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INTERPLAY BETWEEN SAVINGS AND HUMAN CAPITAL DEVELOPMENT IN A NATURAL RESOURCE-RICH DEVELOPING COUNTRY: ARDL APPROACH

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ABSTRACT

This paper carries out an empirical examination of the interplay between savings and human capital development in Nigeria (natural resource rich-country) for the years 1981-2022. The relationships of interest were estimated by employing several methods. Using Ordinary Least Squares, the results show that by types of natural resources, oil rent contributes more to savings in Nigeria but the joint (total) natural resources rents impact on savings was found to be statistically insignificant in both short and long run using auto-regression distributed lag (ARDL). Nonetheless, gross savings lagged (one year period) affects savings in Nigeria negatively. Invariably, the savings must have come from non-oil sectors with less revenue. The ARDL short-run dynamic analysis of the impact of savings on human capital development in Nigeria reveals that gross saving two lag period (two-year period) has impacted positively on human capital development, although its value is <1, i.e., savings in Nigeria has grossly underperformed relative to her enormous resource endowment.

Keywords: savings, human capital development, resource rich-country, non-oil sector, Nigeria

INTRODUCTION

Saving & Investment are two crucial elements of macro-economics. Savings and investments are mutually connected. Saving is the process of setting aside a portion of current income for future use, or the flow of resources accumulated in this way over a given period of time (Britannica.com, 2020). Saving may take the form of increases in bank deposits, purchases of securities, or increased cash holdings. On the other hand, investment is an asset acquired or invested in to build wealth and save money from the hard-earned income or appreciation (Maxlifeinsurance.com, 2020). Investment is primarily made to obtain an additional source of income or gain profit from the investment over a specific period of time. Investment is essentially a dynamic process. It depends on saving. In this paper, investment refers to investing in human capital development which according to Umana (2018), is a way to fulfill the potential of people by enlarging their capabilities, and this necessarily implies empowerment of people, enabling them to participate actively in their own development.

Nevertheless, the foundation of developing human capital is savings and it results when some portion of present income is saved and invested in order to augment future output and incomes. However, little attention has been paid to the relationship between savings and human capital development. According to Morisset and Revoredo (1995), this relationship is important for sustainable economic growth due to the following reasons. First, human capital may be engine for attracting other inputs, such as physical capital, which in turn require higher savings rates (Barro, 1990; Benhabib and Spiegel, 1994). Second, the savings rate has to increase gradually in order to finance the increasing educational needs of future generations and to keep human capital development over time. Azariadis and Drazen (1990) emphasized this intergenerational aspect of the relationship between savings and human capital development.

Given this backdrop, this paper seeks to empirical analyze the relationship between savings and human capital development in a developing country. This is because of the belief that the people of developing countries are incapable of high level of individual savings for reasons like; low level of per capital income, indulgence in luxurious and conspicuous consumption by the few who could afford to save. Another reason for focusing on developing countries is because they are greatly endowed with abundant human and natural resources. It is expected that natural resource abundant countries should tend to save or spend more on developing their human capital than otherwise similar countries. Specifically, this paper gives attention to Nigeria, a developing country in West Africa that is endowed with abundant natural resources and a young, dynamic population.

Many studies on savings have been carried in Nigeria, so also have studies been carried on human capital development. But the impact of savings on human capital development in Nigeria has been under researched with limited empirical works. This study thus contributes to the literature on savings and human capital development in Nigeria. Also, the study contributes to the research on determinants of savings in Nigeria by investigating the empirical relationship between resource abundance and savings.

The remainder of this paper is organized in the following sequence: Section 2 presents an over of resources, savings, human capital development, growth in Nigeria, followed by section 3, review of related literature. Section 4 presents the materials and methods of analysis. Section 5 is empirical findings and discussions. Finally, section 6 reports the conclusion and makes suggestions.

1. NIGERIA: OVERVIEW

Nigeria, a country located in West Africa along the Gulf of Guinea on the Atlantic Ocean, is a federal constitutional republic comprised of 36 states and its Federal Capital Territory, Abuja. Nigeria became the largest economy in Africa after rebasing in 2014. The gross domestic product (GDP) is estimated at 397 billion United States dollars (USD) for 2018 based on the information available from the Nigerian Bureau of Statistics (PWC, 2021). As a developing country, Nigeria has been recognised by prominent members of the global investment community and economists as an up-and-coming market with tremendous growth potential over the next decades. Nigeria has been a member of the Organisation of Petroleum Exporting Countries (OPEC) since 1971 and it ranks as the largest oil producer in Africa and the 11th largest in the world. In addition to oil and gas, the country has vast underexploited mineral resources, including coal, bauxite, gold, and iron ore.

In 1980, gross national savings (GNS) consisted of 24.8 percent of GDP, with this figure reducing gradually to 17.6 percent in 1988, and further declining to 10.5 percent in 1995. From then, the percentage of savings in GDP has been changing or varying at regular intervals. The GNS performance in the country has been inconsistent since 2000s. The gross national savings (percent of GDP) was at level of 21.78 percent of GDP in 2020, down from 22.41 percent of GDP previous year (2019) (Knoema, 2021).

In terms of Nigeria's progress in each of the Human Development Index indicators, between 1990 and 2019, life expectancy at birth increased by 8.8 years, mean years of schooling increased by 1.4 years and expected years of schooling increased by 3.3 years. Nigeria's 2019 HDI of 0.539 is above the average of 0.513 for countries in the low human development group and below the average of 0.547 for countries in Sub-Saharan Africa. From Sub-Saharan Africa, Nigeria is compared with Congo (Democratic Republic of the Congo) and Ethiopia, which have HDIs ranked 175 and 173, respectively (UNDP, 2020).

2. REVIEW OF RELATED LITERATURE

From an empirical standpoint, many scholars have carried out studies on human capital development in Nigeria: Uzodigwe et al., 2019; Osoba and Tella, 2017; Jaiyeoba, 2015; Eigbiremolen and Anaduaka, 2014; Wakeel and Alani, 2012; Adelakun, 2011; Sulaiman et al, 2015; Adeosun and Popogbe, 2021. However, none of these studies examined how human capital development is affected by savings. Similarly, from an empirical standpoint, many scholars have carried out studies on savings in Nigeria: Dolado and Lutkepohl (1996); Olajide (2010); Abu (2010); Chete (1997); Soyibo and Adekanye (1991); Nyong (2000); Nnanna (2003); Bankole and Fatai (2013); Nasiru and Usman (2013). However, none of these scholars studied the effect of savings on human capital development in Nigeria.

However, this current study seeks to improve on previous studies by empirically examining the relationship between savings and human capital development in Nigeria (natural resource-rich country). Most important, this study is distinguished from any existing studies based on the approach to the problem. This paper first evaluated the effect of different types of natural resources on savings and later examined the impact of the summation of natural resources on savings alongside other control variables. Thereafter, it examined the impact of savings on human capital development in Nigeria.

3. MATERIALS AND METHODS

This study uses annual time series data that covers the period 1981-2020 for Nigeria. During this period, Nigerian merchandise export was dominated by the oil and gas sector. This period also coincided with the fall of crude oil prices. Furthermore, sample time span was selected based on the availability of statistical data. The data were extracted from Indexmundi.com (forest rents (% of GDP); coal rents (% of GDP); mineral rents (% of GDP); natural gas rents (% of GDP); oil rents (% of GDP); gross savings (% of GDP); total natural resources rents (% of GDP); annual percentage growth rate of GDP; official exchange rate; real interest rate). Others were from Knoema.com (Human Development Index), Central Bank of Nigeria Statistical Bulletin (government recurrent expenditure on education (N billion); government recurrent expenditure on health (N billion)). All variables were converted to their logarithmic form before being employed for analysis.

To determine how the different types of natural resources influence savings in Nigeria from the period 1981-2022, the empirical model is self-designed and specified functionally as follows:

$$Log(S)_t = \beta_0 + \beta_1 Log(OIL)_t + \beta_2 \log(GAS)_t + \beta_3 \log(COL)_t + \beta_4 \log(MIN)_t + \beta_5 \log(FOR)_t + \mu_t \quad (1)$$

Where S is national savings (proxy by GSA, i.e., gross savings (% of GDP) which are calculated as gross national income less total consumption, plus net transfers); OIL is Oil rents (% of GDP), i.e., the difference between the value of crude oil production at world prices and total costs of production; GAS represents natural gas rents (% of GDP), i.e., the difference between the value of natural gas production at world prices and total costs of production; COL is Coal rents (% of GDP), i.e., the difference between the value of both hard and soft coal production at world prices and their total costs of production; MIN is Mineral rents (% of GDP), i.e., the difference between the value of production for a stock of minerals at world prices and their total costs of production. Minerals included in the calculation are tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate; FOR is Forest rents (% of GDP), i.e., roundwood harvest times the product of average prices and a region-specific rental rate; and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are parameters to be estimated, and μ_t is the error term that includes all other controls that are constant over time.

In attempt to examine the joint (total) impact of the different natural resources and to frame equation 4 to suit the Nigerian context by accounting for other factors or variables with economic significance that may affect savings, and to remove any omitted variable bias. Thus, the savings equation takes the following form:

$$\log(S)_t = \beta_0 + \beta_1 \log(R)_t + \beta_2 X_t + \phi_t \quad (2)$$

Where S is national savings(proxy by GSA, i.e., gross savings (% of GDP) which are calculated as gross national income less total consumption, plus net transfers); R_t is natural resources (proxy by TNA, i.e., total natural resources rents (% of GDP) which is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.); X_t is a set of economic control variables (official exchange rate(EXC), real interest rate (INT)) measured at time t, which could have an impact on our dependent variable leading to potential bias in the estimation of the coefficients related to resource abundance, and ϕ_t is the error term that includes all other controls that are constant over time.

In the light of investment function, the human capital development model in this paper is expressed as:

$$\log(H)_t = \beta_0 + \beta_1 \log(S)_t + \beta_2 \log(\mathrm{D})_t + \Omega_t \quad (3)$$

Where H is human capital development (a variable of interest proxy by human development index of UNDP); S is national savings (also, variable of interest. National savings is proxy by GSA, i.e., gross savings (% of GDP) which are calculated as gross national income less total consumption, plus net transfers); D stands for economic factors/determinants of human capital development (economic growth proxy by Gross Domestic Product (GDP)growth (annual %)), government recurrent expenditure on health (HEL); government recurrent expenditure on education (EDU)). An understanding of how these other variables influence human capital development can serve as valuable inputs in national policy formulation and implementation regarding sustained capacity building efforts in Nigeria; Ω_t stands for error term.

To determine reliable empirical results, the relationships of interest were estimated by employing several methods. Firstly, OLS is applied to equation (1). Despite its imperfectness, this method provides informative estimates which allow us to collect some stylized facts about the impact of each natural resource on savings. Next, the paper adopts Autoregressive Distributed Lag (ARDL) approach. This method allows for mixed order of series for investigating long run relationship. The method yields unbiased, consistent and correct estimates even in the presence of small sample dataset and endogeneity issues. This helps in investigating simultaneously both short and long run relationships in equation (2) and (3).

4. EMPIRICAL FINDINGS AND DISCUSSIONS

Table 1 reports the OLS regression results without testing for unit root. As indicated by the R-squared (0.836198), equation 1 explains a satisfactory amount of the variation in the dependent variable. Furthermore, the Durbin Watson statistics (1.876453) does not indicate multicollinearity problem. The resulting estimates of negative coefficients on GAS, COL, FOR, MIN, and positive coefficient for OIL suggested that gross savings in Nigeria depends heavily on the revenue from oil sector. According to Onyeukwu (2007), oil sector in Nigeria makes up 95 percent of export revenues, 76 percent of government revenues, and accounts for about a third of gross domestic product (GDP). Eko et al. (2013) simply put it that Nigerian economy is mono-cultural, depending on a single commodity–oil. Other sectors of the economy have been relegated to the background. The neglect in exploring other natural resources, could be a plausible reason for low resource rent from the other natural resources which in turn affects savings negatively. For instance, since petroleum was discovered in Nigeria in 1956 and as was found a better alternative to coal in terms of energy and wealth generation, the coal industry suffered neglect and gradually collapsed (Ani and Odife, 2020). According to ICIR (2016), Nigeria's neglect of the coal industry in the past, however, suggests that there is a long way to go to fully harness the resource.

The forest resources in Nigeria are under pressures from urbanization, infrastructure development, residential construction, population growth, nomadic farming and expansion of agricultural crop cultivation. According to Central Bank of Nigeria (CBN, 2006), the national GDP by forestry sector was high in the early 80's up till 1987. The early 90's till today witnesses a drastic drop in the contributions of forest to the national GDP. Meanwhile, mining of minerals in Nigeria accounts for only 0.3 per cent of its GDP, due to the influence of oil resources (Gabriel, 2015). According to Gabriel (2015), the domestic mining industry is underdeveloped and the low activity in the solid mineral sector is not yielding the desired financial benefit as there are no records of payment of taxes and royalty to the government. Nigeria is losing lots of resources

from untapped mineral deposit as well as from the little that is being mined mostly by illegal miners who smuggle the products out of the country.

Even though natural gas (GAS) also dominates in Nigeria, a significant amount of Nigeria's gross natural gas production is either re–injected or flared. Some of Nigeria's oil fields lack the infrastructure to capture the natural gas produced with oil, known as associated gas. According to the most recent data by the World Bank's Global Gas Flaring Reduction Partnership (GGFR), Nigeria flared about 261 billion cubic feet (Bcf) of natural gas in 2018, making Nigeria the seventh–largest natural gas flaring country in terms of annual natural gas flaring volume (WBG, 2020). Nigeria only began exporting Liquefied Natural Gas in 1999 (LPP, 2018).

Table 1: OLS Estimations for Equation 1 without Unit Root Tests

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.533976	0.653344	2.347886	0.0248
GAS	-0.267333	0.035772	-7.473295	0.0000
COL	-0.136035	0.087801	-1.549365	0.1306
FOR	-0.297532	0.071790	-4.144498	0.0002
MIN	-0.071282	0.027487	-2.593339	0.0139
OIL	0.233105	0.061725	3.776487	0.0006

R-squared	0.857198	Mean dependent var	3.594843
Adjusted R-squared	0.836198	S.D. dependent var	0.450541
S.E. of regression	0.182345	Akaike info criterion	-0.428351
Sum squared resid	1.130490	Schwarz criterion	-0.175019
Log likelihood	14.56702	Hannan-Quinn criter.	-0.336754
F-statistic	40.81854	Durbin-Watson stat	1.876453
Prob(F-statistic)	0.000000		

Source: Author's computation using Eviews 10 software

Unit root test was carried out on all our variables in their natural log form using the t-statistics and the corresponding probability values for the test statistic are reported in the table. The signs, i.e., *,** and *** represent the rejection of the null hypothesis of that the variables have unit root at 10%, 5% and 1% levels of significance, respectively.

Table 2 presents the results of ADF unit root test in the presence of intercept & trend for variables in equation 2 and 3 using automatic selection of Schwarz Information Criterion and maximum lag length of 9. It reports that in equation 2, TNA, EDT, and GDP are stationary at first difference in the presence of intercept and trend. GSA, INT, and GNE are stationary at level. The results of ADF test indicate that the variables are integrated I (0) and I (1). For this reason ARDL approach is used for the co-integration of the models. Similarly, Table 2 shows the result of ADF unit root test for variables in equation 3. The result shows that the series are integrated of different order; I (1) and I (0). Therefore, the variables are fit to be used for the analytical purpose for which they were gathered upon which the ARDL approach comes into play.

Table 2: ADF Unit Root Result Test at Level and First Difference

Test	**Variables**	**At Levels**		**First Differences**		**Order**	**Remark**
		T- statistic	**Critical**	**T- statistic**	**Critical**		
ADF test Equation 2	GSA	-4.599511*	-4.211868	-6.127239*	-4.252879	I(0)	Stationary
	TNA	-2.633554	-3.196411	-6.863235*	-4.226815	I(1)	Stationary
	INT	-7.475030*	-4.211868	-12.10487*	-4.219126	I(0)	Stationary
	EDT	-1.876691	-3.196411	-6.689157*	-4.219126	I(1)	Stationary
ADF test Equation 3	HDI	-3.474650***	-3.196411	-8.362938*	-4.219126	I(0)	Stationary
	GSA	-4.599511*	-4.211868	-6.127239*	-4.252879	I(0)	Stationary
	HEL	0.089083	-3.204699	-5.460289*	-4.243644	I(1)	Stationary
	EDU	-2.944797	-3.196411	-5.946503*	-4.243644	I(1)	Stationary
	GDP	-2.207854	-3.202445	-4.531072*	-4.243644	I(1)	Stationary

Source: Author's computation using Eviews 10 software
Note: *MacKinnon (1996) one-sided p-values. * Indicates stationary at the 1% level, ** Indicates stationary at 5% level, and ** Indicates stationary at 10% level.

Table 3: F-Bounds Test

Null Hypothesis: No levels relationship

Function: F_{GSA} (GSA/ TNA INT EXC)

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.020220	10%	2.72	3.77
K	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Source: Author's computation using Eviews 10 software

The result of the cointegration test, based on the ARDL bound testing approach, is presented in Table 3 and 4 for equation 2 and 3. Cointegration is tested on model using real GSA as the dependent variable. Also applied was unrestricted constant and trend in the specification of the models. The model selection was Akaike information criterion. The maximum lag length was automatically selected. In Table 3, when the function was F_{GSA} (GSA/ TNA INT EXC) , the results show that the F-statistic is higher than the upper bound critical value at the 1% level significance. This indeed implies that all the variables are bound by a long run relationship, i.e., the variables included in the model shared long-run relationships among themselves. The investigation would be based on short-run analysis and long-run analysis of ARDL to determine the dynamic relationship.

Table 4: F-Bounds Test

Null Hypothesis: No levels relationship

Function: F_{HDI} (HDI/ GSA HEL EDU GDP)				
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	1.255501	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Source: Author's computation using Eviews 10 software

Table 4 reveals that F-statistics is 1.255501 and falls below the lower bound value I(0) when the function is F_{HDI} (HDI/ GSA HEL EDU GDP). This shows there is no long-term relationship. Therefore, the paper cannot proceed to ARDL Error Correction Model. The investigation would be based only on short-run analysis of ARDL to determine the dynamic relationship.

Table 5: ARDL Short-Run Dynamic Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.069191	0.041354	-1.673132	0.1038
D(GSA(-1))	-0.372853	0.175209	-2.128048	0.0409
D(TNA(-1))	-0.012070	0.094739	-0.127403	0.8994
D(INT(-1))	-0.018841	0.027855	-0.676376	0.5035
D(EXC(-1))	0.115933	0.125593	0.923085	0.3627

Source: Author's computation using Eviews 10 software

Table 6: ARDL long-Run Dynamic Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.038642	0.042310	-0.913309	0.3679
D(GSA(-1))	0.560590	0.490071	1.143894	0.2612
D(TNA(-1))	-0.004487	0.090647	-0.049496	0.9608
D(INT(-1))	-0.025799	0.026850	-0.960847	0.3438
D(EXC(-1))	0.148245	0.121120	1.223950	0.2299
ECM(-1)	-1.068843	0.527364	-2.026764	0.0511

Source: Author's computation using Eviews 10 software

Table 5 represents the ARDL short-run dynamic analysis of the joint impact of the different natural resources and other factors with economic significance that may affect savings in Nigeria. The information from most of the information criteria suggest lag length of one (FPE: Final prediction error; SC: Schwarz information criterion; AIC: Akaike information criterion; HQ: Hannan-Quinn information criterion). Table 5 reveals that in the short-run, only D(GSA(-1)) is statistically significant at 5% while other variables are insignificant. That is, gross savings lagged

(one year period) affects savings in Nigeria negatively. This is rather surprising, giving the natural resources, especially, the revenue from oil sector (though GDP growth for oil has been fluctuating during this period). As Knoema (2021) explains, gross national savings (GNS) in 1980, comprised of 24.8 percent of GDP. This amount declined steadily to 17.6 percent in 1988, and even more dropped to 10.5 percent in 1995. Thereafter, the percentage of savings in GDP has been fluctuating.

The GNS experience in the country has been mixed since 2000s. It recorded an increased from the initial 32.7 percent in 2000, to 48.8 percent in 2006. The figure dropped to 30.2 percent and stood at 29.3 percent in 2013. GNS has been low and consists mostly of public saving in Nigeria. The plausible reason for this low savings rate trends can be linked to the country heavy dependence on imports in both consumption and production; as a result, the government runs a budget deficits which then head to low savings. Thus, connotes the likelihood of lower exports over import balance, which has implications for savings and human capital development. Gross national savings (percent of GDP) was at level of 21.78 percent of GDP in 2020, down from 22.41 percent of GDP previous year (2019) (Knoema, 2021). In terms of gross savings as percent of GDP, 1981 – 2020,the Global Economy (2021) gives an average value for Nigeria during this period as 40.16 percent with a minimum of 15.85 percent in 2016 and a maximum of 87.1 percent in 1981. The latest value from 2020 is 22.87 percent.

Table 6 presents the error correction estimation (ECM) for the ARDL model. The coefficient of the ECM variable is found to be negative and statistically significant at 10% level confirming the existence of long run relationship among variables. Furthermore, the coefficient of the ECM for the cointegrating equation F_{GSA} (GSA/ TNA INT EXC) shows a high speed adjustment back to equilibrium position, with about 106.9% of disequilibrium in the previous year returning to the long run equilibrium in the current year.

However, all the variables in Table 6 appeared to be statistically insignificant. It is not surprising that the log of TNA (total natural resources rents (% of GDP)) one lag period is negative and insignificant at 10% level both in the short and long run in terms of contribution to savings in Nigeria. This could be because past governments did not properly manage the country's oil wealth. According to Trojan News (2016), with oil selling consistently for over $100 a barrel for many years in Nigeria, the country simply failed to save for the rainy days (fall in the price of crude oil), with the result that a country with a population of over 170 million (as at 2016) has just $26 billion in foreign reserves. Many other oil producing countries and fellow OPEC members are faring better, because they saved for the rainy days. Saudi Arabia, with about one fifth of Nigeria's population, has in foreign reserves about 600 billion dollars (which is 23 times what Nigeria has in foreign reserves).United Arab Emirates, with less than 10 million people, has 75 billion dollars in foreign reserves. Qatar, with 2.4 million people, has 36 billion dollars in foreign reserves. Even Angola, with just 24 million people, has about 25 billion dollars in foreign reserves (Trojan News, 2016).

The bottom line is that national savings (proxy by gross savings. Gross savings (GSA) are calculated as gross national income less total consumption, plus net transfers.) in Nigeria is coming from other non-oil sectors of the economy with less revenues. Little wonder that even though only the first difference of gross savings one lag period (D(GSA(-1))) is statistically significant at 5% the result shows a negative sign.

Table 7 represents the ARDL short-run dynamic analysis of the impact of savings on human capital development in Nigeria. This happens to be the main object of this paper. The information from most of the information criteria suggest lag length of two (FPE: Final prediction error; AIC: Akaike information criterion; HQ: Hannan-Quinn information criterion). The ARDL short-run dynamic results from Table 10 is the best fitting parsimonious estimates and it shows that in the short-run, D(GSA(-2)) and D(GDP(-1)) are statistically significant at 10% while other variables are insignificant.

Table 7: ARDL Short-Run Dynamic Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012407	0.003923	3.163047	0.0036
D(HDI(-1))	-0.281815	0.166405	-1.693552	0.1007
D(GSA(-2))	0.023125	0.012541	1.843946	0.0751
D(HDI(-2))	0.066269	0.166528	0.397943	0.6935
D(HEL(-1))	-0.001899	0.003742	-0.507436	0.6156
D(EDU(-2))	-0.001445	0.003782	-0.382011	0.7051
D(GDP(-1))	-0.002895	0.001656	-1.748200	0.0907

Source: Author's computation using Eviews 10 software

The result reveals that D(GSA(-2)) has impacted positively on human capital development, although its value is <1. It would have impacted even more on human capital development (proxy by human development index) if previous governments had not mis-managed the country's oil wealth, i.e., savings in Nigeria has grossly underperformed relative to her enormous resource endowment. Between 2005 and 2019, Nigeria's HDI value increased from 0.465 to 0.539, an increase of 15.9 percent (UNDP, 2020). The little increase in human capital development may be as a result of capturing other critical dimensions of human development. But in terms of education and healthcare, the development of human capital in Nigeria (natural resource-rich country) is categorized as poor by the Human Development Index (HDI, 2014) given the country's population estimated at 173 million (NBS, 2015).The result from Table 10 shows that the impact of government recurrent expenditure on health (D(HEL(-1))) and education (D(EDU(-2))) on human capital development are negative and statistically insignificant. According to UNDP (2020), the county's HDI value for 2019 was 0.539— which places her in the low human development category— positioning it at 161 out of 189 countries and territories. However, Nigeria's 2019 HDI of 0.539 is above the average of 0.513 for countries in the low human development group but it is below the average of 0.547 for countries in Sub-Saharan Africa (UNDP, 2020).

A closer examination of Table 7 reveals that economic growth proxy by Gross Domestic Product (GDP) growth (annual %)) is statistically significant but negatively impact on human capital development. This paper argues that Nigeria's human capital development remains weak due to under-investment. Though Nigeria has made some progress in socio-economic terms in recent years, for instance, with GDP in market exchange rate (MER) terms at $490 billion in 2015, Nigeria ranked as Africa's largest economy and could be the 9th largest global economy by 2050 according to PricewaterhouseCoopers (PwC) estimates (PWC, 2020b). However, this growth did not translate into social development as high poverty and inequality levels persist. It ranked 152 of 157 countries in the World Bank's 2018 Human Capital Index (World Bank, 2020a).Similarly, it ranked 161 out of 189 countries and territories in the UNDP (2020) report. The country continues

to face massive developmental challenges, including the need to reduce the dependency on oil and diversify the economy, address insufficient infrastructure, build strong and effective institutions, as well as address governance issues and public financial management systems. Inequality, in terms of income and opportunities, remains high and has adversely affected poverty reduction. The lack of job opportunities is at the core of the high poverty levels, regional inequality, and social and political unrest (World Bank, 2020a).

CONCLUSION

This paper examined the impact of savings on human capital development in Nigeria (natural resource rich-country) from 1981-2022. This paper employs multiple econometric techniques and new-fangled variables to answer concerns raised. Using OLS, resulting estimates of negative coefficients on GAS, COL, FOR, MIN, and positive coefficient for OIL suggested that gross savings (GSA) in Nigeria depends heavily on the revenue from oil sector.

Using ARDL and ECM method, the short-run shows that only D(GSA(-1)) is statistically significant at 5% while other variables are insignificant in influencing savings in Nigeria. The log of TNA (total natural resources rents (% of GDP)) one lag period is negative and insignificant at 10% level both in the short and long run in terms of contribution to savings in Nigeria. This could be because past governments did not properly manage the country's oil wealth.

The ARDL short-run dynamic analysis of the impact of savings on human capital development in Nigeria shows that in the short-run, D(GSA(-2)) and D(GDP(-1)) are statistically significant at 10% while other variables are insignificant. The result reveals that D(GSA(-2)) has impacted positively on human capital development, although its value is <1. It would have impacted even more on human capital development (proxy by human development index) if previous governments had not mis-managed the country's oil wealth, i.e., savings in Nigeria has grossly underperformed relative to her enormous resource endowment. A closer examination of the result reveals that economic growth proxy by Gross Domestic Product (GDP) growth (annual %)) is statistically significant but negatively impact on human capital development. This paper argues that though Nigeria has made some progress in terms of economic growth in recent years, its human capital development remains weak due to under-investment.

Conclusively, human capital remains one of the factors of production that is capable to learn, adapt and creative. Therefore, investment in human capital development in Nigeria is critical since it would help in ensuring that the nation's manpower is highly knowledgeable, skilled and healthy enough for economic growth. On the other hand, the unsustainable management of Nigeria's oil wealth, rather than the availability of oil itself, remains the real cause of poor savings which has brought about poverty, inequality, and reduction of human capital development as a result of failing to provide public goods and services and allowing the decay of critical infrastructure. In this regard, Nigeria's government should develop the political will to effectively manage the country's resources and save for the future. As such, there is need for stronger legal regimes for the efficient management of Nigeria's oil wealth.

As a matter of priority, Nigeria's government must encourage further diversification of its economy towards agriculture, solid mineral development, entertainment, etc. It is the only viable way to survive the boom-and-bust cycles of the oil market. Government's expenditures should be expanded on social and economic infrastructure that will enhance human capital

development. To this end, availability and improvements in education and health services to the people gives room for healthy and well-trained personnel. Also, improving the ease of doing business, enhancing labour productivity, reducing the overall level of corruption could result in a significant improvement in Nigeria's HDI score.

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