is a common belief in Nigeria that education is the sure way to escape from abject poverty and from the drudgery of rural farm life. Parents see the education of their children as the best insurance not only for their future but also as a vessel of sustenance in their old age (Noko, 2016).

It is not surprising therefore that there was a rapid expansion in the education sector in Nigeria beginning from 1960 when political independence was attained. Between 1960 and 1974, educational facilities were expanded culminating in the takeover of privately owned primary/ secondary schools by government. In 1975 the central government also took over the universities and other tertiary institutions (Aigbokhan et al, 2003) and created new ones. It is rather surprising when the federal ministry of education in 2003 reported that all is not well in the education sector since 1978. Financial inadequacies among other factors were responsible.

The provision of education is a key element of a policy to promote broad-based economic growth. Education plays a great and significant role in the economy of a nation, thus educational expenditures are found to constitute a form of investment. This augments

individual's human capital and leads to greater output for society and enhanced earnings for the individual worker. An insignificant proportion of Nigeria's financial resources is spent on education. Education budget as percentage of total national budgets were 8.43% in 2012 and 8.67% in 2013 development. There is the first phase of rapid expansion in the growth of the sector. This phase may be broadly located within the period 1950 – 1980. There is the second phase of rapid decline in the sector in terms of growth. This phase falls within the period 1981 – 2009 (Chude and Chude, 2013).

In the early 1950s when representative governance took its roots in Nigeria, the three regional governments had control of the educational development in their respective regions. This first phase in educational development in Nigeria effectively marked the beginning of rapid expansion in terms of access. For example the number of pupils in primary schools was 626,000 in 1954, the figure rose to 2,912,619 in 1960. Similarly the number of post primary school rose from 161 in 1955 to 912 in 1960. The student population in post primary schools rose from 9,908 in 1947 to 140,401 in 1960 (Aigbokhan, 2005). The surge in access to schools was due largely to the policies and programmes of governments that built primary and post primary schools and also provided grant – in- aid to missionary schools. We must note here that the missionary churches dominated the provision of schools before the government takeover of primary and post primary schools in the early 1970s.

It must be noted also that at this initial phase of educational development no effort was made to select school curricula that would meet the long-run developmental needs of the Nigeria society. Rather emphasis was placed on numeracy and general intellectual capacity while technical and practical skills were neglected. The university college Ibadan which was the only university in Nigeria before 1960 had no facilities of engineering, law and technology. Access to tertiary education was more than doubled with the establishment of the University of Nigeria, Nsukka (1960), university of Lagos (1962), University of Ife, Ile – Ife (1961), Ahmadu Bello University, Zaria (1962), University of Benin, Benin City (1970).

This study however examines the extent at which government expenditure as an input to health and education sectors produced optimal outcomes using data on growth technique borrowed from the Romer endogenous growth theory.

Statement of the Problem

In Nigeria the high level of unemployed graduates and mass underemployment, 38% in 2016, which is manifested in low per capita income of Nigeria could be attributed to the neglect of the human capital development of the nation. Another issues of concern is, why should Nigeria be tagged a developing country in the face of such high number of universities, polytechnics, universities of science and technology and colleges of education that abound in the country?

An insignificant proportion of Nigeria's financial resources is spent on education. Education budget as percentage of total national budgets were 8.43% in 2012 and 8.67% in 2013. These

fell below those of other developing countries like Ghana, South Africa, Cote d'Ivoire, Kenya and Morocco that had 31%, 25.8%, 30%, 23% and 17.7% respectively in their annual budget for education (Abayomi, 2012). The United Nations recommends that 26% of the total expenditure should be devoted to education. Due to the perceived poor funding of education sector which reflects in the area of poor salaries to teachers, poorstate of the infrastructural facilities, irregularities of teachers remuneration, inadequate staffing, etc.This has resulted to incessant strikes embarked upon by the Academic Staff Union of Universities (ASUU), Colleges of Education Academic Staff Union (COEASU), Academic Staff Union of Polytechnics (ASUP), National Union of Teachers (NUT), Academic Staff Union of Secondary Schools (ASUSS), Non-Academic Staff Union (NASU), etc; have really affected the educational sector.

Owing to this, the academic calendars of schools have been disrupted; pupils and students have stayed more than required in their studies. To the employed staff in the academic institutions, their agitations bow down to the inability of the government to meet up the new salary scale and other allowances. More so, it is attributable to poor state of the learning institutions in which the attention of the government is drawn to. There exist no strong evidence of growth-promoting externalities of education in Nigeria, but rather education expansion further deepens social inequality and inculcate negative social changes such as cultism, sexual harassment, result racketeering, brain drain among other social vices in the Nigerian school system (Noko, 2016).

In many Less Developed Countries like Nigeria, the role of government as a provider of funds to the education sector at Primary, Secondary and Tertiary levels is widely recognised. Nigeria's successive governments have increasingly augmented their allocations for education sector in order to achieve the desired goals in the country. On the other hand, school enrolments at Primary, Secondary and Tertiary levels have also been on the increase since 1970s due to population growth rate in Nigeria. It is expected that adequate funding of education is a driver of human capital development which will as well translate into economic growth. Based on the above, this paper raises the following pertinent questions; to what extent does government expenditure on education impact on the economic growth of Nigeria? And, is there any long run relationship between education expenditure and economic growth in Nigeria? The objectives of this paper is to; empirically investigate the relationship between government expenditure on education and economic growth in Nigeria and also examine the long run relationship between government expenditure on education and economic growth in Nigeria.

Literature Review

The Traditional Human Capital Theory

This theory shows how education leads to increase in productivity and efficiency of workers by increasing the level of their cognitive skills, which can be transformed through enhanced productivity to economic growth. Theodore Schultz, Gory Bucker and Jacob Mincer introduced this theory; according to the theory, people invest in education so as to increase their stock of

human capabilities and skills which can be formed by combining innate abilities with investment in human beings (Babalola, 2000 cited in Chude & Chude, 2013). Examples of such investments include expenditure on education, expenditure on health, on-the-job training, provision of free health facility; others includes organizing workshop, seminars, symposium and nutrition taking.

However, the stock of human capital increases in a period only when gross investment exceeds depreciation with the passage of time, with intense use or lack of use. The provision for education is seen as a productive investment in human capital, an investment which the proponents of human capital theory considers to be equally or even more equally worthwhile than that in physical capital. Human capital theorists have established that basic literacy enhances the productivity of workers low skill occupations.

They further state instruction that demands logical and analytical reasoning, which provides technical and specialized knowledge which increases the marginal productivity of workers in high skill profession and positions (Noko, 2016). This, suffice it to mean that the greater the provision of schooling society, the greater the increases in national productivity and economic growth. These believe of the more the schooling society, the more economic growth will be is the concern of this research study; because an increased schooling society without employable skills will increase unemployment which in turn hinders economic growth.

Endogenous growth model

The theoretical model built on the one sector version of the Lucas (1988 cited in Nwuzo, 2015). The economy is populated by P individuals each endowed by h units of human capital and one unit of time that is offered inelastically. The level of

Human capital in the aggregate is:

$H = h.P$

The level of human capital increases the productivity of labour so that the effective labour unit offered by each agent is h. The output of the economy is produced using a Cobb-Douglas technology:

$Y = AL^{\alpha}K^{1-\alpha}$

Where; Y stands for output, K for capital, and L for labour in efficiency units (Lh).

Normalizing the equations to one, and assuming that all the agents belong to the labour force, L is also the employment rate and H is equals to h. Hence, the equation above can be rewritten below as:

$Y = H^{\beta}L^{\alpha}K^{1-\alpha}$

where; Y is now per capita output.

Differently; from the original model we distinguish between schooling Human capital (S) and Firm specific Human capital (H). The schooling human capital is thought of as general scholastic knowledge but it is not rewarded per se. An experienced engineer working in a firm is firm-specific human capital whereas a just graduated engineer searching for his/her first position job is not, although he/she can be considered as schooling human capital for the society (and human capital for official statistics). Through a learning-by-doing process the scholastic human capital is transformed into firm-specific human capital, a transformation that the unemployment spell can prevent.

In the model the inefficiency generated by unemployment is captured by means of a not standard equation of motion of human capital that builds on equation The accumulation of schooling human capital is a function of the invested stream of output but the flow of resources invested in education (IS) increases human capital according to a function in which the unemployment rate (u) enters as an argument.

Empirical Review

Adebiyi and Oladele (2005) employed the error correction mechanism and the vector auto-regressive (VAR) models to investigate the relationship between public education expenditure and defence spending in Nigeria. They found a negative tradeoff between defence spending and public education expenditure. The impulse response functions derived from the VAR model reveals that past public education expenditure shocks has a positive but declining relationship with current public education expenditure in the first two years after which it turns negative. Also, the impulse responses show that increase in defence spending will increase public expenditure available for education in the short-run.

Dauda (2009) employed Johansen co-integration technique and error correction methodology to investigate the relationship between investments in education and economic growth in Nigeria, using annual time series data from 1977 to 2007. The results indicate a long-run relationship between investment in education and economic growth.

Omojomite (2010) applied co-integration and Granger Causality Tests to test the hypothesis of a growth strategy led by improvements in the education sector using Nigerian data for the period of 1980-2005. The results show that there is co-integration between public expenditures on education, primary school enrolment and economic growth. The tests revealed that public expenditures on education Granger cause economic growth but the reverse is not the case. The tests also revealed that there is bi-directional causality between public recurrent expenditures on education and economic growth. No causal relationship was established between capital expenditures on education and economic growth, and primary school enrolment and economic growth. The paper recommends improved funding for the education sector and a review of the primary school curricula to make it more relevant to the needs of the Nigerian society.

In the same vein, Lawal and Wahab (2011) considered the relation that is established between education and economic growth in Nigeria, using OLS technique on time series data collected from 1980 and 2008. Education is seen here as representing one of the primary components of human capital formation, which is an important factor in modelling the endogenous growth. It was discovered that educational investments have direct and significant impact on economic growth in Nigeria. It was recommended that government at all levels should increase their funding on different segments of education in the country. Chude and Chude (2013) also investigated the effects of public expenditure in education on economic growth in Nigeria over a period, from 1977 to 2012, with particular focus on disaggregated and sector expenditures analysis. The study used Ex-post facto research design and error correction model to examine the long and short run effects of public expenditure on economic growth in Nigeria.

Methodology

The research design employed in this research work was ex post facto method. This method was chosen because secondary data were collected and as such no attempt was made to control or manipulate the relevant independent variables. The researcher adopted the multiple regression analysis based on the classical linear regression model, otherwise known as Ordinary Least Square (OLS) technique. The researcher's choice of this technique is based not only on its computational simplicity but also as a result of its optimal properties such as linearity, unbiasedness, minimum variance, zero mean value of the random terms, etc (Gujarati, 2004).

Thus, in evaluating the impact of government expenditure on education and economic growth of Nigeria. Our theoretical and analytical framework is captured within the context of the endogenous growth theory. But will naturally begin with the neoclassical production function or the standard Solow growth model of the form.

$$Y_t = A_tF(K_t, L_t) \qquad (1)$$

Where; Y_t is the aggregate real output, K is the capital stock, L is labour, A is the efficiency factor or technological progress and t is the time dimension. Transforming the model in capturing the study, the following variable; gross domestic product, government expenditure on education and government expenditure on health and life expectancy were used as proxy. Thus, the model is represented symbolically in its functional form as:

$$GDP = F (GEE, GEH, LEXP) \qquad (2)$$

Where;

GDP = Gross Domestic Product

GEE = Government Expenditure on Education

GEH = Government Expenditure on Health

LEXP = Life Expectancy

Thus in view of the relationship between Gross Domestic Product (dependent variable) and the explanatory variables, we then structurally express the equation 1 and 2 in their mathematical form and also introduce the stochastic element, U_t to take care of other variables that were not included in our models. In a linear function, it is represent as follows,

$GDP = b_o + b_1 GEE + b_2 GEH\ b_3LEXP + U_t$ (3)

Where;

b_o = constant term/parameter intercept

b_1, $b_2$andb_3= coefficients of the parameters estimates.

U_t = Error Term

As effort will be made to rescale the data, the log form is thus expressed as follow:

$LOG\ (GDP) = b_o + b_1LOG\ (GEE) + b_2LOG\ (GEH) + b_3\ (LEXP) + U_t$ (4)

And, the apriori expectations are as specified in table hereunder;

VARIABLES	**APRIORI SIGN**
GOVERNMENT EXPENDITURE ON EDUCATION (GEE)	$b_1 > 0$
GOVERNMENT EXPENDITURE ON HEALTH (GEH)	$b_2 > 0$
LIFE EXPECTANCY (LEXP)	$b_3 > 0$

Results

Having estimated the model, the variables considered are Gross Domestic Product (dependent variable), Government Expenditure on Education (GEE), Life expectancy (LEXP), and Government Expenditure on Health (GEH) will all be used as the independent variables. The result covers the period of year 1981 – 2016.

Unit Root Test

In other to test for the presence or absence of unit root in the data used for the empirical analysis, Augmented Dickey-Fuller (ADF) test was employed and the test result is as presented below:

Table 1: Unit Root

Augmented Dickey Fuller Result at Level and First Difference, Trend only

Variable	**ADF @ Level**	**1st difference**	**2ND Difference**	**Critical value (5%)**	**Order of integration**	**Remarks**
D(GDP)	-2.13333	-5.2853	-	-3.557759	I(1)	Stationary
D(GEE)	-3.805151	-	-	-3.552973	I(0)	Stationary
D(LEXP)	-4.192983	-	-	-3.552973	I(0)	Stationary
D(GEH)	-4.616681	-	-	-3.552973	I(0)	Stationary

Source: Researcher's Computation

From table 1 above, the result revealed that all the explanatory variables were stationary at level namely; Government Expenditure on Education (GEE), Life expectancy (LEXP), and Government Expenditure on Health (GEH) given the 5% level of significance, since the absolute value of the calculated ADF exceeds the absolute value of 5% critical value of the ADF.

However, at level Gross Domestic Product (GDP) was not stationary but was stationary after differencing same by one. Hence, since all the variables are not stationary at the level, and were integrated of different orders, we proceed to test for longrun relationship among the variables using ARDL bounds test as recommended by Pesaran and Shin (1999) and Pesaran et al. (2001).

ARDL Bounds Tests for Cointegration

In order to empirically analyze the long-run relationships and short run dynamic interactions among the variables of Education, (Government Expenditure on Education (GEE), Life expectancy (LEXP), and Government Expenditure on Health (GEH)) in relation to Gross Domestic Product (GDP), the researcher apply the autoregressive distributed lag (ARDL) cointegration technique.

As earlier stated above, the ARDL bound test cointegration approach was developed by Pesaran and Shin (1999) and Pesaran et al. (2001). It has three advantages in comparison with other previous and traditional cointegration methods.

- First being that the ARDL does not need that all the variables under study must be integrated of the same order and it can be applied when the under-lying variables are integrated of order one, order zero or fractionally integrated.
- Second advantage is that the ARDL test is relatively more efficient in the case of small and finite sample data sizes.
- And the last being that; by applying the ARDL technique we obtain unbiased estimates of the long-run model (Harris and Sollis, 2003).

The ARDL bound test model used in this study is expressed as:

$$\Delta y_t = \beta_0 + \Sigma\, \beta_i \Delta y_{t-i} + \Sigma \gamma_j \Delta x_{1t-j} + \Sigma \delta_k \Delta x_{2t-k} + \theta_0 y_{t-1} + \theta_1 x_{1t-1} + \theta_2\, x_{2t-1} + e_t;$$

And, in the e-views equation format, it becomes:

D(GDP) C D(GDP(-1)) D(GDP(-2)) D(GDP(-3)) D(GEE(-1)) D(GEE(-2)) D(GEE(-3)) D(LEXP(-1)) D(LEXP(-2)) D(LEXP(-3)) D(GEH(-1)) D(GEH(-2)) D(GEH(-3)) GDP(-1) GEE(-1) LEXP(-1) GEH(-1).

Where all variables are as previously defined in the cause of this study; D is the first difference, and lag length 3 is chosen due to the obtained lowest akaike information criterion (AIC) and Schwarz information criterion (SIC) values.

Conclusion

From the analysis so far carried in this research study, one can conclude that, Education within the period under study (1981-2016), has a very significant impact on the economic growth of Nigeria as compared to other economies of the world.

This relationship was revealed by the ARDL Bound test which was significant proven a longrun relationship between economic growth and Education in Nigeria. From our analysis we discover that government expenditure on education has negative relationship with economic growth against the apriori expectation of positive relationship. The reason may not be far-fetched as the expenditure of government in the education sector is far below the minimum 26% budget total recommendation of UNESCO.

One can also conclude from the analysis that Education has a significant role in the development of Nigeria economy at large. Thus, an investment in Education is an investment to put the economy on future part of growth.

Recommendations

The researcher thus makes the following recommendation;

I. Government should increase its expenditure on education so as to ensure sustainable economic growth in the country, as government expenditure to education and health as compared to UNESCO recommendation is still far behind the recommended 26% of the total budget allocation.
II. Government should through its expenditure boost employment by increasing its expenditure on the creation of skills acquisition Centres, symposiums and investing in industry that can train and employ the teeming unemployed youths in the country.
III. Government should as a matter of urgency increase its expenditure in infrastructural building in our educational sector as well as evaluate how the funds allocated to this sector are being expended, to prevent diversion of funds from this sector for another purpose.
IV. The government of Nigeria should through its strategic spending, create an enabling investment climate in order to attract foreign investors that would boost the performance of the economy in order to achieve economic growth in Nigeria thereby reducing the alarming unemployment rate in the country.

V. Government should establish a strong body that will monitor our educational system from primary to the tertiary levels. This will help in preventing our tertiary institutions from producing unemployable graduates/graduate without skills.

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DATA FOR REGRESSION ANALYSIS

Year	GDP(N'B)	GEE(N'B)	GEH(N'B)	LEXP (%)
1981	94.33	0.17	0.08	43
1982	101.01	0.19	0.1	43
1983	110.06	0.16	0.08	43
1984	116.27	0.2	0.1	44
1985	134.59	0.26	0.13	44
1986	134.6	0.26	0.13	45
1987	193.13	0.23	0.04	45
1988	263.29	1.46	0.42	45
1989	382.26	3.01	0.58	45
1990	472.65	2.4	0.5	45
1991	545.67	1.26	0.62	45
1992	875.34	0.29	0.15	46
1993	1,089.68	8.88	3.87	46
1994	1,399.70	7.38	2.09	46
1995	2,907.36	9.75	3.32	46
1996	4,032.30	11.5	3.02	46
1997	4,189.25	14.85	3.89	46
1998	3,989.45	13.59	4.74	47
1999	4,679.21	43.61	16.64	47
2000	6,713.57	57.96	15.22	47
2001	6,895.20	39.88	24.52	47
2002	7,795.76	80.53	40.62	48
2003	9,913.52	64.78	33.27	48
2004	11,411.07	76.53	34.2	49
2005	14,610.88	82.8	55.66	49
2006	18,564.59	119.02	62.25	50
2007	20,657.32	150.78	81.91	50
2008	24,296.33	163.98	98.22	51
2009	24,794.24	137.12	90.2	51
2010	54,612.26	170.8	99.1	51
2011	62,980.40	335.8	231.8	52
2012	71,713.94	348.4	197.9	53
2013	80,092.56	390.42	179.99	53
2014	89,524.41	440.12	198.02	54
2015	94,166.94	444.14	206.31	55
2016	101,489.23	532.8	433.8	56

Source: CBN Bulletin and World bank Indicators