



Received: 28-08-2022

Accepted: 08-10-2022

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Impact of Government Health and Education Expenditure on Economic Growth in Nigeria: Econometric Approach of Autoregressive Distributive Lag Model (ARDL)

¹Dr. Azike Lawrence Chike, ²Dr. Ngwu Jerome Chukwuemeka, ³Dr. Umeh Anthony Chinedu

^{1,2,3}Department of Economics, Enugu State University of Science and Technology, Nigeria

Corresponding Author: Dr. Umeh Anthony Chinedu

Abstract

The study examined the impact of the impact of government health and education expenditure on economic growth in Nigeria. The specific objectives were to: (i) determine the impact of government health expenditure on economic growth in Nigeria; (ii) ascertain the impact of government education expenditure on economic growth in Nigeria and (iii) evaluate the impact of Primary school enrolment rate on economic growth in Nigeria. This study made use of ex post-facto research design. The data analytical technique was Autoregressive Distributive Lag Model. Empirical results of the study show that (i) government health expenditure (GHE) has 26 percent positive and insignificant impact on economic growth in Nigeria ($t - statistics (1.104568) < critical value (1.694)$); (ii) government

education expenditure (GEE) has 10 percent positive but insignificant impact on economic growth in Nigeria ($t - statistics (0.083962) < critical value (1.694)$) and (iii) primary school enrolment rate (PSER) has 11 percent positive and insignificant impact on the economic growth in Nigeria ($t - statistics (0.853753) < critical value (1.694)$). It implies that a percent increase in primary school enrolment rate government results to 11 percent insignificant increase in economic growth in Nigeria. The study recommends federal Government should instill fiscal discipline in health sector spending in Nigeria to ensure that funds allocated to the education and health sector are efficiently utilized and monitored.

Keywords: Health expenditure, Education expenditure, Economic Growth, Autoregressive Distributive Lag Model (ARDL)

Background of the Study

Health and education undoubtedly are the most important factors that determine the quality of human capital and could be the necessary factors for economic growth. Economic growth is attained through the productive use of all resources, including labor, this result in greater per capita income and improvement in people's average standard of living (World Bank, Development report, 2020). It has also been argued that meaningful human development depends on policy choices including access to income and employment opportunities, educational and health care services as well as clean and safe physical environment. Human capital theory suggests that the society and individuals derive economic benefits from investments in people (Chandana, Adamu & Abdu, 2021) ^[3]. Education and health play a central role in economic development. They play a central role in development process. No country has successfully achieved continuous growth without significant investment in human capital (Okerekeoti, 2022) ^[10]. The effect of government expenditure spending on human capital development is still an unsolved issue both empirically and theoretically. Quite recently the wealth of a nation is now being measured in terms of human capital and not the stock of physical capital only, as an independent factor of production required to accomplish high and sustainable labour productivity.

Education is seemed to be a crucial factor for a nation that promotes economic growth. The gain from the education of a child accrues not only to the child or his parents but also to the other members of the society. The education of children contributes to welfare by promoting a stable and democratic society (Abasifreke, Nenbee & Bariika, 2022) ^[1]. It is not feasible to identify the particular individuals (or families) benefitted and so to charge for the services rendered. There is therefore a significant "neighborhood effect". Echekeoba and Amakor, 2017) ^[4] asserted that population that is better educated has less unemployment, reduce dependence on public assistance program and greater tax revenue. From well-educated nation benefit the whole country. Health is the level of functional and metabolic efficiency of a living organism. The World Health organization (WHO) defined health in its broader sense in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (WHO, 2020). Thus, a country's general economic health can be measured by looking at that country's economic growth and development (Udeorah, Obayori, Joseph & Onuchuku, 2018) ^[13]. Economic

growth on the other hand, is a long-term expansion of the productive potential of the economy.

The growth of health and education sector in the development process of any economy cannot be over-emphasized because only well-educated and healthy people produce optimally and contribute to national output. The importance which government places on education and health in Nigeria could lead to the increase in public expenditure allocation to both health and education sector over the years with the aim that this would in turn generate returns that will further enhance the growth and development of the country (Olajide, Akinlabi, & Tijani 2013)^[11]. The importance of health and education as a key aspect of development and economic wellbeing of individuals and nations is increasingly being recognized in the world. This can be seen from a series of reforms taken by African countries to increase investments in health and education in order to meet the health Millennium Development Goals (MDGs).

Statement of the problem

The improvement and extension of healthcare delivery in Nigeria have been constrained by gaps in financing, its contribution is still marginally low whereas the extent of its impact on economic growth is undermined and the desired results have not been met. This is particularly worrisome as several questions have been raised on the situation and which, the study intends to answer within its scope and context. What is responsible for this marginal contribution and how can this be addressed, is the thrust of this study. Health service delivery in Nigeria has suffered neglect from time to time, thereby endangering the national productivity and economic growth (GDP) which could have acted as a catalyst to the realization of formulated economic development policies. At this point, it must be stated that Health expenditure is too low in many developing countries for instance as at 2012, the health sector's share of the total expenditure of the government was an estimate of 5% (Njoku, Ugwu and Chigbu, 2014).

Despite the seemingly low percentage which the health and education sectors are allocated annually, yet the results shown have been quite disappointing in Nigeria. Health and Education is made known with poor and degenerated educational facilities, low ranking, mass graduation with low prerequisite skill, incessant strikes, cultism, rent seeking, sexual harassment, sorting, racketeering among other social vices in the Nigerian school system and the society at large (Obi & Ogugua, 2014)^[8] and brain drains, poor medical service and facility, high infant mortality, low life expectancy and the increased rate of travelling for better medical service (Udeorah, Obayori, Joseph & Onuchuku, 2018)^[13]. Educational sector has not been productive as expected. This is evidenced by the poor quality of graduates, increasing cases of cultism in schools and high rates of drop-outs (Obi & Ogugua, 2014)^[8]. It was observed that increased public health expenditure could have a significant role to play in achieving better health outcomes. A basic question however is, does the level of economic growth attained by a country have a role to play? Previous studies have examined the impact of health expenditure and health outcome, but the results are mixed and inconclusive, raising the importance to re-assess them. Besides, indicators of health outcome adopted by studies have ignored infant mortality rate. The contribution of this study is that it links

government health and education expenditure and economic growth in Nigeria.

Objectives of the study

The main objective of the study is to examine the impact of the impact of government health and education expenditure on economic growth in Nigeria. The specific objectives are to:

1. determine the impact of government health expenditure on economic growth in Nigeria.
2. ascertain the impact of government education expenditure on economic growth in Nigeria.
3. evaluate the impact of Primary school enrolment rate on economic growth in Nigeria.

Conceptual literature

Health Expenditure and Economic Growth

Health spending measures the final consumption of health care goods and services including personal health care and collective services. Health financing is a critical component of the health system. For it is the synthesis of the financing and spending flows recorded in the operation of a health system, right from funding sources to distribution. Therefore, the concept of health expenditure, as defined by WHO report (2006), is the sum of general government health expenditure and private health expenditure in a given year, calculated in national currency units in current prices. The concept of health expenditure (public), consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds (WHO, 2018).

Public Education Expenditure and Economic Growth

Government expenditure on schools, universities, and other public and private entities that provide or support educational services is included in government education expenditure. Education expenditure by the federal government (current, capital, and transfers) is expressed as a proportion of total federal spending across all sectors (including health, education, social services, and others). It includes spending financed by overseas transfers to the government (Gootjes, de-Haan, Jong-A-Pin, (2021)^[5]. There are two types of public education spending: current and capital. Government expenditures on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities) are all included in public expenditure on education (Nikiforos, 2021)^[7].

Economic growth

Economic growth is defined as a rise in national income or output per capita over a long period of time. It's an economic condition in which the rate of rise in national output must outpace the rate of population growth. Economic growth is the long-term expansion of the economy's productive potential. It entails a gain in Real GDP, which translates to increased national output and wealth. The market worth of all products and services produced in a country during a given time period is known as real GDP. Real GDP is a measure of a society's wealth since it shows how quickly profits can expand and the

expected return on investment (Okerekeoti, 2022)^[10].

Theoretical literature

Keynesian theory of government expenditure

John Maynard Keynes (1936), in his theory, believes that expenditure can contribute positively to economic growth; Keynes discussed the relation between public expenditures and economic growth, he regarded public expenditures as an exogenous factor that can be utilized as a policy instrument to promote economic growth. From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, an increase in government consumption is likely to lead to an increase in employment, profitability, and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

The Keynesian theory of Government expenditure was developed by the British economist John Maynard Keynes during the 1930s in an attempt to understand the Great Depression. Keynesian economics is considered a "demand-side" theory that focuses on changes in the economy over the short run. Keynesian economics is a macroeconomic economic theory of total spending in the economy and its effects on output, employment, and inflation. According to Keynes, when the government embarks on borrowing to finance its expenditure, unemployed funds are withdrawn from the private pockets and as such the consumption level of the private individuals is unaffected. This funds when injected back into the economy by the government leads to a multiple increase in aggregate demand causing an increase in output and employment. This according to Keynes is the multiplier effect of government expenditure (Matthew, & Mordecai, 2016). Given the national income model as follows;

$$Y = C + I + G + (X-M) \quad (2.1)$$

Therefore, change in output all over change in government expenditure is equal to the multiplier. This shows that public borrowing can be used to influence macroeconomic performance of the economy (Jhingan, 2010).

Empirical literature

Umeh, Ezudike and Anyaegbunam, (2022)^[14] examined the impact of the impact of government expenditure on economic growth in Nigeria over a period of 1981 to 2019. Specifically, the study sought to: determine the impact of government expenditure on economic growth in Nigeria and evaluate the causality relationship among government capital expenditure, government recurrent expenditure and economic growth in Nigeria. The methods of data analysis were Error Correction Model and Granger Casualty Test. The following are the major findings of the study: government expenditure (GE) has 24 percent positive and insignificant impact on economic growth in Nigeria and there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria, there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria. The study recommends that government should increase government expenditure by 20 percent as against 8 percent increase in 2018 to investment in infrastructural development especially electricity supply in order to

transform effective and efficient growth of the Nigerian economy.

Abasifreke, Nenbee and Bariika, (2022)^[11] analyzed the effect of health expenditure and population growth on economic development in Nigeria using yearly data from 1980 to 2019. Specifically, the study sought to evaluate the effect of capital health, recurrent health expenditure, and population growth on economic development in Nigeria. The data was sourced from the World Development Indicators, Central Bank of Nigeria (CBN) Statistical Bulletin, and the United Nation Development Report. Ordinary Least Squares (OLS), cointegration, and autoregressive distributed lag (ARDL) were used to estimate the model. Empirical result show that capital health expenditure in the long run has a positive and significant sign, while recurrent health expenditure is negative for development, though insignificant in effect. Development responds positively to population growth variation in the short run too. The study recommends that the Nigerian Government allocate more funds for capital healthcare expenditure to increase the pace of economic development. Okerekeoti, (2022)^[10] conducted a study to examined the effect of government expenditure on education on economic growth of Nigeria. Data for the analysis were extracted from annual series of the selected relevant macroeconomic variables from 1999 to 2020. Data for government expenditure on education were used as public expenditure variable while real gross domestic product was used as economic growth variable. Regression analysis was used to test the hypothesis, the findings of this study upholds that there is a positive and significant effect between government expenditure on education and RGDP at 5% level of significance. Based on finding of the study, the study recommended that there should be an increase in the reallocation of public spending towards education in order to raise income in the long run which would cause an improvement in the well-being of the citizenry.

Chandana, Adamu and Abdu, (2021)^[3] conducted a study to investigates the impact of Nigerian government expenditure (disaggregated into capital and recurrent) on economic growth using time series data for the period 1970-2019. The paper employs Autoregressive Distributed Lag (ARDL) model. To ensure robustness of results, the study accounts for structural breaks in the unit root test and the co-integration analysis. The key findings of the study are that capital expenditure has positive and significant impact on economic growth both in the short run and long run while recurrent expenditure does not have significant impact on economic growth both in the short run and long run. The study recommends that government should increase the share of the capital expenditure especially on meaningful projects that have direct bearing on the citizen's welfare. Government should also improve the spending patterns of recurrent expenditure through careful reallocation of resources toward productive activities that would enhance human development in the country.

Yusuf (2018)^[17] conducted a study that empirically examined the relationship between government health expenditure on economic growth in Nigeria, using Gross Domestic Product (GDP) as a proxy to economic growth which is the dependent variable and the independent variables are Capital Expenditure on Health (CAPEXP) and Recurrent Expenditure on Health (RECEXP). The Error Correction Mechanism results showed that the system

corrects to equilibrium at a speed of 43.40%. The study also employed the OLS regression analysis to estimate the model and the R² showed a 94% significant relationship between government health expenditure and economic growth. The regression analysis results showed that the dependent variable (GDP) has; a positive and significant relationship with all the independent variables; every 1% unit increase in CAPEXP and RECEXP will increase economic growth by 140.1217 units and 190.7144 units respectively. Good public health is vital in any country, not only to maintain a healthy populace but also as a matter of national security. Given these findings, to ensure sustainable economic growth, it is recommended that there is the need for the Nigerian government to double its budgetary allocation to the health sector.

Udeorah, Obayori, Joseph and Onuchuku, (2018) ^[13] conducted a study to examine the impact of health care expenditure on economic growth in Nigeria for the period of 1980 to 2016. The data used in the study were sourced from Central Bank of Nigeria (CBN) statistical bulletin. The study adopted ex post facto research method. The study used Real Gross Domestic Product (RGDP) as proxy for economic growth as the dependent variable; health care expenditure (HE) as the major independent variable while education expenditure (EE) as a check regressor to enhance the explanatory power of the model. The study used descriptive statistics and Generalized Method of Moments (GMM) test as the estimation techniques of data analysis. The GMM result revealed that the coefficient of health care expenditure with positive sign which conformed to economics theory is not statistically significant at 5% level. The coefficient of education expenditure conformed to economics theory (i.e., positive) and statistically significant at 5% level. The study concluded that health care expenditure had no significant impact on economic growth while education expenditure had positive significant impact on economic growth in Nigeria during the period of study. The study recommended that the government should redesign her policy toward health care expenditure in particular and human capital development in general and put in place machineries for implementing and monitoring this policy for effective implementation.

Ogunjimi, and Adebayo, (2018) ^[9] conducted a study that examined the relationship among health expenditure, health outcomes and economic growth in Nigeria for the period between 1981 and 2017. This study adopted the Toda-Yamamoto causality framework to examine these relationships. The Augmented Dickey Fuller unit root test and Autoregressive Distributed Lag (ARDL) Bounds test approach was used for data analysis. The results of the Toda-Yamamoto causality tests showed a unidirectional causality running from health expenditure to infant mortality while there is no causality between real GDP and infant mortality; a unidirectional causal relationship running from health expenditure and real GDP to life expectancy and maternal mortality; and a unidirectional causal relationship running from real GDP to health expenditure. This study therefore recommended that the Nigerian government should make concerted efforts geared towards increasing the health expenditure at least to meet up with the WHO's recommendation that all countries should allocate at least 13 per cent of their annual budget to the health sector for effective funding.

Echekoba, and Amakor, (2017) ^[4] conducted a research work to explore the impact of government expenditure such as expenditure on General administration, Defense, Education and Health on GDP of Nigeria (1983-2016). Time series data were generated from the Central Bank of Nigeria (CBN) statistical bulletins of various years spanning from 1983 to 2016. The Ordinary Least Square (OLS) method of estimation was used in the multiple regression analysis. The variable used for the study were expressed econometrically as GDP = Gross Domestic Product; DFE = Defense Expenditure; GADM = General Administration; EDUT = Education expenditures; HTH = Health expenditures. The result showed that expenditure on General Administration has a positive impact and significant relationship with economic growth; Expenditure on Defense has a negative impact but significant relationship with GDP; Expenditure on Education has a positive and highly significant relationship with economic growth; and Expenditure on Health has a positive but insignificant impact on GDP. Among the recommendations were that government should ensure that her expenditure whether capital and recurrent should be managed and monitored at the implementation stage to enhance comparable achievement viz-a-viz on economic growth.

Salami, Olabode, Atoyebi, Lawal and Danmola, (2017) ^[12] conducted a study that empirically examines the relationship between health and education expenditure on economic growth in Nigeria between 1917 and 2013. The study adopted ordinary least square to determine the relationship between health and education expenditure on economic growth in Nigeria. Contrary to our expectation our result did not conform with our apriori expectation where all the variables are expected to be positively related to economic growth but rather capital expenditure and recurrent expenditure showed a negative sign which implies that as more of the variables increase, economic growth reduces. The study also observed that little attention was paid to health sector as the percentage of budgetary allocation to the sector ranged from the 1.07% 1980 to 5.24% in 2007 compared with education. However, Government commitment to education fluctuated within the period. It reaches the peak in 2013. Upon all these observations, the study therefore recommended that Government should devoted more resources to the sector.

Gupta, (2017) ^[6] investigated the impact of government expenditure on economic growth in Nepal. Annual series data between 2002/03 to 2015/16 is used for the study. Economic growth is dependent variable whereas total capital expenditure, total recurrent expenditure, agriculture, non-agriculture, industry, service and inflation are independent variables. Data are collected from economic survey of Nepal. The tools of analysis are the regression model between the variables, DW Test and for multicollinearity between the variables, VIF test is used. The empirical result shows that there is positive correlation between the dependent variable economic growth and the predictors like agricultural, non-agricultural, industry and service sector. The total current and recurrent expenditure and inflation are negatively related to economic growth. The beta coefficient is positively significantly for agricultural, non-agricultural, industry, and service sector, it implies that higher the investment in agricultural and non-agricultural sector higher would-be economic growth. Similarly, higher the

investment on industry and service sector of the country, higher would-be economic growth.

Methodology

This study made use of ex post-facto research design. The pre-estimation and post-estimation tests were Augmented Dickey-Fuller Unit Root test statistic, Johansen co-integration test, Ramsey Reset test, Jarque Bera, Breuch-Godfrey Serial Correlation LM Test respectively while the data analytical technique was Autoregressive Distributive Lag Model. A number of variables were considered in this study. These variables consist of real GDP (RGDP), government health expenditure (GHE) and government education expenditure (GEE) were sourced from Central Bank of Nigeria’s (CBN) statistical bulletin for various years while life expectancy at birth (LEB), secondary school enrolment rate (SSER), infant mortality rate (INFANT) and primary school enrolment rate (PSER) were sourced from online World Bank Data indicators. All the variables were sourced for a period of 1987 to 2021 as defined in our model specification. The study employed e-view version (9) statistical application software to analysis the data because it is user- friendly software.

Theoretical framework

The study adopts the Keynesian theoretical framework. The desired aggregate demand relationship in the goods market in the Keynesian framework is expressed as follows:

$$Y = C + I + G + (X - M) \tag{1}$$

The behavioural equation is written as;

$$\begin{aligned} C &= a + bY^d, & b > 0 \\ Y^d &= Y - T \\ I &= \theta + Y_i, & Y < 0 \\ G &= G^* \\ X &= S + \sigma e, & \sigma > 0 \\ M &= M + \phi Y^d, & \phi > 0 \end{aligned}$$

Where Y = output, C = Consumption, = Disposable income, T = Tax revenue, I = Investment, θ = exogenous investments, I = interest G = exogenous government expenditure (G*), X = exports, s= exogenous exports, e=exchange M= Imports, m= exogenous imports and b, σ , ϕ and γ are coefficients.

Model specification

This study specifically adopts the model of Echekoba, and Amakor, (2017) [4]; Ogunjimi, and Adebayo, (2018) [9] to study of the impact of government health and education expenditure on economic growth in Nigeria. Thus, the model is represented in a functional form as shown below:

$$RGDP = f(GHE, GEE, LEB, SSER, INFANT, PSER) \tag{3.1}$$

Where RGDP is real GDP per capita proxy for economic growth, GHE is government health expenditure, GEE is government education expenditure, LEB is life expectancy at birth, SSER is secondary school enrolment rate, infant mortality rate and PSER is primary school enrolment rate. In a linear function, it is represented as follows:

$$RGDP = \beta_0 + \beta_1 GHE + \beta_2 GEE + \beta_3 LEB + \beta_4 SSER - \beta_5 INFANT + \beta_6 PSER + U_t \tag{3.2}$$

Where: β_0 = Constant term, β_1 to β_6 = Regression coefficient and U_t = Error Term.

To reduce the outliers among the variables, all variables will be expressed in logarithmic form.

$$\text{Log RGDP} = \beta_0 + \beta_1 \text{Log GHE} + \beta_2 \text{Log GEE} + \beta_3 \text{Log LEB} + \beta_4 \text{Log SSER} - \beta_5 \text{Log INFANT} + \beta_6 \text{Log PSER} + U_t \tag{3.3}$$

Where: β_0 = Constant term, β_1 to β_6 = Regression coefficient, Log = Natural Logarithm and U_t = Error Term. 5% level = -2.954021

Results and discussion

Table 1: Results of Stationarity (unit root) test

Variables	Variables Full Meaning	ADF- Statistics	Critical Value	Lag Value	Remark
RGDP	Real Gross domestic Product (Proxy for Economic growth)	-7.057897	5% level = -2.954021	0	1(1)
GHE	Government Health Expenditure	-5.705096	5% level = -2.954021	0	1(1)
GEE	Government Education Expenditure	-6.505577	5% level = -2.954021	0	1(1)
LEB	Life Expectancy at Birth	-3.863606	5% level = -2.954021	0	1(1)
SSER	Secondary school Enrolment Rate	-6.895666	5% level = -2.954021	0	1(1)
INFANT	Infant Mortality Rate	-31.14900	5% level = -2.951125	0	1(0)
PSER	Primary school Enrolment Rate	-3.095717	5% level = -2.951125	0	1(0)

Source: Author’s computation from E-view Result

In the table 1, the variables that were tested with unit root are shown, the values for Augmented Dickey Fuller (ADF) statistics were presented, the lag level of each variable was identified. The Mackinnon critical values at 5% level of significant were pointed out. The order of integration of each variable was enumerated, and finally the stationarity position of each variable was also stated. The unit root test was based on the level of Augmented Dickey Fuller (ADF) statistics was stationary or not stationary on 5 percent significance level. When Augmented Dickey Fuller statistic is greater than Mackinnon 5 percent critical value in

absolute term, it is concluded that the variable is stationary. The real GDP (RGDP), government health expenditure (GHE) and government education expenditure (GEE), life expectancy at birth (LEB), secondary school enrolment rate (SSER) were stationary at difference while infant mortality rate (INFANT) and primary school enrolment rate (PSER) were stationary at level. It is now referable to use auto-regressive distributed lag model to estimate the parameters.

Descriptive statistics of the variables

Table 2: Descriptive Statistics of the Variables

	RGDP	GHE	GEE	LEB	SSER	INFANT	PSER
Mean	214986.6	53696.18	84554.39	49.66229	33.22686	38.34974	53.42600
Median	205971.4	18181.80	59744.60	47.69000	29.61000	37.47200	56.40000
Maximum	527576.0	140325.1	241201.6	54.84000	56.21000	50.47500	70.00000
Minimum	37474.95	264.7000	653.5000	46.98000	23.00000	29.51600	0.900000
Std. Dev.	151576.3	57492.16	85169.28	3.097836	9.603359	6.267896	13.81104
Skewness	0.522011	0.454050	0.399016	0.714854	0.613146	0.343464	-1.530546
Kurtosis	2.304015	1.452652	1.485302	1.793927	2.080916	1.925129	6.792585
Jarque-Bera	2.295966	4.694276	4.274616	5.102239	3.424908	2.373027	34.64122
Probability	0.317276	0.095643	0.117972	0.077994	0.180423	0.305284	0.000000
Sum	7524529.	1879366.	2959404.	1738.180	1162.940	1342.241	1869.910
Sum Sq. Dev.	7.81E+11	1.12E+11	2.47E+11	326.2840	3135.633	1335.742	6485.322
Observations	35	35	35	35	35	35	35

Source: e-view's Result

The table 2 shows descriptive statistics of the variables. In the model established in the study, there is one dependent variable and six independent variables. The descriptive statistics of the variables show the nature and status of mean, median, maximum, minimum, sum of the variable respectively.

**Estimation of Regression Model
Empirical Results of the Auto-regressive Distributive Lag Model (ARDL)**

Table 3: Empirical Results of the Auto-regressive Distributive Lag Model (ARDL)

Dependent Variable: LogRGDP				
Method: ARDL				
Date: 03/18/22 Time: 17:08				
Sample (adjusted): 1988 2021				
Included observations: 34 after adjustments				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (0 lag, automatic): GHE GEE LEB SSER				
INFANT				
PSER				
Fixed regressors: C				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LogRGDP(-1)	0.515482	0.145295	3.547838	0.0015
LogGHE	2.613081	2.365703	1.104568	0.2795
LogGEE	0.101499	1.208862	0.083962	0.9337
LEB	27955.32	25726.55	1.086633	0.2872
SSER	12044.21	4909.754	2.453119	0.0212
INFANT	-15419.81	7305.863	-2.110607	0.0446
PSER	1121.746	1313.900	0.853753	0.4010
C	1890868.	1280053.	1.477179	0.1516
R-squared	0.802365	Mean dependent var	215850.9	
Adjusted R-squared	0.749156	S.D. dependent var	153768.2	
S.E. of regression	77013.75	Akaike info criterion	25.54368	
Sum squared resid	1.54E+11	Schwarz criterion	25.90282	
Log likelihood	-426.2426	Hannan-Quinn criter.	25.66616	
F-statistic	15.07942	Durbin-Watson stat	1.987081	
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

Source: E-view Results

The auto-regressive distributive lag model was carried out to examine parameters estimates. In testing this hypothesis, government health expenditure (GHE), government education expenditure (GEE), life expectancy at birth (LEB), secondary school enrolment rate (SSER), infant mortality rate (INFANT) and primary school enrolment rate (PSER) were regressed against real GDP (RGDP). The

result of the regression analysis represented the model for the impact of government health and education expenditure on economic growth in Nigeria. The empirical result showed that the coefficient of government health expenditure (GHE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (1.104568) was less than its critical value (1.694). The empirical result showed that the coefficient of government education expenditure (GEE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.083962) was less than its critical value (1.694). The empirical result showed that the coefficient of life expectancy at birth (LEB) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (1.086633) was less than its critical value (1.694). The secondary school enrolment rate (SSER) had positive and insignificant impact on real GDP (RGDP) because the observed values of t – statistics (2.453119) was greater than its critical value (1.694). The infant mortality rate (INFANT) had negative significant impact on real GDP (RGDP) because the observed value of t-statistics (-2.110607) was greater than its critical value (1.694). The primary school enrolment rate (PSER) had positive and insignificant impact on real GDP (RGDP) because the observed values of t – statistics (0.853753) was less than its critical value (1.694). The result of the F – statistical test shows that the overall regression of the variables was statistically significance because the observed values of the F – statistics (15.07942) was greater than its critical value (1.864251). Again, our empirical result shows that the R-squared (R²) is 0.802365.

ARDL Bound Test

Ho = There is no co-integration (no long run relationship among Variable)

Table 4: Co-integration Test Results

ARDL Bounds Test		
Date: 03/18/22 Time: 17:11		
Sample: 1986 2019		
Included observations: 34		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	4.032283	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

The co-integration results in table 4 for the model (RGDP, GHE, GEE, LEB, SSER, INFANT and PSER) revealed that f-statistics was 4.032283 greater than low bound (2.45) and upper bound (3.61) at the 5 percent level of significance. Thus, there is a long-run relationship among the variables (RGDP, GHE, GEE, LEB, SSER, INFANT and PSER). We therefore reject the null hypothesis of no co-integration amongst the variables and accept the alternative hypothesis.

Econometric /Second Order Test
The null hypothesis; there is Autocorrelation.

Table 5: Result of Breuch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	6.018290	Prob. F(2,24)	0.0009
Obs*R-squared	5.051742	Prob. Chi-Square(2)	0.0005
Test Equation:			
Dependent Variable: RESID			
Method: ARDL			
Date: 03/19/22 Time: 08:07			
Sample: 1988 2021			
Included observations: 34			
Presample missing value lagged residuals set to zero.			

Source: E-view Results

The Breuch-Godfrey Serial correlation LM Test was used to identify whether the model suffers from autocorrelation problem. The autocorrelation problem violates of ordinary least square assumption that says there is no correlation among error terms of different observation. Breuch-Godfrey Serial correlation LM Test was a statistic that ensures that the assumption of ordinary least square was not violated. The null hypothesis; there is autocorrelation problem. The result of Breuch-Godfrey Serial correlation LM Test (6.018290) and its P-value was (0.0009). Because Breuch-Godfrey Serial correlation LM Test (6.018290) was greater than its P-value was (0.0009), we conclude that the model is free from Autocorrelation problem. This denotes that

prediction base of the Ordinary Least Square estimates were efficient and unbiased.

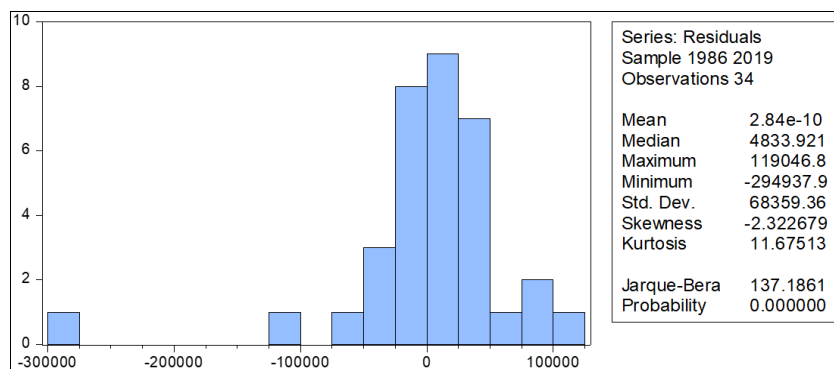
Result of Ramsey Reset Test
The null hypothesis; there is specification Error.

Table 6: Ramsey Reset Test

Ramsey RESET Test			
Equation: UNTITLED			
Specification: RGDP RGDP(-1) GHE GEE LEB SSER INFANT PSER C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	4.603052	25	0.0001
F-statistic	21.18808	(1, 25)	0.0001
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	7.07E+10	1	7.07E+10
Restricted SSR	1.54E+11	26	5.93E+09
Unrestricted SSR	8.35E+10	25	3.34E+09
Unrestricted Test Equation:			
Dependent Variable: RGDP			
Method: ARDL			
Date: 03/19/22 Time: 08:05			
Sample: 1988 2021			
Included observations: 34			
Maximum dependent lags: 1 (Automatic selection)			
Model selection method: Akaike info criterion (AIC)			
Dynamic regressors (0 lag, automatic):			
Fixed regressors: C			

Source: E-view Results

This second order test checks whether the model of the study suffers model specification error. The null hypothesis; there is model specification error. The Ramsey reset test showed that there was no specification error because F-statistics (21.18808) is greater than Probability value (0.0001). It means that model include core variables in the model, does not include superfluous variables, the functional form of the model was very well chosen, there is no error of measurement in the regress and regressor.



Sources: E-view 9.0 Version

Fig 1: Presents Normality test for each of the Distribution

Histogram Normality Test

Normality test is done to check if the residuals of the error term have a normal distribution. Normality test is conducted using Jacques-Bera (JB) test. In testing for normality, approach used by Paavola (2006) for testing normality using Jacques-Bera test was adopted.

The skewness is normal because the value was -2.322679. The model of the study produced positive skewed distribution meaning that it has a long tail in the positive

direction. The kurtosis was 11.67513 meaning that the degree of peakedness was high that normal value of three (3). This implies that the standardized residuals from the estimated model in the regression framework is normally distributed, which is consistent with the OLS assumption.

Test of Hypotheses

The results for the various hypotheses testing are presented in the section.

Test of Hypothesis one**H₀₁ Government health expenditure has no significant impact on economic growth in Nigeria.**

In testing this hypothesis, government health expenditure (GHE) was regressed against real GDP. The empirical result shows that the coefficient of government health expenditure (GHE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (1.104568) was less than its critical value (1.694). The empirical finding reveals that government health expenditure has no significant impact on economic growth in Nigeria.

Test of Hypothesis two**H₀₂ Government education expenditure has no significant impact on economic growth in Nigeria.**

In testing this hypothesis, government education expenditure (GEE) was regressed against real GDP (RGDP). The empirical result shows that the coefficient of government education expenditure (GEE) has positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.083962) was less than its critical value (1.694). The empirical finding reveals that government education expenditure (GEE) positive but insignificant impact on economic growth in Nigeria.

Test of Hypothesis three**H₀₃ Primary school enrolment rate has no significant impact on economic growth in Nigeria.**

In testing this hypothesis, primary school enrolment rate (PSER) was regressed against real GDP (RGDP). The primary school enrolment rate (PSER) has positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.853753) was less than its critical value (1.694). The empirical finding reveals that primary school enrolment rate (PSER) has positive and insignificant impact on the economic growth in Nigeria.

Summary of the findings

The following are the major findings of the study:

1. Government health expenditure (GHE) has 26 percent positive and insignificant impact on economic growth in Nigeria (t – statistics (1.104568) < critical value (1.694). It implies that a percent increase in government health expenditure results to 26 percent insignificant increase in economic growth in Nigeria.
2. Government education expenditure (GEE) has 10 percent positive but insignificant impact on economic growth in Nigeria (t – statistics (0.083962) < critical value (1.694). It implies that a percent increase in government education expenditure results to 10 percent insignificant increase in economic growth in Nigeria.
3. Primary school enrolment rate (PSER) has 11 percent positive and insignificant impact on the economic growth in Nigeria (t – statistics (0.853753) was < critical value (1.694). It implies that a percent increase in primary school enrolment rate government results to 11 percent insignificant increase in economic growth in Nigeria.

Conclusion

This study concluded there was impact of government health and education expenditure on economic growth in Nigeria. Government health expenditure (GHE) had positive and insignificant impact on economic growth in Nigeria.

Government education expenditure (GEE) had positive but insignificant impact on economic growth in Nigeria and primary school enrolment rate (PSER) has positive and insignificant impact on the economic growth in Nigeria. Investment in health and education government expenditure contributes to the development of human capital. As such using health care expenditure as a means of stimulating economic growth cannot be over-emphasized. Based on the results and findings of this study it is recommended that government should redesign her policy toward health care expenditure in particular and human capital development in general and put in place machineries for implementing and monitoring this policy for effective implementation. This will enhance positive and significant impact of health care expenditure on economic growth in Nigeria.

Recommendations of the study

Based on the findings of this study, the following recommendations were made.

1. The Federal Government should instill fiscal discipline in health sector spending in Nigeria to ensure that funds allocated to the education and health sector are efficiently utilized and monitored.
2. Parents, teachers, government and other stakeholders should address the issue of loss of morality and values in our society, corruption, good governance, accountability and transparency in Nigeria. The dignity of man has to be restored through education.
3. Effort should be made to increase government funding on education to curtail the level of strike in our education sector and as well increase funding on anti-graft or anti-corruption agencies like the Economic and Financial Crime Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC) in order to arrest and penalize those who divert and embezzle public funds.

References

1. Abasifreke NI, Nenbee SG, Bariika NV. Public Healthcare Expenditure, Population Growth and Economic Development in Nigeria. *International Journal of Public Health, Pharmacy and Pharmacology*. 2022; 7(3):1-13.
2. Bakare AS, Salami O. Health care expenditure and economic growth in Nigeria: An empirical study. *Journal of Emerging Trends in Economics and Management Science*. 2011; 2(2):83-87.
3. Chandana A, Adamu J, Abdu M. Impact of Government Expenditure on Economic Growth in Nigeria, *CBN Journal of Applied Statistics*. 2021; 12(1):139-174.
4. Echeboba FN, Amakor IC. Impact of government expenditure such as expenditure on General administration, Defense, Education and Health on GDP of Nigeria (1983-2016); *NG - Journal of Social Development*. 2017; 6(3):20-27.
5. Gootjes B, de-Haan J, Jong-A-Pin R. Do fiscal rules constrain political budget cycles? *Public Choice*. 2021; 188:1-30.
6. Gupta R. Impact of government expenditure on economic growth in Nepal; *International Journal of Business and Finance Management Research*. 2017; 2(1):42-48.
7. Nikiforos M. Crisis, austerity, and fiscal expenditure in Greece: Recent experience and future prospects in the

- post-COVID-19 era. *Eur. J. Econ. Econ. Policies Interv.* 2021; 1:1-8.
8. Obi ZC, Ogugua OC. Impact of government expenditure on education: The Nigerian experience; *International Journal of Business and Finance Management Research.* 2014; 2(1):42-48.
 9. Ogunjimi J, Adebayo A. Health Expenditure, Health Outcomes and Economic Growth in Nigeria, 2018. Online at <https://mpa.ub.uni-muenchen.de/94989/> MPRA Paper No. 94989, posted 18 Jul 2019 08:25 UTC
 10. Okerekeoti CU. Government expenditure on education and economic growth in Nigeria, *International Journal of Recent Research in Commerce Economics and Management.* 2022; 9(2):126-134.
 11. Olajide OT, Akinlabi BH, Tijanim AA. Agricultural resource and economic growth in Nigeria. *European Scientific Journal.* 2013; 8(22):103-115.
 12. Salami DK, Olabode OS, Atoyebi KO, Lawal SA, Danmola R. Effects of Government Health and Education Expenditures on Economic Growth in Nigeria *International Journal of Social & Management Sciences, Madonna University.* 2017; 1(1):118-130.
 13. Udeorah SAF, Obayori, Joseph B, Onuchuku O. Health Care Expenditure and Economic Growth in Nigeria; *International Journal of Research and Innovation in Social Science.* 2018; 2(3):54-61
 14. Umeh AC, Ezudike CP, Anyaegbunam NS. Impact of government expenditure on economic growth in Nigeria: Econometric approach of error correction model. *International Journal of Multidisciplinary Research and Growth Evaluation.* 2022; 3(4):82-92.
 15. World Health Organization. Statistical Information System. World Health Organization, WHO: Geneva, 2013. <http://www.who.int/whosis/en>; Retrieved on 16/3/2021
 16. Yogish SN. Education and Economic Development. *Indian Journal of Social Development.* 2006; 6(2):255-270.
 17. Yusuf M. Impact of government health expenditure on economic growth in Nigeria from 1981 – 2016. *Nigeria Journal of Clinical Practice.* 2018; 18(4):437-444.