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Impact of Human Capital Development on Economic Growth in Nigeria: Using ARDL Bound Approach

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Abstract:
This study examined the impact of human capital development on economic growth in Nigeria, were education and health expenditures was proxed for human capital. Secondary data between 1986 and 2017 were collected. Autoregressive Distributed Lagged (ARDL) bound technique was used to analyse the data. The result on education expenditure revealed that both capital and recurrent expenditure has positive and significant impact on economic growth by 2% and 1% during the period of the study. On the other hand, result on capital expenditure on health shows positive and significant impact at 1% level on economic growth with impact elasticity 3%. Life expectancy rate result shows positive with impact elasticity 23%, but the probability value indicated that there is no significant impact on economic growth during the period of the study. The bound test cointegration procedure revealed that there is presence of long-run relationship among the variables employed. The coefficients of the ECM (-2.45) and (-1.32) shows a highly statistically significant, implies the disequilibrium occur due to some shocks which is totally corrected approximately 25% and 13% respectively in current year. The study recommends that policy makers should review budget allocation to education and health sectors upward in other to meet up with United Nations and African Union benchmark of 26% and 15% respectively.

Keywords: *Human capital development, economic growth, ARDL, education, health*

1. Introduction

Economic growth is one of the major indicators of well-being in a country. For decades the concept of economic growth has been used in comparing the strength of one country to another around the globe. Several countries that have achieved rapid economic growth since World War II, have two common features. First, they invested in education of men and women and second the transformation of technology which trigger economic efficiency[1]. A study on United States economy, shows that before the great depression of 1930s, economic growth was slow than in the post-depression that is between 1890 and 1929. The average growth rate of the United States was 1.76% as against 2.23% between 1929 and 2007[2]. This transformation happened as a result of paradigm shift that is, moving away from the use of physical capital to human capital and technology during the pre-industrial era. These have encouraged many countries in the world to concentrate on developing their human resources and transforming their technology.

Moreover, studies in early 1960s revealed that human capital is a catalyst for economic growth. Schultz [3] and Denison [4]investigated the factors that influence economic growth in United States of America. According to their findings, accumulation of human capital through learning activities has significant influence on various sectors of the economy, while investment on education and training largely affects growth of individual wage, firms' productivity and national output. Furthermore, modern growth theories support the fact that investment in human capital will go a long way in influencing economic growth in countries[5].World Economic Forum Report [6] shows that countries such as Finland was recognized first in terms of human capital development and this may not be unconnected to large amount of expenditure as a percentage of GDP allocated to education and health sectors. The country attained 85.86% Human Capital Index (HCI) with corresponding GDP growth rate of 1.4%. The report also indicates that Norway was ranked high in human capital development with 84.72% (HCI) and corresponding GDP growth rate of 1.02%. This indicates that for country to attain significant level of economic growth, the government most give special attention to human capital development[6]. African countries are not left behind in terms of human capital development. Among the countries, Ghana was recognized first with 64.24% (HCI) and corresponding GDP growth rate of 3.5%, while Zambia was second with 62.06% (HCI) and corresponding GDP growth rate of 3.4% and Nigeria was ranked 127th with 48.86% (HCI) and corresponding GDP growth rate of -1.62%[6]. Based on the aforementioned, GDP growth rate is slow in developed

countries, but developed human capital appears to have a meaningful spillover effect on their economies unlike in Africa, where there is large GDP growth rate, but has low human capital index. Therefore, it is necessary for African countries to prioritized meaningful human capital development so as to achieve meaningful economic growth.

However, statistics on education and health expenditure in Nigeria in 2013 was 10.21% and 3.4% respectively. In 2014 the figures increased to 10.63% and 3.7% respectively. But by the year 2016 and 2017 the figure drastically fall to 6.01% and 3.7 and 6.0% and 3.5% respectively [7].In spite the effort of Nigerian government in formulating good policy and programs to develop human capital through investment in education and health sectors, the economy is still characterized with slow growth rate, low human development index, delay in release of funds and mismanagement of funds allocated to education and health sectors among others. The bench mark by United Nations Education Scientific Corporation (UNESCO) of at least 26% of annual budgets which should be allocated to education and 15% to health sector according to Abuja declaration in 2001 has not been realized over the years [7].

Therefore, it is against this backdrop that this paper examines the impact of human capital development on economic growth in Nigeria where education and health expenditures were proxed for human capital. The rest of this paper is structured as follows: Section 2 is on the review of some extant literature.Section 3 is on methodology. Section 4 is results and discussions on the impact of education and health indicators on economic growth in Nigeria. Section 5 concludes the paper.

2. Literature Review

The concept of human capital has been defined by many scholars. Adam Smith [8] was the first classical economist to include human capital in his definition of capital? He included in the capital stock of a nation the inhabitants' acquired and useful talents. He believes that human skills increase the wealth of a society as well as that of the individual. Along the line, the concept of human capital was largely forgotten until the coming of scholars like Mincer [9, 10], and Becker [11], Schultz [12]. These economists rekindled the concept by re-affirming the links which human capital and economic growth has by emphasizing its importance in explaining earning differentials among workers. According to Babalola, 2003 cited in Lawanson [13] the rationality behind investment in human capital is based on three arguments; first is that the new generation must be given the appropriate parts of the knowledge which has already been accumulated by previous generations; second is that the new generation should be taught how existing knowledge should be used to develop new products, to introduce new processes of production and social services; and thirdly that people must be encouraged to develop entirely new ideas, products, processes and methods through creative approaches.

The concept of human capital as put forward by different empirical literature, largely hinge on knowledge and skills acquired through education (whether formal or informal) development and sound health, which eventually result to economic growth of a nation. In other to ameliorate the concept of human capital, this study defined human capital as a general knowledge gain by individual or group of individuals for immediate or future benefit. This can come either as organized formal knowledge, innate abilities or nurtured influence knowledge.

On the other hand, Lipsey [14] explains economic growth as a positive trend in the nation's total output over long term. This implies a sustained increased in gross domestic product (GDP) for a long time will eventually lead to development. According to Dolan [15] economic growth measures growth in relation to gross domestic product (GDP) from one period to another and adjusted for inflation. The real economic growthrate is expressed as a percentage that shows the rate of change in a country's GDP, typically, from one year to the next. According to Gbosi and Omoke [16] gross domestic product refers to the total market value of all final goods and services produced in an economy within a given period.

In another way round, Muritale and Taiwo [17] defined a country's economic growth as a long term rise in capacity to supply increasing diverse economic goods to its population, this growth capacity based on advancing technology and the institutional and ideological adjustment that is demand.

There are many theories of human capital propounded by different scholars around the globe. This study has discussed theories such as; Harrod-Domar Model which is an economic growth model that stresses the importance of the level of national savings and the productivity of capital investment. This model assumed that if there is 10% rate of savings in a country with a co-responding 2% capital output ratio then it is expected that the country will grow at the rate of 5%[18]. The emphases here are that investment is a prime mover of the economy.

Schultz introduced his theory of human capital by arguing that, both knowledge and skills are forms of capital, and that this capital is a product of deliberate investment. He argued that education, training and investments in health open up opportunities and choices that otherwise would be unavailable to many individuals [12].

Becker's [11] research was fundamental in arguing for the expansion of human capital when his research was considered very controversial as some considered it debasing. However, he was able to convince many that individuals' makes choices of investing in human capital based on rational benefits and cost that include a return on investment as well as a culture aspect. His research included the impact of positive and negative habits such as punctuality and alcoholism on human capital. He explored different people and the resulting macroeconomic implications. He also distinguished between general to specific education and their influence on job lock and promotions. Beckers' idea of human capital embodied the knowledge, skills and health of an individual or group of people who choose to invest in anticipation of future returns.

Schumpeterian economic growth is unlike other economic growth theories, his explanation of the process of economic growth does not fit into the orthodox theories, because he stressed the noneconomic causes of growth. Though he examined some strictly economic factors, he insisted that the principal elements in the past growth of the system and the elements that will reduce growth in the future are noneconomic, to him depressions were self-correcting, and there could

be no equilibrium at less than full employment. Schumpeter considered depressions beneficial to the system; because they were an integral part of the entire process of economic growth. To him growth was tied to the prosperity stage of the business cycle, because this phase represents the ultimate outcome of the introduction of new products and technology into the economy. But excesses develop as credit is over expanded and businesses overextend themselves. The resulting depression is beneficial in that it shakes out the economy, removing the less efficient firms, and thereby prepares the way for a growing economy of healthy, well managed, efficient firms amongst others[19].

Frankel [4] AK model states that, thrift; capital accumulation and efficient allocation of resources are the keys to economic growth. It assumes that, when people accumulate capital, learning by doing generates technological progress that tends to raise the marginal product of capital, thus offsetting the tendency for the marginal product to diminish when technology is unchanged [20]. Furthermore, Romer [21] opined that all increases in standard of living can be traced to discoveries of more valuable arrangements for the things in the earth's crust and atmosphere. No amount of savings and investment no policy of macroeconomic fine-tuning, no set of tax and spending incentives can generate sustained economic growth unless it is accompanied by the countless large and small discoveries that are required to create more value from affixed set of natural resources. Uzawa [22] Modelled technological change as an emanation from the education sector, were Lucas [23]using Uzawa's framework, introduced and endogenized human capital in the neoclassical growth framework. He kept technological progress exogenous and presented human capital accumulation as an alternative growth engine which will increase productivity and thus raise the level of output.

Romer's model of economic growth is very fundamental in economic discourse, he developed the endogenous growth theory by emphasizing that technological change is as a result of efforts by researchers and entrepreneurs who respond to economic incentives. He stressed on that, anything affecting their efforts, such as tax policy, basic research finding and education has potential influence in the long-run on the prospect of the economy [24].

Uduh and Azu [25] examined the impact of nomadic education expenditure and economic growth in Nigeria. The study employed ordinary least square (OLS). The result revealed that total government expenditure on nomadic education has a significant impact on Nigeria economic growth. Furthermore, study by Muddassaar and Rehman [26] investigated the impact of human capital and economic growth nexus in the presence of corruption for a disaggregated sample of developed and developing economies, and East, West, and South Asia. The study employed dynamic panel data and generalize method of moment. The findings revealed that human capital has positively affected economic growth even though for some groups of economies, corruption boost up economic growth while for some others, it retards the economic growth.

3. Methodology

3.1. Variables and Data

This study used secondary data in form of time series which was sourced from Central Bank of Nigeria (CBN), World Development Indicator (WDI), United Nations Development Programme (UNDP) and National Bureau of Statistics (NBS).

Acronyms	Variables Names	Unit	Source
RGDP	Real Gross Domestic Product	$\frac{norminal\ GDP}{GDP\ Deflector} \times 100$	CBN
CEE	Capital Expenditure in Education	Naira	CBN
REE	Recurrent Expenditure in Education	Naira	CBN
CEH	Capital Expenditure in Health	Naira	CBN
REH	Recurrent Expenditure in Health	Naira	CBN
HDI	Human Development Indices	Percent (%)	UNDP
LEBF	Labour Force	Numbers	ILO/NBS
LEP AT B	Life Expectancy at Birth	Numbers	WorldBank

Table 1: Variables Definitions, Measurements and Sources of Data

3.2. Model Specification and Method of Analysis

The study employed Auto-regressive Distributed Lagged (ARDL) bound technique, where the impact of education and health expenditures on economic growth was determined.

In order to avoid spurious regression, Augmented Dickey Fuller (ADF) unit root tests was used to check for the stationary status of the data series so as not to violate the rule in applying ARDL bound technique.

The general model used in testing the presence of a unit root is formulated thus:

$$\Delta Y = \beta_t + \beta_1 t + \partial Y_{t-1} + \sum_{t=1}^{n} \alpha_1 \Delta Y_{t-1} + \mu_t \quad \text{..... (1)}$$

Where Y_{t-1} is the immediate prior observation, ΔY_{t-1} is the differenced lag term, n is the number of lags, β_t is the coefficient of the preceding observation, Δ is the first difference operator, β_2 is the parameter to be determined and μ_t is the pure white noise error term.

After establishing the stationarity of the variables, the next step is to test for the presence of co-integration using ARDL bound technique. Using ARDL bound technique has high advantages over other methods of cointegration like Johansen and Juselius cointegration [27]. The ARDL bound technique does not formally require parsimonious test of unit root, also, using ARDL bound technique, both short run and long run coefficient are obtained sequentially, and it can be applied to variables irrespective of their order of integration whether they are I(0) and I(1) or mixed, it is also efficient in observing small sample size [28].The ARDL model is specified below:

$$\Delta RGDP_t = \beta_0 + \beta_t + \zeta_1 RGDP_{t-1} + \zeta_2 CEE_t + \zeta_3 REE_t + \zeta_5 LABF_t + \sum_{i=1}^{n} \varpi i \Delta RGDP_{t-i} + \sum_{n=1}^{n} \Psi n \Delta CEE_{r-n} + \sum_{m=1}^{n} \varphi m \Delta REE_{t-m} + \sum_{s=1}^{n} s \Delta LABF_{t-s} + \varepsilon ECMt - 1 + \mu_t \quad (2)$$

$$\Delta RGDP_t = \beta_0 + \beta_t + \zeta_1 RGDP_{t-1} + \zeta_2 CEH_t + \zeta_3 REH_t + \zeta_4 LEP_t + \sum_{i=1}^{n} \varpi i \Delta RGDP_{t-i} + \sum_{n=1}^{n} \Psi n \Delta CEH_{r-n} + \sum_{m=1}^{n} \varphi m \Delta REH_{t-m} + \sum_{s=1}^{n} s \Delta LEP_{t-s} + \sum_{v=1}^{n} + \epsilon ECMt - 1 + \mu_t \quad (3)$$

The above model is specified to include both short-run and long-run estimates. Values in the first –difference operator (Δ) are the short-run representative while those with ζ_i represent the long-run coefficients. The null hypothesis of no cointegration is specified as follows; H_o: $\zeta_1 = \zeta_2 = \zeta_3 = \zeta_4 = 0$ and alternative hypothesis of cointegration is specified in the form; H_i: $\zeta_1 \neq \zeta_2 \neq \zeta_3 \neq \zeta_4 \neq 0$. The hypothesis is tested by F-statistics. However, the asymptotic distribution of the familiar F-test has no standard in respect to the order of integration of the variables in question. Thus two critical values of lower bound and upper bound generated by Pesaran et al [28] are adopted. The lower bounds assumes that all the series are stationary at level I(0) while the upper bound assumes that all the series are integrated of order one I(1). If the computed F-statistics exceeds upper bound, then null hypothesis is rejected and the presence of cointegration is confirmed. On the other hand, if F-statistics is less than the lower bound then H_o is accepted implying absence of long-run relation. All computations would be carried out using Econometric Views (E-views 10) computer software.

The model that was used for the impact of education expenditure on economic growth has been derived from the classical theory of production function, where it has been modified in the work of Mallick et al [29]. But this study has adopted and modified the model used in their research in order to ascertain the effect of education expenditure on economic growth in Nigeria. The education expenditure has been disaggregated as it is done in the work of Eigbiremolen and Anaduaka [30] to analysis the effect of capital and recurrent expenditure on economic growth in Nigeria. Furthermore, labour force has been added as control variable and this has been captured in the works of Adawo [31] and Bahadur [32]. The model is specified thus;

$$RGDP_t = \beta_1 + \beta_2 CEE_t + \beta_3 REE_t + \beta_4 LABF_t + \mu_t \quad (4)$$

Where:
RGDPt = Real Gross Domestic Product (%)
CEEt = Capital Expenditure on Education (₦)
REEt = Recurrent Expenditure Education (₦)
LABFt = Labour Force (numeric)
μ_t = Stochastic Error Term
β_0 = Intercept and
$\beta_1 ... \beta_n$ = Coefficients of the independent variables

On the other hand, this study has adopted and modified the empirical model formulated by Onisanwa [33]and Adeniyi and Abiodum [34]. These studies analyses the impact of health on economic growth in Nigeria from 1985 – 2009. The studies employed data on life expectancy rate at birth, fertility rate, gross fixed capital formation, capital and recurrent expenditures on health and real gross domestic product as indicators. While this research used indicators such as; capital and recurrent expenditures on health, life expectancy rate at birth, and real gross domestic product.
The model has been specified thus:

$$RGDP_t = \beta_0 + \beta_1 CEH_t + \beta_2 REH_t + \beta_3 LEP_t + \mu_t \quad (5)$$

Where,
RGDPt = Real Gross Domestic Product (%)
CEHt = Capital Expenditure on Health (₦)
REHt = Recurrent Expenditure on Health (₦)
LEPt = Life Expectancy Rate at Birth (%)
β_1= Intercept
$\beta_2 ... \beta_n$ = Parameter to be estimated
μ_t = Error Term

4. Preliminary Results

Due to the spurious nature of time series data, certain studies on the variables used carried out descriptive and unit root test to observe the behaviour and the integral level of the variables so as to minimized digression in the output of the results. The variables considered for the study include; real GDP, capital expenditure on education, recurrent expenditure on education, capital expenditure on health, recurrent expenditure on health, labour force, life expectancy at birth and human development index.

	RGDP	CEE	REE	CEH	REH	LABF	LEP_AT_B
mean	4.39	242	116	155	68.0	423	44.0
median	4.35	172	61.3	137	28.8	413	46.3
max	33.7	879	394	559	257	589	52.7
min	-10.8	225	0.23	69.5	0.04	295	5.30
Std. Dev	7.15	231	137	166	85.2	882	12.8
Skewness	1.76	0.79	0.98	1.05	1.05	0.29	-2.62
Kurtosis	10.5	2.83	2.39	3.28	2.60	1.92	8.27
Jacque-Bera.	93.0	3.40	5.56	6.08	6.13	1.76	74.0
Prob.	0.00	0.18	0.06	0.04	0.04	0.41	0.00
Sum	140	774	374	498	217	1.19	140
Sum sq. Dev	158	1.65	588	8.61	225	2.10	510
Observations	32	32	32	32	32	32	32

Table 2: Descriptive Statistics

The Real Gross Domestic Product (RGDP) has a maximum value of 33.70 and minimum value of -10.80 for the periods under consideration, with mean value of 4.39. The measure of dispersion of RGDP is indicated by standard deviation value of 7.15. The Jacque-Bera probability value of 0.00 and the skewness value of 1.76 indicate that the variable is positively skewed which is call leptokurtic meaning not normally distributed. The Recurrent Expenditure in Education (REE) has a maximum value of 394 and minimum value of 0.23 for the periods under study, with mean value of 116. The measure of dispersion of (REE) is indicated by standard deviation value 137. The Jacque-Bera probability value 0.06 and the skewness value of 0.98 indicate that the variable is positively skewed (leptokurtic) and normally distributed. Capital Expenditure in Education (CEE) has a maximum value of 879 and minimum value of 225 for the periods considered, with mean value 242. The measure of dispersion of (CEE) is indicated by standard deviation value 231. The Jacque-Bera probability value 0.18 and the skewness value of 0.79 indicate that the variable is positively skewed (leptokurtic) and normally distributed.

Recurrent Expenditure in Healthcare (REH) has a maximum value of 257 and minimum value of 0.04 with mean value of 68.03. The measure of dispersion of (REH) is indicated by standard deviation value of 85.21, the Jacque-Bera probability value of 0.04 and the skewness value of 1.05 shows that the variable is normally distributed. Capital Expenditure in Healthcare (CEH) has a maximum value of 559 and minimum value 69.50 with mean value of 155. The measure of dispersion of (CEH) is indicated by standard deviation value of 166, the Jacque-Bera probability value 0.04 and the skewness value 1.05 shows that the variable is not normally distributed.

Labour Force (LABF) has a maximum value of 589 and minimum value 295 with mean value of 423. The measure of dispersion of (LABF) is indicated by standard deviation value of 882, the Jacque-Bera probability value 0.41 and the skewness value 0.29 shows that the variable is normally distributed. Life Expectancy at Birth (LEP AT B) has a maximum value of 52.72 and minimum value 5.30 with mean value of 44.01. The measure of dispersion of (LEP AT B) is indicated by standard deviation value of 12.83, the Jacque-Bera probability value 0.00 and the skewness value -2.62 shows that the variable is skewed negatively and not normally distributed.

This study applied unit-root test to determine the stationarity of the variables. Table 2 below present the results of the stationary test based on Augmented Dickey-Fuller test. The variables include; RGDP, LABF and LEP AT B are found to be I (0) variables, that is stationary at level while CEE, REE, REH and CEH are integrated at first order difference I(1).

Variables	ADF Stat.	Crit. Val. @ 5%	No. of Diff.	Prob
RGDP	-4.44	-2.96	I(0)	0.00*
CEE	-6.75		I(I)	0.00*
REE	-4.85		I(I)	0.00*
CEH	-5.65		I(I)	0.01*
REH	-3.59		I(I)	0.00*
LABF	-24.90		I(0)	0.99
LEP @ B	-4.11		I(0)	0.00*

Table 3: Unit Root Test
Note -2.96 Denotes Significant at 5% Level for All Variables and the Variables Are Observed at Intercept*
Source: Author's Computation Using E-Views 10.0

5. Trend of Variables

The figures below shows the trend on the variables employed in the study. Figure 1 on real GDP indicates the trend over the years. The highest GDP growth rate recorded was in 2004 and this happens as a result of government deliberate effort in using discretionary fiscal policy and tightened monetary policy in other to achieve its target of 5% GDP growth rate by the end of the year. Furthermore, the over-all R^2= 0.0449 shows that the variables employed in the study has low influence on economic growth in Nigeria over the period of the study. On the other hand, the lowest GDP growth rate recorded was in 1987 and 2016. This happened as a result of economic crunch and corruption that has eaten dip in the Nigerian policy and the debt burden of about $63.7 billion dollar further worsen the situation as at 2016. Figure 2 on CEE

and figure 3 on REE shows the allocation given to education sector in capital and recurrent expenditure, the graph indicated that budget allocated to this sector has not been in progressive increase, but it has been swinging up and down showing how government policy in revamping education has been suffering from one transition to another. Figure 4 on REH and figure 5 on CEH indicated allocation given to health sector in capital and recurrent expenditure. The graph reveals that in 2011 and 2015 budget allocation to health sector was the highest during the range of the study. This happened as a result of government deliberate effort to achieve the millennium development goal on reduction in both maternal and infant mortality by 2015.

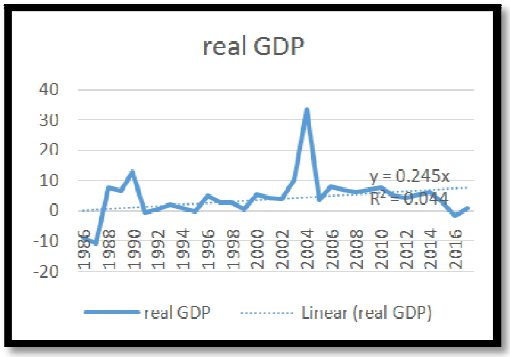

Figure 1: Real GDP

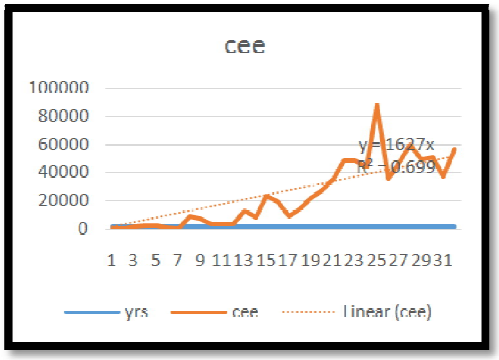

Figure 2: Capital Expenditure on Education

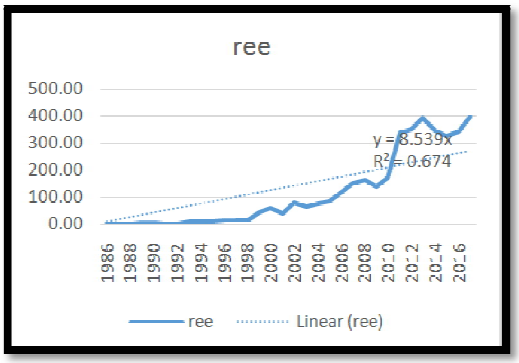

Figure 3: Recurrent Expenditure on Education

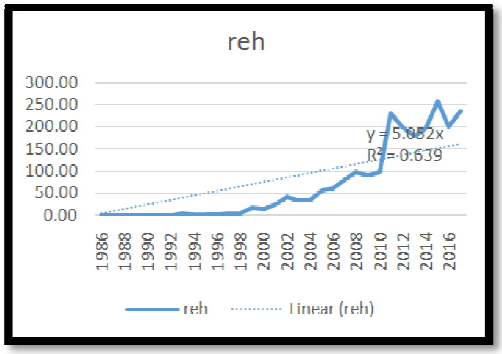

Figure 4: Recurrent Expenditure on Health

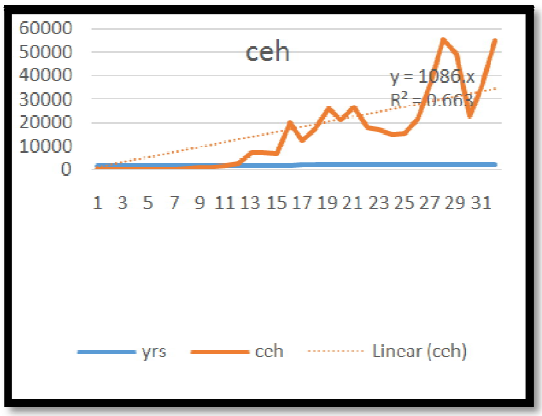

Figure 5: Capital Expenditure on Health

6. ARDL Bound Cointegration Test

The test for cointegration is to identify existence of a long-run relationship among the variables of ARDL equation. Bound test procedure of Pesaran et al., [28] was used for the test. The procedure involved OLS estimation of the variables of equation 4 and 5 and subject the coefficient of the level of variables to joint-significance Wald Test. The F-statistics obtained in the process are then compared with the bound-test critical values provided in Pesaran et al., [28] (5% level of significance is maintained). Long-run cointegration exists if the Wald Test statistics falls above the upper bound critical values. The result of ARDL bound test on education revealed that the Wald test F-statistics is 7.21, which is above the upper bound critical values at 5% 4.35. This mean there is the existence of long-run relationship among the variables employed. While health Wald tests F-statistics is 4.46 which is greater than the upper bound test at 5% critical value of 4.35. This implies that there is a unique long- run relationship among the variables employed in the study.

F-Bound Test		**Null Hypothesis:**		**No Level Relationship**
Education				
	Value	Signif.	I(0)	I(I)
F-statistics	7.211249	10%	2.72	3.77
K	3	5%	3.23	4.35
		2.50%	3.69	4.89
		1%	4.29	5.61
F-Bound Test		Null Hypothesis:	No level relationship	
Health				
	Value	Signif.	I(0)	I(I)
F-statistics	4.461363	10%	2.72	3.77
K	3	5%	3.23	4.35
		2.50%	3.69	4.89
		1%	4.29	5.61

Table 4: Result for ARDL Bound Cointegration Test

Having determined the existence of a long run equilibrium between economic growth and the long run coefficients are estimated using the associated ARDL bound and ECM. The ARDL bound model is estimated by automatic selection of maximum lag length of 4 and using Akaike information criteria in selecting the optimum lag order for the model. The specification finally selected ARDL (4, 3, 4, 4), the derived long run elasticities are presented in Table 4.4 The long run impact of capital expenditure in education on economic growth is around 0.000155 and statistically significant at 5% level, meaning for a unitincrease in CEE will increase 1% in economic growth. The long run impact of recurrent expenditure in education on economic growth is 0.02400 and is statistically significant at 5% level, meaning that for every 1% increase in recurrent expenditure in education will increase 2% in economic growth. Meaning budget allocation to both capital and recurrent expenditure on education over the years has influenced the increase in GDP growth in the long-run in Nigeria. The result for Lagrange Multiplier (LM) Test above shows that there is no serial correlation amongst the variables in the model. Furthermore, the result for Heteroskedasticity test confirmed that the variables are not homoscedastic since the probability of F-statistics is greater than the critical level (F-stat 0.7027 > 0.05). A figure in the appendix II shows the recursive residual of CUSUM Test where the model show that at 5% level of significant the coefficients of the model are stable.

	Coef.	S.E	T-ratio	P		Coef	S.E	T-ratio	P
C	-11.10	7.51	-1.47	0.19	C	-11.05	12.25	-0.90	038
CEE	0.024	0.006	3.61	0.01*	CEH	-0.03	0.02	-1.23	0.23
REE	0.00015	3.20	4.83	0.00*	REH	0.0003	0.0001	2.45	0.02*
LABF	3.55	1.05	33.75	0.00*	LEP	0.23	0.18	1.26	0.22
LM Test	0.02			0.97	LM Test	1.26			0.31
Heter. Test	0.75			0.70	Heter Test	6.90			0.00*

Table 5: Estimated Models on Education and Health
Significant at 5% Level
Source: Author's Computation Using E-Views 10

The error correction term ECM (-1) estimated is -2.454(0.0011) is highly significant, is well specified and has the correct sign, and imply a fairly speed of adjustment to equilibrium after a shock. Meaning that about 25 percent departures from long run equilibrium is corrected in the short run. Approximately, 25% of disequilibria from the previous year's shock converge back to the long run equilibrium in the current year. This implies that the disequilibrium occurring due to reluctance of the government to meet the basic requirement of UNESCO of 26% allocation to the education sector in annual budget. Furthermore, the increase in the number of labour force has worsened the situation in Nigeria over the years. Therefore, it can be said that the speed of adjustment is low and this reflects inefficiency in the economy.

After establishing the existence of long run relationship among the explanatory variables, the long run coefficients are estimated using the ARDL bound and ECM. The ARDL bound model is estimated by automatic selection of maximum lag length of 4 and using Akaike information criteria in selecting the optimum lag order for the model. The specification finally selected was ARDL (3, 0, 4, 2), the derived long run coefficients are presented in Table 5. The result shows that health sector when disaggregated into recurrent and capital expenditures, the capital expenditure has positive and significant influences on the economic growth in Nigeria with impact elasticity 0.000382 meaning that a 1% increase in capital expenditure on health will increase about 38% in economic growth in Nigeria. On the other hand, the coefficient of recurrent expenditure on health is -0.032812, meaning that for every 1% increase in REE, it will bring about 33% decrease in economic growth and the effect is insignificant as the probability value is 0.2371. Furthermore, in order to test the stability of this model, Lagrange Multiplier (LM) test is used. The test confirmed that the residuals are not homoskedastic (meaning no serial correlation in the model) since the F- probability value is 0.3153 which is greater than the critical value at 0.05. The test for stability using the CUSUM Test further confirmed that the model is stable.

On the order hand, capital expenditure at lag 3 on health has positive and significant influence on economic growth, while life expectancy rate at birth has positive significant impact on economic growth in the short run. The error correction specification is unrestricted constant and no trend. The size of the error correction model indicates the speed of adjustment to long run equilibrium. According to the Model above, the parameter ECM (-1) is negative, less than one and significant at 1% level. The error correction term ECM estimated is -2.4746 (which is also equal to -0.0247) it means the speed of adjustment to equilibrium after a shock is slow. This means that about 25 percent departure from long run equilibrium is corrected in the short run. Approximately 25% of disequilibrium from the previous year's shock converges back to the long run equilibrium in the current year.

	Coef.	S.E	T-ratio	P		Coef.	S.E	T-ratio	P
dRGDP	1.60	0.19	8.28	0.00*	dRGDP(-1)	0.49	0.22	2.23	0.04*
dCEE	0.0001	1.97	5.14	0.00*	dCEH(-3)	0.0006	0.0002	3.24	0.00*
dREE	0.03	0.008	4.98	0.00*	dLEP	0.32	0.14	2.24	0.04*
dLABF	-0.0001	4.41	-27.7	0.00*					
dC	-11.10	2.17	-5.10	0.00*	dC	-11.05	2.43	-4.54	0.00*
ECM(-1)	-2.45	0.36	-6.79	0.00*	ECM(-1)	-1.32	0.28	-4.62	0.00*

Table 6: Error Correction Education and Health Models
*Note: *denote significant at 5% level*
Source: Author's computation using E-Views 10

7. Conclusion

The study investigated the impact of human capital development on economic growth in Nigeria from 1986 - 2017. The result on the impact of education expenditure on economic growth reveals that the disaggregated capital and recurrent expenditures on education influence economic growth by 2% and 1% respectively during the period of the study. On the other hand, the impact of health expenditure on economic growth was analysed through the use of ARDL bound technique and the result shows that capital expenditure on health has impacted economic growth by 3% and recurrent expenditure on health impacted economic growth negatively with impact elasticity -3%, while life expectancy rate at birth shows positive impact on economic growth by 23%, but the impact was insignificant.

Therefore, the study recommends that budget allocation on education should be reviewed upward so as to meet up with the benchmark set by United Nations of 26%. Also, government and stakeholders need to collaborate in building

health Centre's and ensuring adequate provision of healthcare facilities. This is in line with the finding on impact of health expenditure as while as result on life expectancy rate at birth on economic growth in the study.

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