

# Human Capital and Economic performance in Nigeria

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**Abstract:** The study analyses the influence of human capital progress on economic performance in Nigeria using Endogenous Growth model and ARDL approach from 1981 to 2019. Data was obtained from central bank of Nigeria statistical bulletin and world development indicator. Long run estimate illustrates that capital expenditure on education accelerates economic progress, recurrent expenditure on education does not explain economic growth and population shrinks economic performance. Short run result also shows that capital expenditure on education is positive and significant in determining economic growth. On the contrary, recurrent expenditure on education do not impact significantly on economic growth. Therefore, based on the findings, the study recommends that in order to boost human capital and attain sustainable economic progress, budget allocation on capital expenditure on education should be increased and policy makers should design policies that will curb population growth such as limiting the number of child birth per couple and provision of free family planning tools.

**Keywords:** Human capital, trade, GDP, ARDL, Nigeria

## I. INTRODUCTION

In order to achieve economic, social and political growth, there is the need for a qualitative human capital. The economies that grows fast such as China, Japan, India, Korea, and the likes, even though their level of natural endowments is low, obtained economic growth because of their investment in human capital development (Taiwo, Oluwatobi & Olurinola, 2016). Nigeria as a country is blessed with human resource. Oluwaseyi (2012) stated that in 2010, 53.8% of the country's populace set up the economic active group, this is an indication that the country has the ability to build an affluent economy, decrease poverty, provide health facilities, education and infrastructural facilities that her populace. All the same, poverty is increasing, infrastructural facilities are poor (particularly roads and power supply) which pave way to the breakdown of many industries, and has bring about high level of unemployment. In addition, macroeconomic indicators such as balance of payments, exchange rate, inflation rate, import obligations, and national savings make known that the country has not progressed well in the last couple of years (Ohwofasa, Obegh & Atumah, 2012).

Despite the realisation of the importance and contributions of human capital in the process of economic progress, the problem is Nigerian government still gives a somewhat low percentage of the budget to education sector. UNESCO vouch for 26 per cent of government budget to education but Nigeria gives out less than 12 % of it to education. Education budget signifies 5.3 percent of total budget expenditure, in 1989 it accounted for 7.9% and 0.7% in 1992; 11.6% in 2000 (Uche,

Ihugba and Chinedu, 2013). In 2012 it was 8.43%, in 2013 it was 10.21% (Michael, 2012). Similarly, in 2014, 10.63 % (statisense, 2015) which was against international benchmark of 26%. Therefore it becomes necessary for the study to analyse the influence of human capital development on economic performance of Nigeria. The study comprises of five parts; introduction which includes background and statement of research problem; literature review which involves of conceptual, theoretical and empirical reviews; methodology which takes account of model of analysis and choice of variables; data and results discussions; and finally conclusions and recommendations.

## II. LITERATURE REVIEW

### 2.1 Conceptual review

Schumpeter (1911) as cited in Jhingan (1997) termed economic growth as gradual transformation of economic activities in future which leads to the acceleration of savings and population. Economic growth may well involve a gradual upsurge in a nation's per capita product which is determined by increase in physical capital and advancement in technology which can be achieved through acquiring more knowledge and education and lastly human capital development which also can be achieved through education (Jhingan, 1997). Schumpeter's definition states that for economic growth to take place there has to be rise in the level of savings and population, here, it, should be taken into consideration that as population is growing so does human capital. Jhingan also clearly points out that for economic growth to take place, there has to be growth in technology which is achieved through obtaining more knowledge and education and lastly human capital development. All in all, for economic growth to take place, there has to be a boost in an economy's savings which will give lead to a boost in capital, human capital, technology, investment and productivity. According to UNECA (1990), human capital denotes to the knowledge, skills, physical and managerial efforts; and attitudes that is necessary and required to manipulate capital, technology and land amid other things so as to produce goods and services for human consumption. Human capital is the most vital of all the attributes of economic growth because all other attributes cannot fit into place by themselves in growth process, there is the need for the brains and ability to fix them and this calls for human capital without which a steady growth path will be difficult if not impossible to achieve.

## 2.2 Theoretical review

Endogenous growth theory was established by a class of economists among which includes Arrow, Romer and Lucas. The theory was given birth to due to the insufficiencies of Solow Swan neoclassical growth model which states that a steady equilibrium is accomplished in an economy through a continuous production process which is arrived at through a combination of inputs of capital and labour. To the theory, long run growth is attained in an economy through some exogenous factors that consist of population growth rate and the rate of progress in technology, and that growth doesn't depend on the rate of savings. The endogenous growth theory stepped in and corrected this assumption; they argued that long run growth is assimilated in an economy by way of technological progress which is not an exogenous factor but rather an endogenous factor that arises from investment rate, physical capital size and human capital stock. Lucas (1988) assumes that investment on education hints to the making of human capital and to him, it is the most imperative contributing aspect in growth process because it promotes technology which proliferates the whole productivity of an economy and increase output; and by doing so leads to economic growth.

The theoretical link between human capital and economic growth is marked out by the Endogenous Growth theory. The theory sees human capital through investment in education as the utmost significant cause of economic growth, hence this study made use of the theory as a theoretical base.

## 2.3 Empirical review

Association amongst human capital and economic performance is discussed in the literature. For instance, Sbaouelgi (2016) brought into being a causal relationship between higher education and the GDP per capita in Tunisia, Morocco and South Korea. Mallick and Dash (2015) for India discloses long run relationship crammed between expenditure on education and economic growth. Aysen and Hakan (2014) conveyed that improved education quality upsurges GDP per capita while public spending on human capital does not in MENA countries. Naftaly, Symon, Lawrence and James (2014) in East Africa confirms that investment expenditure promotes economic progress. Awad and Halid (2013) made known that in Arab countries, human capital development outpours economic growth. Harris and Boopen (2013) in Mauritius shows human capital proliferates growth. Shobande, Odeleye and Olunkwa (2014) divulge that in Nigeria short term relationship between economic development and human capital investment is negative. Kanayo (2013) displays that capital expenditure on education is unimportant to growth progression in Nigeria. Javed, Abbas, Fatima, Azeem and Zafar (2013) disclose that enrolment in secondary school does not advance economic growth bearings for Mauritius. Ali, Chaudhry and Farooq (2012) the case of Pakistan confirms education enrolment, physical capital and health augments economic growth. Idrees

and Siddiqi (2013) for seven developed (United Kingdom, United States of America, Canada, Germany, France, Italy and Japan) and seven developing countries (Pakistan, India, China, Turkey, Poland, Russia and South Africa) point out that public education expenditures bears more on economic growth in developing countries rather than developed countries. Maitra and Mukhopadhyay (2012) brought into being the long run relationship between education and health sectors public spendings and GDP in Republic of Korea, Philippines, Maldives, Malaysia, Kiribati and Bangladesh. Whereas in Vanuatu, Tonga, Sri Lanka, Singapore, Nepal and Fiji it such a relationship does not occur. This literature offers different findings, for that reason, this study probes the interconnection amid human capital and economic performance of Nigeria.

## III. METHODOLOGY

### 3.1 Model of analysis

The study chooses the Lucas (1988) endogenous growth model featured by Johnson (2011) with some changes to examine the influence of human capital on economic performance. As opposed to Johnson (2011), the present study disaggregates education expenditure into capital and recurrent expenditures and also incorporates population and trade openness as control variables. The model is exemplified in equation 1:

$$GDP_t = \alpha + \Psi_1 CEE_t + \Psi_2 REE_t + \Psi_3 GFCF_t + \Psi_4 PPTL_t + \Psi_5 TOPS_t + \varepsilon_t \quad (1)$$

In equation 1 GDP represents economic progress, CEE illustrates capital expenditure on education, REE is recurrent expenditure on education (and are used to signify human capital), GFCF shows the gross fixed capital formation (used to denote physical capital), PPTL is population (used to represent labour), TOPS is trade openness, t stand for the period  $\alpha$ ,  $\Psi$  are the parameters and  $\varepsilon$  is the disturbance error.

The apriori expectation ( $\Psi_1, \Psi_2, \Psi_3, \Psi_4, \Psi_5 > 0$ ), therefore, CEE, REE, GFCF, PPTL and TOPS are positively related to economic growth.

Hence, ARDL technique is applied for the long run estimation of model as shown in the following equation.

$$\begin{aligned} \Delta LGDP_t = & \beta_0 + \sum_{j=1}^n \beta_1 \Delta LGDP_{t-j} + \sum_{j=0}^n \beta_2 \Delta LCEE_{t-j} \\ & + \sum_{j=0}^n \beta_3 \Delta LREE_{t-j} + \sum_{j=0}^n \beta_4 \Delta LGFCF_{t-j} \\ & + \sum_{j=0}^n \beta_5 \Delta LPPTL_{t-j} + \sum_{j=0}^n \beta_6 \Delta LTOPS_{t-j} \\ & + \alpha_1 LGDP_{t-1} + \alpha_2 LCEE_{t-1} + \alpha_3 LEE_{t-1} \\ & + \alpha_4 LGFCF_{t-1} + \alpha_5 LPPTL_{t-1} \\ & + \alpha_5 LTOPS_{t-1} + \varepsilon_t \end{aligned} \quad (2)$$

It noted that to obtain the long run validation of the model, value of F statistics must be above the critical value.

IV. DATA AND RESULTS

4.1 Data

The study utilizes yearly data on economic performance (GDP current USD), human capital growth (capital expenditure and recurrent expenditures on education), capital (gross fixed capital formation), labour (total population ages 15-65), trade (total of exports and imports). This data was retrieved from CBN statistical bulletins 2008 and 2016; and WDI 2017. Table 1 illustrates the descriptive values of the variables used in the study. It reveals that population obtained the highest mean value to the turn of 17.9 percent. However, gross fixed capital formation came up with lowest mean value of 2.45 percent.

Table 1: Descriptive values for the Variables

Variables	Mean	SD	Min	Max
LGDP	6.37	0.91	5.03	8.08
LCEE	8.60	2.43	4.94	11.9
LREE	2.59	2.74	-1.82	5.97
LGFCF	2.45	0.42	1.69	3.56
LPPTL	17.9	0.28	17.5	18.4
LTOPS	3.85	0.39	3.03	4.40

Note: LGDP is gross domestic product, LCEE is capital expenditure on education, LREE is recurrent expenditure on education, LGFCF is gross fixed capital formation, LPPTL is population total and LTOPS is trade openness.

4.2 Results

Table 2 indicates the outcome for the stationarity test. The result reveals that all the variables are stationary at first difference for both the ADF and PP tests.

Table 2. Outcome of the stationarity test

Variables	Level		First Difference	
	ADF	PP	ADF	PP
LGDP	-0.198 (0.92)	-0.331 (0.90)	-5.284* (0.01)	-5.271* (0.01)
LCEE	-0.660 (0.84)	-0.660 (0.84)	-6.995* (0.00)	-7.000* (0.00)
LREE	-1.843 (0.33)	-1.239 (0.64)	-7.447* (0.00)	-10.27* (0.00)
LGFCF	-2.887 (0.05)	-2.899 (0.05)	-5.449* (0.01)	-5.046* (0.02)
LPPTL	-0.212 (0.96)	0.861 (0.99)	-5.013* (0.03)	-3.016** (0.03)
LTOPS	-0.500 (0.87)	-1.374 (0.58)	-7.527* (0.00)	-7.400* (0.00)
LTOR	-2.989** (0.04)	-1.044 (0.04)	(0.00)	-5.635* (0.00)

Note \* and \*\* indicates significance at 1 percent, 5 percent respectively.

The bound test for the long run link among the variables of the model is shown in table 3. The cointegration of the

variables is reveal as the outcome indicates that F statistic value is above the critical value.

Table 3. Outcome for the model bound test

F-statistics	1% I(0)	I(1)	5% I(0)	I(1)
5.69	3.93	5.23	2.75	3.79

Table 4 shows that the speed of adjustment term is 47 and it illustrates 47 percent adjustment towards long run of the models variables. The short run result further indicates that in Nigeria, capital expenditure on education accelerates economic performance. This means that A1 percent growth in capital expenditure on education pave way to about 0.26 percent rise in economic progress. However, recurrent expenditure on education does not improve the country’s economic performance. It also reveals that population reduce economic performance. The long run outcome indicates capital expenditure on education increases the capacity of economic performance in Nigeria. It implies that A 1 percent increase in capital expenditure on education results to 0.54 percent increase in economic growth. By implications, this results indicates that if policy makers’ increase capital expenditure on education, economic progress will increase by 0.25 percent. This result is in agreement with the findings reported by studies such as Babatunde and Adefabi (2005), Omojinite (2010), Mercan (2013) and Obi and Obi (2014). On the contrary, recurrent expenditure on education is insignificant in determining economic growth, this is in disagreement with studies of Omojinite (2010), Ohwofasa et al (2012) and Kanayo (2013). Gross fixed capital formation is insignificant in determining economic growth, this is dissimilar to studies of Ali et al (2012), Ejiogu and Chinedu (2013) and Jaiyeoba (2015). Trade openness are also insignificant in determining economic growth while in a study conducted by Fattah, Limam, and Makdisi (2000), the variable is important in growth process. In addition, population reduces economic performance, this implies that increase in population will cause decrease in economic progress, as such findings on population is not supported by that of Samimi et al (2012) and Naftaly et al (2014) as their findings point out a positive relationship between population and economic growth.

Table 4. Model estimation outcome

Variables	Coefficients	SD errors	T statistics	Probability
Short run				
ΔLCEE	0.259492**	0.088832	2.921149	0.0077
ΔLREE	0.114961	0.084457	1.361181	0.1866
ΔLGFCF	-0.056290	0.173946	-0.323607	0.7492
ΔLPPTL	-45.44100*	12.93196	-3.513853	0.0019
ΔLTOPS	-0.076124	0.120551	-0.631467	0.5340
ECT(-1)	-0.473471	0.129079	-3.668082	0.0018
Long run				

LCEE	0.548062*	0.164599	3.329687	0.0029
LREE	0.242805	0.200615	1.210301	0.2385
LGFCF	-0.118888	0.383332	-0.310145	0.7592
LPPTL	-95.97420*	29.99982	-3.199159	0.0040
LTOPS	-0.160779	0.244910	-0.656481	0.5180

Note \*, \*\* illustrates significance at 1 percent 5 percent levels.

**Diagnostic and Stability Tests**

After estimating the ARDL regression, it is important to check whether the data generating process is a true representative of the data (Breitung & Pesaran, 2008). The study conducts residual diagnostic tests for Heteroskedasticity, serial correlation, normality and omitted variables tests. Furthermore, the study also conducted stability tests of CUSUM and (CUSUMSQ) tests. Results from table 5 reveals there is no problem of Heteroskedasticity, serial correlation and errors are normally distributed. Similarly, figures 1 and 2 indicates that the model is stable and good for policy analysis as CUSUMSQ plot lies within the critical lines and it does not move out of it.

Table 5. Diagnostic tests

Tests	F-Statistics	Probability	
Serial Correlation Test		0.4552	0.6404
Heteroskedasticity Test		1.2518	0.3123
Normality Test		0.6711	0.7149
Omitted Variables Test 0.3181		0.3181	0.5784

CUSUM and CUSUMSQ Plots of Recursive Residuals

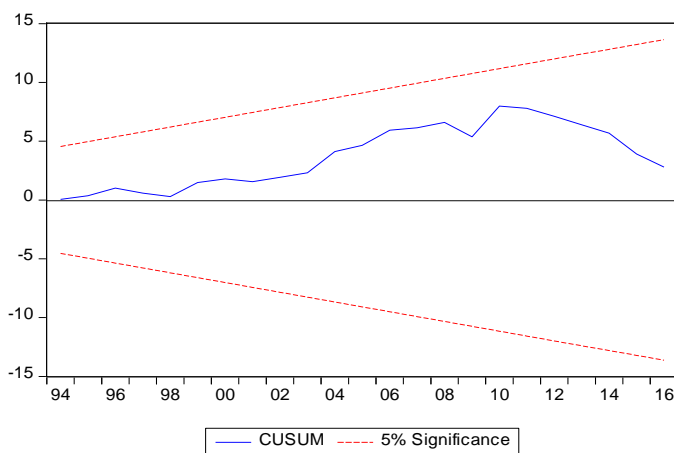


Figure 1: CUSUM

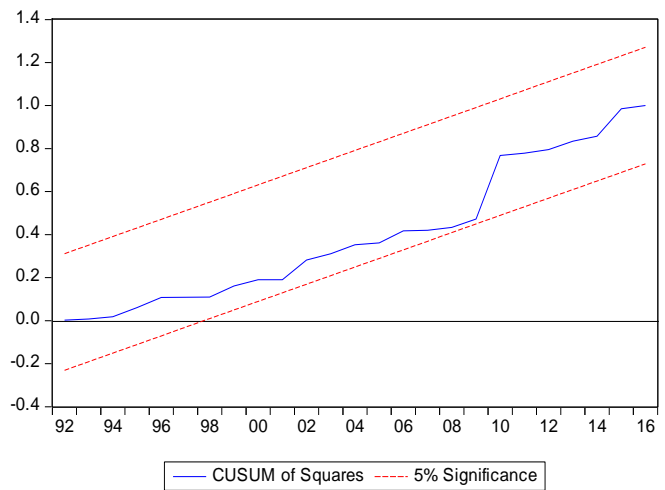


Figure 2: CUSUMSQ

**V. CONCLUSION AND RECOMMENDATION**

This study investigates the influence of human capital on economic performance in Nigeria, using ARDL approach from 1980 to 2019. The study’s outcome illustrates that capital expenditure on education promotes economic performance, whereas recurrent expenditure on education does not. Population reduces economic progress, gross fixed capital formation and trade does not explain economic progress in the long run. Hence, the study suggest that government should increase budget allocation on capital expenditure on education, policy makers should design policies toward promoting capital expenditure for the purpose of attaining viable economic progress. Policy makers should also design policies that will curb population growth such as limiting the number of child birth per couple and provision of free family planning tools. The study’s limitation is the inability of the study to incorporate other variables like oil and non-oil revenues to the government. Therefore, future studies should incorporate such variable to expand their analysis.

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