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Sectoral Effect of Public Expenditure on Economic Growth in Nigeria

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Abstract

This study examined the effects of public expenditure on healthcare and education on economic growth in Nigeria spanning 1981-2016. The study focused on the sectoral and disaggregated spending analyses. Public spending is such an important channel through which economic growth could be achieved. The study utilizes the Error Correction Model (ECM) as it made use of the quasi-experimental research and the data for analysis was purely time series and the econometrics technique was used to examine the short and long run effects of government spending on economic growth in Nigeria. The ADF Unit Root Test was used to test for Stationarity of variables, where at various levels of significance (1%, 5%, and 10%), the variables were stationary, though, the time series were not stationary at their levels, the non-stationary variables were differenced and variables became stationary at first difference. That is, RGDP, EXHTH and EXEDU were integrated of order one 1(1). Granger Causality Test to ascertain the direction of the effect of the variables was also conducted. The results showed a unidirectional causality between the EXHTH and RGDP as well as EXEDU and RGDP. Meaning, that total expenditure on education and total expenditure on health care granger causes economic growth in Nigeria during the period of study. This further reveals that the variables; government expenditure on education and health care impact on economic growth. The result of the analyses is an indication that government spending on health care and education in Nigeria are statistically significant and are positive to economic growth in the long run. Therefore, the paper concludes and recommends that government in Nigeria should increase its expenditure on health care services delivery and education in order to accelerate real economic growth, especially as the economy is gradually exiting economic recession.

Keywords: Economic Growth, Education, Endogenous Growth, Error Correction Model, Health Care.

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Background to the Study

The role of government expenditure on economic growth cannot be over-emphasized. Economic growth is one major macroeconomic goal of governments at all levels. Government spending to accelerate effective demand in order to achieve real economic growth has been a clarion call by policy makers and scholars, especially in an economy like Nigeria that is gradually moving out of recession. The Keynesians believe that during economic crises, of the sort Nigeria is experiencing, government could reposition the economy through productive spending and encourage effective demand to re-fix the economy by increasing disaggregated and sectoral expenditure in health care and education. This to the Keynesians could bring about employment creation and stimulate productive investment. Public spending is indeed an important instrument of government to better the economic activities in every economy. The general view is that government expenditure on social and economic infrastructure can be growth enhancing although the financing of such expenditure to provide essential infrastructural facilities including transport, electricity, telecommunication, water and sanitation, waste disposal, education and health can be growth retarding (Olukayode, 2009). It is argued that the relationship between government expenditure and economic growth has continued to generate series of controversies among scholars in economic literature. While some scholars believed that the impact of government expenditure on economic growth is negative or non-significant (Taban, 2010; Vu Le and Suruga, 2005), others believed that the impact is positive and significant (Alexiou, 2009; Belgrave and Craigwell, 1995).

Baro(1990) predicts that only those productive government expenditures will positively affect the long run growth rate. Solow (1956) argues that, productive government expenditure may affect the incentive to invest in human or physical capital, but in the long-run this affects only the equilibrium factor ratios, not the growth rate, although in general there will be transitional growth effects. Other scholars have argued that expenditure on infrastructure such as road, power etc, reduces production costs, increase private sector investment and profitability of firms, thus ensuring economic growth (Barro, 1990; Barro and Sali-i-Martin, 1992; Roux, 1994; Okojie, 1995; Morrison and Schwartz, 1996).

In the same vein, others argued that growth in government spending, mainly based on non-productive spending is accompanied by a reduction in income growth has given rise to the hypothesis that the greater the size of government intervention the more negative is its impact on the economy (Glomm and Ravikumar, 1997; Abu and Abdullah, 2010).

Government expenditure has being on the increase over the years with little or no positive real impact on the economy as the country records worsening state of infrastructures that could not enable real economic growth in Nigeria. However, for Nigeria to experience real positive economic growth out of recession, an examination of the impacts of government spending on economic growth is imperative. The study, therefore, examines the impacts of government sectoral and disaggregated spending on economic growth in Nigeria by empirically estimating and analyzing the effects of sectoral and disaggregated health care and educational spending on economic growth in Nigeria. The paper is organized into five

sections. Section two reviews related literature, section three is the methodology, section four is data presentation and analyses. Section five is conclusion and recommendations.

Literature Review
Theoretical Literature
There are a number of theories that explains government expenditure and economic growth. These are;

Wagner's Law/ Theory of Increasing State Activities: Adolph Wagner (1835-1917) this is a law named after the German Political Economist who developed the "law of increasing state activity" after an empirical analysis on the Western Europe at the end of the 19th century. According to him, government growth is a function of increased industrialization and economic development and that as the real income per capita of a nation increases, the share of public expenditures in total increases. In 1893, he designed three bases for the increase in state expenditure.

He said, during industrialization, public sector activities tend to replace private activities and that state functions like administrative and protective functions will increase. Secondly, government needed to provide cultural and welfare services like education, public health, old age pension or retirement insurance, food subsidy, natural disaster aid, environmental protection programs and other welfare functions. Thirdly, increased industrialization will bring about technological transformation and large firms tends to monopolize by yearning for larger market share, as a result, governments would have to avert the effects through the provision of social and merit goods. This law is further corroborated by Musgrave and Musgrave (1988) where it says that as progressive economies industrializes, the share of the public sector in the national economy grows progressively

Peacock and Wiseman Theory of Public Expenditure: Peacock and Wiseman in 1961 developed the pattern of increase in government expenditure as a result of their study of public expenditure in England. In 1967, they averred that the growth of public expenditure does not occur as a result of increase state activities; rather it is the political prepositions instead of the organic state where it is considered that government like to spend money, and peoples' dislike of increasing tax but want government to increase social services.

Musgrave Theory of Public Expenditure Growth: Musgrave and Musgrave propounded this theory due to noticeable changes in the income elasticity of demand for public services in three areas of per capita income. Musgrave averred that at low levels of per capita income, demand for public services tends to be very low, this according to him, satisfies primary needs and that increase in income leads to a rise in the demand for public services like health care, education and transport and government would be left with no option than to increase expenditure on such public goods.

The Keynesian Theory
The Keynesian theory of employment posits that government expenditure leads to economic growth and development especially its importance in stimulating the economy at the long

run. The Keynesian theory of employment indicates the functional relationship as Q = f (K) …….. (2.1), where; Q represents the rate of employment, K represents the government expenditure. From the above functional equation, government can reduce unemployment through it expenditure. Keynes considers government expenditure as the only means to stimulate the economy for positive growth, hence, he recommend that government increase its expenditure.

There is no gainsaying the fact that public expenditure is an important instrument for economic growth and development, especially for developing economies like Nigeria. Government investment in education and health could catapult the economy greatly. Man is central to development in all ramifications, judging from the fact that education positively affects economic growth as it increases the efficiency of the labour force. For example, education can affect growth by increasing the efficiency of the workforce, reducing inequality, promoting health, reducing fertility levels, creating better conditions for good governance, and by increasing the knowledge and the innovative capacity of an economy (Aghion et al., 1999; Castelló-Climent and Doménech, 2008; Lipset, 1960; Glaeser et al., 2004; Castelló-Climent, 2008; Benhabib and Spiegel, 1994; Hanushek and Woessmann, 2008). Scholars have severally investigated the relationship between public expenditure and economic growth. Some of these studies are; Glomm and Ravikumar (1992, 1997, 1998), Eckstein and Zilcha (1994), Zhang (1996), Kaganovich and Zilcha (1999), Cassou and Lansing (2001), Benabou (2002), Blankeanu (2005), and Wigger (2004).

Empirical Literature

Studies on government spending and economic growth abound in underdeveloped, developing and developed economies like Nigeria with different results. Alexander (1990) applied OLS method with a sample of 13 Organization for Economic Cooperation and Development (OECD) countries panel during the period ranging from 1959 to 1984. The results show that growth of government spending has significant negative impact on economic growth. Foster and Skinner (1992) evaluated the relationship between government expenditure and economic growth for a sample of wealthy countries for 1970-95 periods, using various econometric approaches. They found a positive relationship between public sector expenditure and economic growth. Devarajan, S., et al (1996) studied the effects of different expenditure component on growth.

The study covered 43 countries for periods of 1970 to 1990. The study shows that recurrent expenditure has positive impact on growth, while capital expenditure exerts negative impact on growth. But when a subsample of developed countries were considered the result was reversed indicating that, the earlier result might be as a result of corruption and inefficiency in the use of public funds in the developing countries. Josaphat and Oliver (2000) investigated the impact of government spending on economic growth in Tanzania (1965-1996) using time series data for 32 years. They formulated a simple growth accounting model, adapting Ram model in which total government expenditure is disaggregated into expenditure on (physical) investment, consumption spending and human capital investment. It was found that increased productive expenditure (physical investment) have a

negative impact on growth and consumption expenditure relates positively to growth, and which in particular appears to be associated with increased private consumption. The results revealed that expenditure on human capital investment was insignificant in their regression and confirm the view that public investment in Tanzania has not been productive, as at when the research was conducted. Devarajan and Vinay (1993) used panel data for 14 developed countries for a period ranging from 1970 to 1990 and applied the Ordinary least square method on 5-year moving average. They took various functional types of expenditure (health, education, transport, etc) as explanatory variables and found that health, transport and communication have significant positive effect while education and defense have a negative impact on economic growth. Olorunfemi, (2008) studied the direction and strength of the relationship between public investment and economic growth in Nigeria, using time series data from 1975 to 2004 and observed that public expenditure impacted positively on economic growth and that there was no link between gross fixed capital formation and Gross Domestic Product. He averred that from disaggregated analysis, the result reveal that only 37.1% of government expenditure is devoted to capital expenditure while 62.9% share is to current expenditure.

Gregorious and Ghosh (2007) made use of the heterogeneous panel data to study the impact of government expenditure on economic growth. Their results suggest that countries with large government expenditure tend to experience higher economic growth. Fajingbesi and Odusola (1999) empirically investigated the relationship between government expenditure and economic growth in Nigeria over the period 1970 to 1995. The econometric results indicated that real government capital expenditure has a significant positive influence on real output. However, the results showed that real government recurrent expenditure affects economic growth only by little.Okoro, AS (2013) investigated the impact of public expenditure on economic growth in Nigeria (1980-2011). The study concluded that Government capital spending in industries and agriculture "if properly managed" will raise the nation's production capacity and employment, which in turn will increase economic growth in Nigeria. The study advised that Government should increase its expenditure on rural roads and electricity as this will accelerate the productive sectors as well as raise the standard of living of poor citizens in Nigeria. Chude and Chude (2013) investigated the impact of government expenditure on economic growth in Nigeria (1977-2012) and found that total government expenditure on education has significant effect on Gross Domestic Product (GDP).

The study recommend that government should focus its expenditure on productive sectors like education as it would reduce the cost of doing business as well as raise the standard living of poor ones in the country and that government should ensure that capital expenditure and recurrent expenditure are properly managed in a manner that it will raise the nation's production capacity. Alexander (1990) applied OLS method for sample of 13 Organization for Economic Cooperation and Development (OECD) countries panel during the period ranging from 1959 to 1984. The results show, among others, that growth of government spending has significant negative impact on economic growth. Abu and Abdullah (2010) investigates the relationship between government expenditure and economic growth in

Nigeria from the period ranging from 1970 to 2008.They used disaggregated analysis in an attempt to unravel the impact of government expenditure on economic growth. The results of their study reveal that government total capital expenditure, total recurrent expenditure and Education have negative effect on economic growth.

Health is also important for economic growth and development due to the central importance of man in the growth and development process of an economy. On the same vein, studies have been conducted to confirm the positive effects of health care investment and economic growth. For instance, Grossman (1972) averred that people are born with initial endowments that depreciate over time but can grow with investments in health. Grossman further argued that increase in health capital reduces the time lost to illness and thus, heal and allows more effective performance that increases productivity. Jack (1999) found that the productivity of a labour force depends on investments in human capital and also the physical and mental capabilities of the workforce. Bloom and Canning (2000) indicates that healthy communities or populations tend to have enhanced physical abilities and mental clarity which in turn increases productivity. In a bid to echo the imperatives of health to development, Sorkin (1977) says that in areas where economic activity has been hindered owing to unfavorable health condition, an investment into a robust major health programme could be a catalyst to promote development.

Model Specification

This study adopts the Vector Error Correction Model (VECM) approach to examine the impact of government spending in Health Care and Education on economic growth in Nigeria. Davidson and Mackinnon (1993), Bannergee (1993), and Verbeck (2000) states that Vector Error Correction Model (VECM) is a derivation of autoregressive distributed lag (ADL) model. In the same light, Armorer (1996), Engert and Hendry (1998) found Vector Error Correction Model to be a good tool for public expenditure and economic growth forecasting.

The model hence estimates that:

$$\mathbf{Yt = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu} \text{ ..... (1)}$$

Where Yt represents the real gross domestic product (RGDP), β_0 is the intercept term, β_1 and β_2 are the regression coefficient, X_1, X_2 are the set of baseline explanatory variables and μ is the stochastic random variable.

The modified version of the above model is as follows:

$$\mathbf{RGDP = (EXHTH, EXEDU)} \text{ ..... (2)}$$

The functional and econometrics effect of government expenditure in health care and education on economic growth is stated as;

$$\mathbf{RGDP = f\ (EXHTH, EXEDU)} \text{ ..... (3)}$$

$$\mathbf{RGDP = \beta_0 + \beta_1\ EXHTH + \beta_2\ EXEDU + \mu} \text{ ..... (4)}$$

Where: RGDP is Real Economic Growth, EXHTH is Health Care expenditure, EXEDU is Educational expenditure, μ is stochastic random variable, Bo is intercept parameter, β_1& β_2 are Slope parameters and t is Time /Period. On the a priori it is expected that; $\beta_1 > 0$, and $\beta_2 > 0$.

Estimation Technique and Procedure

ADF Unit Root Test

The study conducted a stationarity test for each of the variables by employing the augmented Dickey-Fuller test proposed by Dickey and Fuller (1979) to check for the stationarity properties of the variables in order to avoid any spurious regression. The general form of ADF is estimated by the following regression

$$\Delta Ydt = \beta_o + \beta_1 Yd\ t_{-1} + \sum \beta_1 \Delta Ydi + {}^{\delta}t + \mu t \ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where: Yd is a time series, t is a linear time trend, Δ is the first difference operator, β_0 is a constant, t_{-1} is the optimum number of lags in the independent variables and μ is random disturbance term.

The Granger Causality Test

Granger causality test shows the direction of the effect between the two time series. This effect could take the form of bilateral, bidirectional, unidirectional and independent causality. The general form of granger causality is estimated by considering two variables which are Real Gross Domestic Product (RGDP) and Health Care expenditure (EXHTH) and Real Gross Domestic Product (RGDP) and Education expenditure in the following regressions:

$$RGDP\ t = \sum_{t=1}^{n} \square + \psi\ EXHTH\ t_{-1} + \sum \Omega\ RGDPt_{-1} + \varepsilon_1 t \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

$$EXHTH\ t = \sum_{t=1}^{n} \square + \omega_1 RGDPt_{-1} + \sum_{t=1}^{n} \square\ \theta 1 EXHTHt - 1 + \varepsilon 2t \ldots\ldots\ldots (7)$$

Where it is assumed that the disturbances e1t and e2t are uncorrelated in the two variables case is called bilateral causality. However, the RGDP and EXHTH in the equations above, the case of unidirectional causality from RGDP to EXHTH exists if the set of lagged EXHTH coefficients in (4) is not statistically different from zero (i.e., $\sum \omega_1 \neq 0$) and the set of the lagged RGDP coefficients in (5) is statistically different from zero (i.e., $\sum \theta_1 \neq 0$).

$$RGDP\ t = \sum_{t=1}^{n} \square + \psi\ EXEDU\ t_{-1} + \sum \Omega\ RGDPt_{-1} + \varepsilon_1 t \ldots\ldots\ldots\ldots\ldots\ldots (8)$$

$$EXEDU\ t = \sum_{t=1}^{n} \square + \omega_1 RGDPt_{-1} + \sum_{t=1}^{n} \square\ \theta 1 EXEDUt - 1 + \varepsilon 2t \ldots\ldots\ldots (9)$$

Where it is assumed that the disturbances e1t and e2t are uncorrelated in the two variables case is called bilateral causality. However, the RGDP and EXEDU in the equations above, the case of unidirectional causality from RGDP to EXEDU exists if the set of lagged EXEDU coefficients in (4) is not statistically different from zero (i.e., $\sum \alpha_1 \neq 0$) and the set of the lagged RGDP coefficients in (5) is statistically different from zero (i.e., $\sum \theta_1 \neq 0$).

Data Presentation, Analysis, Results and Discussion

The data used in this study is time series data spanning from 1981 – 2016. The study identified the significance of Health Care and Educational public expenditure on economic growth in Nigeria.

Here we presented the data and analyzes the findings. This was done in two sections. The first section presented the trend analysis of the data used in the study in table 1. In the second segment, the data in table 1 was further subjected to econometrics analysis by employing ADF unit root test and granger causality test methods. The essence of this is to validate the objectives of the study which is to examine the effects of public expenditure on health care and education on economic growth in Nigeria.

Data Presentation

This research examined the government spending on education and health care and economic growth in Nigeria during the period 1981-2016. A growth model was estimated for the Nigerian economy. The real gross domestic product (RGDP) was employed as the proxy for economic growth. While Expenditure on Education (EXEDU) and Expenditure on Health Care (EXHTH) are the sets of explanatory variables, all the variables are in Million Naira (N m). See table 1 below

Table 1: Data on Nigeria's RGDP, GSE and GSH from 1981-2016

YEAR	RGDP (₦ m)	EXEDU(₦ m)	EXHTH(₦ m)
1981	205222.1	984.6000	248.2000
1982	199685.2	1135.100	286.0000
1983	185598.1	967.4000	279.6000
1984	183563.0	861.2000	190.2000
1985	201036.3	850.2000	223.5000
1986	205971.4	1094.800	360.4000
1987	204804.5	653.5000	236.4000
1988	219875.6	1084.100	443.2000
1989	236729.6	1941.800	452.6000
1990	267550.0	2294.300	658.1000
1991	265379.1	1554.700	757.0000
1992	271365.5	2060.400	975.4000
1993	274833.3	7999.100	2684.500
1994	275450.6	10283.80	3027.800
1995	281407.4	12728.70	4851.500
1996	293745.4	15351.80	5060.900
1997	302022.5	15944.00	5803.000
1998	310890.0	26721.30	11984.30
1999	312183.5	31563.80	16180.00
2000	329178.7	67568.10	18181.80
2001	356994.3	59744.60	44651.50
2002	433203.5	109455.2	63171.20
2003	477533.0	79436.10	39685.50
2004	527576.0	93767.90	59787.40
2005	561931.4	120035.5	71685.40
2006	595821.6	165213.7	105590.0
2007	634251.1	185771.8	122400.0
2008	672202.6	157007.0	99891.80
2009	718977.3	169330.8	109293.9
2010	776332.2	170703.2	110528.6
2011	834161.9	165680.3	106571.4
2012	902794.0	168571.4	108798.0
2013	964184.0	175314.26	110834.26
2014	969969.1	182326.83	115267.63
2015	990690.7	187796.63	118725.63
2016	977740.42	193430.53	122287.40

Source: CBN Statistical Bulletin Various Issues

Table 1 above shows that the growth in the GDP fluctuates between 1981 and 1987 and then increased progressively from 1988 to 2015 before economic recession in 2016. Furthermore, Table 1 equally shows that total government expenditure on education and health witnessed an increase between the periods of 1981-2016. From the table, total government expenditure on education falls from N948.6 Million in 1981 to N653.5 Million in 1987, but witnessed a further increase from N184.1 Million in 1988 to N 168571.44 Million in 2012 except for 1993

that witnessed a sharp decline of N799.1 Million. Total government expenditure on health care falls from N248.2 Million in 1981 to N 236.4 Million in 1987. But increases from N 443.2 Million in 1988 to N108.797 Million in 2012 and N115.267 in 2014. The trend in the various variables used for the analysis is presented in the graphs below.

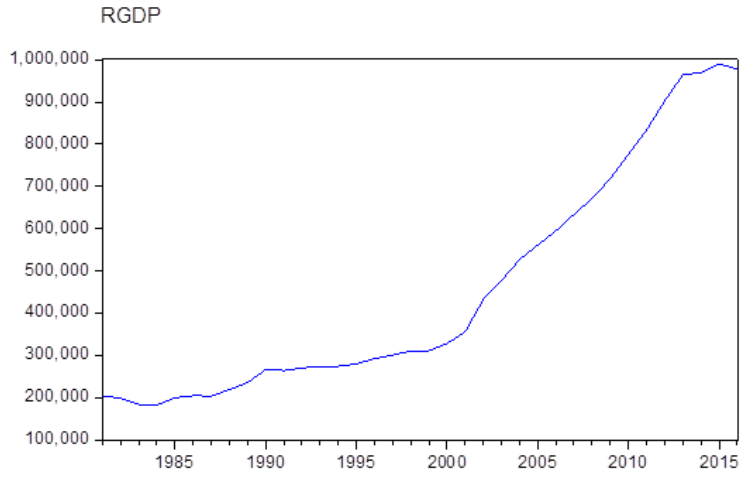

Figure 1: Line Graph Showing the Trend in RGDP

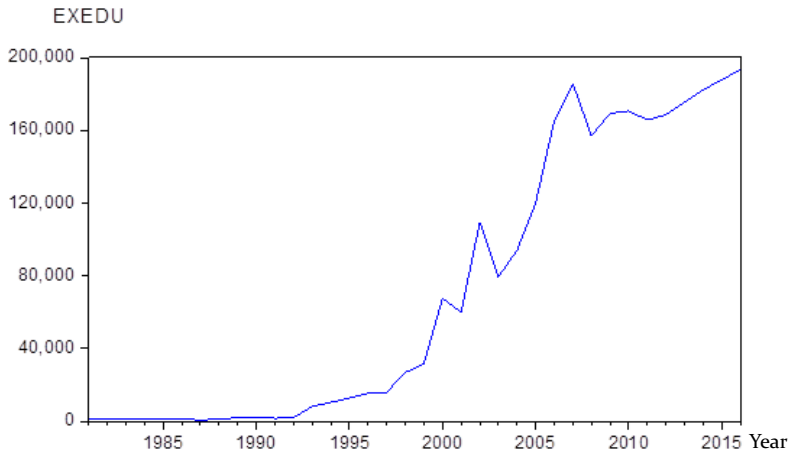

Figure 2: Line Graph Showing the Trend in Government Spending on Education

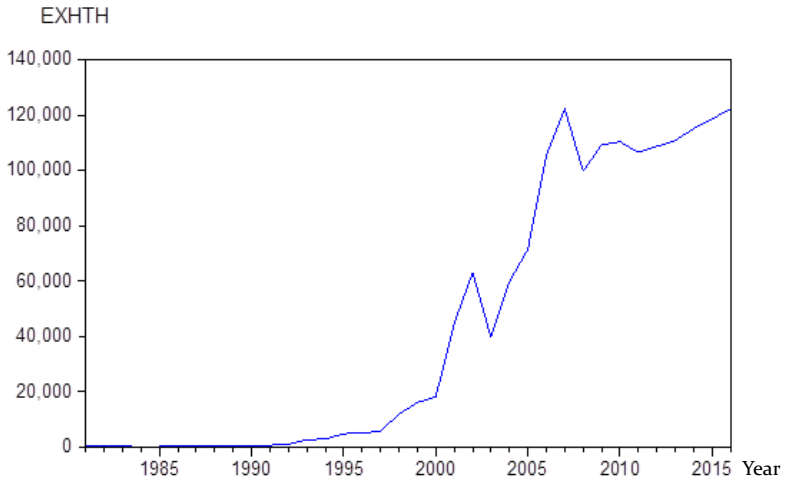

Figure 3: Line Graph Showing the Trend in Government Spending on Health Care

Empirical Data Analysis

The empirical analysis focused mainly on descriptive statistics and estimation of the regression result amongst others.

Descriptive Statistics for Underlying Series

The essence of the descriptive statistics is to ascertain stability of the time series

Table 2: Descriptive Statistics for Underlying Series

	RGDP	EXHTH	EXEDU
Mean	456134.9	43945.95	71867.46
Median	311536.8	14082.15	29142.55
Maximum	990690.7	122400.0	193430.5
Minimum	183563.0	190.2000	653.5000
Std. Dev.	272564.6	49475.02	76165.56
Skewness	0.825459	0.527610	0.464282
Kurtosis	2.221955	1.502230	1.471625
Jarque-Bera	4.996326	5.035206	4.797242
Probability	0.082236	0.080653	0.090843
Sum	16420855	1582054.	2587228.
Sum Sq. Dev.	2.60E+12	8.57E+10	2.03E+11
Observations	36	36	36

Source: Researchers' Computation from (E-view 9)

The descriptive statistics reported in Table 4.2 indicated that real gross domestic product (RGDP), expenditure on health care (EXHTH) and expenditure on education (EXEDU) averaged N456134.9 million, N43945.95 million, and N 71867.46 million respectively. The standard deviation showed that the dependent variable (GDP) converged around it mean. While the independent variables (total expenditure on health care and expenditure on

education) does not converged around their respective mean. The skewness test result shows positive values for all the series, meaning that they have high tails. The probability of Jarque-Bera statistics suggest that the null hypothesis of normal distribution for RGDP, total expenditure on health care and expenditure on education are accepted at 5% level.

Correlation Test

This study employed correlation matrix to check whether or not the explanatory variables can be regressed together. The correlation matrix result is presented in Table 3

Table 3: Correlation Matrix of the Series

VARIABLES	RGDP	EXHTH	EXEDU
RGDP	1	0.952699	0.953641
EXHTH	0.9526991	1	0.995033
EXEDU	0.9536411	0.995033	1

Source: Researchers' Computation from (E- view 9)

The correlation matrix result presented in Table 3 shows that the correlation coefficient depicting the relationship between each of the explanatory variables is below 0.95 which Gujarat (2004) describes as evidence of lack multicollinearity. Hence, the variables can be regressed together without the problem of multicollinearity.

The Unit Root Test

The Augmented Dickey Fuller (ADF) test was used to investigate stationarity and the order of integration of the variables.

Table 4: Unit Root Stationarity Test (1981-2016)

Variable	ADF Test @ Level	Critical Value			ADF Test @ 1ST Diff	Critical Value			Order of Integration
		1%	5%	10%		1%	5%	10%	
RGDP	-0.085451	-3.6394	-2.9511	-2.6143	-3.616364	-3.4394	-2.9511	-2.6143	1(1)
EXHTH	0.076726	-3.6329	-2.9484	-2.6129	-5.639407	-3.6394	-2.9511	-2.6143	1(1)
EXEDU	0.11824	-3.6329	-2.9484	-2.6129	-6.96668	-3.6394	-2.9511	-2.6143	1(1)

Source: Authors' Computed Result from E-views 9.0 (Appendix)

The summarized result presented in table 4 showed that at various levels of significance (1%, 5% and 10%), the variables were stationary, though, all the time series were not stationary at their levels. However, the non-stationarity variables were differenced. Thus, the variables became stationary at first difference. That is, RGDP, EXHTH and EXEDU were integrated of order one 1(1). Having established stationarity of the variables, the long –run relationship among the variables were conducted using the granger causality approach. The result of the pairwise granger causality test is reported in table 4 below.

Granger Causality Test

Granger causality test shows the direction of effect between two time series. Such effect could be bilateral, bidirectional, unidirectional and independence causality. In order to find out the direction of the effects of health care expenditure, education expenditure on economic growth, the Pairwise Granger Causality Test was conducted.

Table 5: Pairwise Granger Causality Test Result

Variables	Observation	F-Statistic	Prob.	Decision
(RGDP) → (EXHTH)	34	3.33673	0.0496	**Reject Ho**
(EXHTH) → (RGDP)		0.50776	0.6071	Accept Ho
(RGDP) → (EXEDU)		6.77607		**Reject Ho**
	34		0.0038	
(EXEDU) → (RGDP)		0.12003	0.8873	Accept Ho

Source: Researchers' Computation (E-view 9.0)

Note: means does not granger cause and RGDP, EXHTH and EXEDU as earlier defined

The results presented on table 5 shows a unidirectional causality between the EXHTH and RGDP as well as EXEDU and RGDP. Meaning that total expenditure on education and total expenditure on health care granger causes economic growth in Nigeria during the period of study. This further reveals that the variables; government expenditure on education and health care impact on economic growth.

Discussion of Findings

The analysis of the empirical result depicted by the granger causality test shows that government expenditure on education has a significant impact on economic growth. Thus, an increase in government spending in the education sector will have a significant boost on economic growth in Nigeria. Similarly, the analysis of the empirical result depicted by the granger causality test shows that government expenditure on health care has a significant impact on economic growth. Thus, an increase in government spending in the health sector will significantly boost economic growth in Nigeria.

Conclusion

The findings of this study shows that total government expenditure on health care (EXHTH) and education (EXEDU) have significant effects on Gross Domestic Product (GDP). The economy of Nigeria is currently witnessing a slow growth out of recession. The National Bureau of Statistics (NBS) reported that Nigeria is currently moving out of economic recession at 0.55 per cent. The analyses of the empirical results are truth to fact indication that if government of Nigeria increases expenditure on health and education, it would have a significant impact on economic growth. Thus, an increase in government spending on health and education sectors would have a significant boost on economic growth in Nigeria.

Recommendations

Based on the findings, the following recommendations were made:

1. Government should as a matter of priority increase its expenditure on productive public expenditure on health to encourage wealthy nation, curtail excessive industrial strikes hovering the country.

2. Government should direct its spending on productive sector like the education sector which would boost its human capital and create more job opportunities for the unemployed, public expenditure on education should be as a matter of priority in order to encourage productivity, create more jobs and avert detrimental effects militating the sector, especially the incessant industrial action by the Academic Staff Union of Universities in Nigeria.

3. In order to achieve development of these sectors that would further boost the economy, corruption in these sectors and others should be properly checkmated so that funds meant for the development of these sectors shall be religiously utilized and expended.

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APPENDIX

Descriptive Statistics

	RGDP	EXHTH	EXEDU
Mean	456134.9	43945.95	71867.46
Median	311536.8	14082.15	29142.55
Maximum	990690.7	122400.0	193430.5
Minimum	183563.0	190.2000	653.5000
Std. Dev.	272564.6	49475.02	76165.56
Skewness	0.825459	0.527610	0.464282
Kurtosis	2.221955	1.502230	1.471625
Jarque-Bera	4.996326	5.035206	4.797242
Probability	0.082236	0.080653	0.090843
Sum	16420855	1582054.	2587228.
Sum Sq. Dev.	2.60E+12	8.57E+10	2.03E+11
Observations	36	36	36

Correlation Test

	RGDP	EXHTH	EXEDU
RGDP	1	0.9526991807 758584	0.95364117317 42644
EXHTH	0.9526991807 758584	1	0.9950336545 335824
EXEDU	0.95364117317 42644	0.9950336545 335824	1

Unit Root Test

RGDP

Null Hypothesis: LOG(RGDP) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.085451	0.9432
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

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Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LOG(RGDP))
Method: Least Squares
Date: 09/19/17 Time: 05:55
Sample (adjusted): 1983 2016
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(RGDP(-1))	-0.001269	0.014850	-0.085451	0.9325
D(LOG(RGDP(-1)))	0.482823	0.166860	2.893577	0.0069
C	0.040682	0.188420	0.215909	0.8305

R-squared	0.233837	Mean dependent var	0.046721
Adjusted R-squared	0.184407	S.D. dependent var	0.048628
S.E. of regression	0.043916	Akaike info criterion	-3.328958
Sum squared resid	0.059788	Schwarz criterion	-3.194279
Log likelihood	59.59228	Hannan-Quinn criter.	-3.283028
F-statistic	4.730682	Durbin-Watson stat	2.001537
Prob(F-statistic)	0.016106		

Null Hypothesis: D(LOG(RGDP)) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, max lag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.616364	0.0173
Test critical values:	1% level	-3.439407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LOG(RGDP),2)
Method: Least Squares
Date: 09/19/17 Time: 05:55
Sample (adjusted): 1983 2016
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG(RGDP(-1)	-0.522385	0.152907	-3.416364	0.0017
C	0.024606	0.010251	2.400192	0.0224

R-squared	0.267257	Mean dependent var	0.000417
Adjusted R-squared	0.244359	S.D. dependent var	0.049731
S.E. of regression	0.043230	Akaike info criterion	-3.387546
Sum squared resid	0.059802	Schwarz criterion	-3.297760
Log likelihood	59.58828	Hannan-Quinn criter.	-3.356926
F-statistic	11.67154	Durbin-Watson stat	1.993066
Prob(F-statistic)	0.001745		

EXHTH

Null Hypothesis: EXHTH has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.076726	0.9593
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXHTH)
Method: Least Squares
Date: 09/19/17 Time: 05:58
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXHTH(-1)	0.002953	0.038488	0.076726	0.9393
C	3363.672	2436.276	1.380661	0.1767

R-squared	0.000178	Mean dependent var	3486.834
Adjusted R-squared	-0.030119	S.D. dependent var	10682.57
S.E. of regression	10842.25	Akaike info criterion	21.47573
Sum squared resid	3.88E+09	Schwarz criterion	21.56461
Log likelihood	-373.8254	Hannan-Quinn criter.	21.50642
F-statistic	0.005887	Durbin-Watson stat	2.047814
Prob(F-statistic)	0.939305		

Null Hypothesis: D(EXHTH) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.793255	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXHTH,2)
Method: Least Squares
Date: 09/19/17 Time: 05:57
Sample (adjusted): 1983 2016
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXHTH(-1))	-1.022242	0.176454	-5.793255	0.0000
C	3665.782	1982.731	1.848855	0.0737

R-squared	0.511911	Mean dependent var	103.6462
Adjusted R-squared	0.496658	S.D. dependent var	15492.25
S.E. of regression	10991.23	Akaike info criterion	21.50460
Sum squared resid	3.87E+09	Schwarz criterion	21.59439
Log likelihood	-363.5783	Hannan-Quinn criter.	21.53522
F-statistic	33.56180	Durbin-Watson stat	2.009555
Prob(F-statistic)	0.000002		

EXEDU
Null Hypothesis: EXEDU has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.118240	0.9627
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXEDU)
Method: Least Squares
Date: 09/19/17 Time: 05:59
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXEDU(-1)	0.004351	0.036798	0.118240	0.9066
C	5200.873	3688.009	1.410212	0.1678

R-squared	0.000423	Mean dependent var	5498.455
Adjusted R-squared	-0.029867	S.D. dependent var	15715.55
S.E. of regression	15948.51	Akaike info criterion	22.24756
Sum squared resid	8.39E+09	Schwarz criterion	22.33644
Log likelihood	-387.3324	Hannan-Quinn criter.	22.27824
F-statistic	0.013981	Durbin-Watson stat	2.415191
Prob(F-statistic)	0.906594		

Null Hypothesis: D(EXEDU) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.966668	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXEDU,2)
Method: Least Squares
Date: 09/19/17 Time: 05:59
Sample (adjusted): 1983 2016
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXEDU(-1))	-1.203555	0.172759	-6.966668	0.0000
C	6774.173	2876.150	2.355292	0.0248

R-squared	0.602655	Mean dependent var	161.2765
Adjusted R-squared	0.590238	S.D. dependent var	24731.08
S.E. of regression	15831.03	Akaike info criterion	22.23435
Sum squared resid	8.02E+09	Schwarz criterion	22.32414
Log likelihood	-375.9840	Hannan-Quinn criter.	22.26497
F-statistic	48.53446	Durbin-Watson stat	1.950278
Prob(F-statistic)	0.000000		

GRANGER CAUSALITY TEST

Pairwise Granger Causality Tests
Date: 09/19/17 Time: 06:00
Sample: 1981 2016
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EXHTH does not Granger Cause RGDP	34	3.33673	0.0496
RGDP does not Granger Cause EXHTH		0.50776	0.6071
EXEDU does not Granger Cause RGDP	34	6.77607	0.0038
RGDP does not Granger Cause EXEDU		0.12003	0.8873
EXEDU does not Granger Cause EXHTH	34	12.5143	0.0001
EXHTH does not Granger Cause EXEDU		11.0028	0.0003