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Impact of Government Health Expenditure on Economic Growth in Nigeria: 1990-2017

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Abstract
This study examines the impact of government health expenditure on economic growth in Nigeria from 1990-2017. To achieve the objective of the study, data on gross domestic product (GDP) and total government expenditure on health were collected from the Central Bank of Nigeria (CBN) annual report and statement of account online (2018) while data on life expectancy rate (LEPR), infant mortality rate (IFMR) and maternal mortality rate (MMTR) were collected from World Data Atlas. The study employed Ordinary Least Squares multiple regression, econometric (E-Views 10.0) tool for regression. The study carried out ADF, ECM, Johansen and Granger causality tests for statonatity, long run relationship, co-integration and causality. The result of ADF test shows that all the variables are stationary, ECM result shows a positive relationship between TGEH and GDP while Johansen result shows reveals the presence of cointegration between TGEH and GDP and Granger causalty result show that TGEH can cause GDP. It is therefore recommended among others that the government should allocate more funds to the health sector, continue the NHIS programme and government should create more public awareness through mass media, national orientation agency, health talks in the hospitals to help improve LEPR, IFMR and MMTR.

Keywords: *Gross Domestic Product, Government Expenditure Health Expenditure, Life Expectancy Rate, Infant Mortality Rate, Maternal Mortality Rate*

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I. Introduction

Human being is the most valuable factor in achieving significant progress in terms of productivity and technological advancement towards attaining economic growth and development. The economic view of human encompasses health, education, training, migration and other investments that enhance an individual's productivity (Onisanwa, 2014).

Globally, health plays avital role in every nation's development (Udeorah, Obayori, &Onuchukwu, 2018) and it is significant to national life since governments in many nations of the world both developed and developing formulate policies and programmes which regulates, guides and controls the operations of the health sector. In recognition of the fact that a healthy population is important for socio-economic development, the Nigerian government put up series of policies and programmes with the aim to assist in strengthening the National health scheme. The policies include: Western Traditional Health Care Integration (WTHCI:1990), Basic Health Social Scheme (BHSS:1975-1980 Develoment Plan), Primary Health Care (PHC:1978), National Health Insurance Scheme (NHIS) established in 1999 but launched in 2005, National Immunization Coverage Scheme (NICS:), Midwives Service Scheme (MSS:2009),Oagadougou(1978) and Abuja (1989) declarations, National Strategic Health Development Plan (NSHD) established in 2010, among others. These policies are put in place so as to achieve some objectives such as easy accessibility of Nigerians to good health care facilities, equitable distribution of health care facilities within the federation and at all the tiers of the government, maintaining high standard of health delivery, limiting the rise in the cost of health care services and ensuring the conformity to laid down rules and regulations guiding health care operations by all health care providers (Udeorah, et al, 2018).

Health expenditure relates to the amount allocated to health sector due to the vital role it plays on economic growth (Onisanwa, 2014). Policy makers in Nigeria having realized the role health care plays in growing the economy have considered it necessary to increase public expenditure on health in order to tackle health care problems and this can be seen from the trend of government expenditure on health (recurrentand capital) since independence. For instance, in 1970, total government expenditure on health was ₦110.1852M,, and rose to ₦ 852.484823M in 1980, ₦2402.80M in 1990, ₦194960M in 2014,₦16.828.759B and ₦18,392.991B in 2019,which shows that government expenditure on health has been increasing annually (Anyanwu, Oyefusi, Oikhanem&Dimowo, 1997; CBN Statistical Bulletin, 2019).

Many studies have been carried out on government health expenditure and economic growth in Nigeria, where many of the studies reveal positive resultsyet thehealth care delivery has not experiencedany significant improvement. Nigeria is still among the developing nations with poor health outcomes and its attendant problems. The health care status of Nigeria is considerably low if compared to some countries in West Africa, with low life expectancy at birth of 48 years in 2007 compared with 56 years in Ghana, although it increased to 53.4 years in Nigeria as at 2016, high infant and maternal mortality ratio of 1100 per 100000 live births compared to Ghana and Guinea with 560 and 910 in 2008 while the global mortality ratio is below 400 maternal death per birth (Ogunleye, Owolabi, Sanyaolu&Lawal (2017); Jaiyeoba (2015); Federal Ministry of Health (2010) and Anyanwu, et al., (1997); WHO (2013).

Health and other forms of human and physical capital have the capacity to increase the GDP per capita through increase in productivity of accumulated resources and technical change. A healthy individual can live long, possess sound mind for quality education, gain strength and vitality so as to, earns income, co-ordinate other resources, patronize commodity market, save or invest which will in turn reflect at the macro level due to increase in savings and capital accumulation, increase in investment and eventually in economic growth. Also, some part of the income is spent on human capital development which further leads to growth per capita and when economy improves, it result in improved life expectancy, infant mortality and maternal mortality.

Given the foregoing, the study therefore, assesses the impact of total government health expenditure on Nigerian economy. The challenges of the study, specifically is:

i. Examine the total Government Health Expenditure has no significant impact on economic growth in Nigeria.
ii. Evaluate the causal relationship between total government health expenditure and economic growth in Nigeria.

II. Literature Review

Conceptually, health has been described differently by various scholars due to the important role it plays in the development of human capital development. Health is central to well-being essential for satisfying and rewarding life and fundamental to the broader notion of expanding human capital and it has the heart of the meaning of development (Todaro, 2011). It is the ability to perform one's roles or functions and helps to develop what we are capable of doing in the society at large. Good health is an integral part of development because only healthy people can earn income, afford and seek medical care for themselves as well as their families, have better nutrition and experience more freedom to live healthier lives.

Health is seen as a one of the cardinal factor in the development of human capital and it has being underscored in the vision 2020 and the National Development Plan (National Strategic Health Development Plan, 2010).

Health expenditure is an aspect of health finance which deals with how the amount allocated to health is spent. Adeyemi&Ogunsola (2016) identify health and nutrition ash important aspect of human capital development for economic growth because the deficiency in it will severely limit the population ability to engage in productive activities. Health spending has impact on education sector effectiveness because it is possible for greater health capital to raise the return on education investment and other areas. For example, good health improves schooling in childhood investment and educational outcome, allows positive expectation of good adult and influences the health in adulthood. Also, healthprogrammes rely on skills learnt from school in the form of life expectancy, literacy and numeracy and other health education that can assist in growing healthy population which will in turn raise the entire economy productivity. Good health is an integral part of development because only healthy people can earn income, afford and seek medical care for themselves as well as their families, have better nutrition and experience more freedom to live healthier lives.

Theories on Government Expenditure and economic growth areSchumpeter, public expenditure and growth. Schumpeter theory relates to health while endogeneous growth relates to economic growth and Wagner relate to public expenditure.

Wagner's Theory

Wagner's law as a principle was named after the German Economist Adolph Wagner (1835-1917). He proposed the 'law of rising public expenditures' through the analysis of trends in the growth of public expenditure and in the size of public sector. The law postulated that the extension of the function of the states contributes to an increase in public expenditure in administration and regulation of the economy, the development of modern industrial society would increase the political pressure for social progress which result to increase in allowance for social consideration in the conduct of industry, increase in public expenditure will overshoot the proportional increase in the national income which is income elastic wants and will eventually results in a relative expansion of the public sector such as education, health, transportation and other social services starts to increase and these force the government to increase expenditure on them.

Wagner's Law/Theory of Increasing State Activities is considered relevant to this study. The law postulated that the extension of the function of the states contributes to an increase in public expenditure in administration and regulation of the economy, the development of modern industrial society would increase the political pressure for social progress which result to increase in allowance for social consideration in the conduct of industry, increase in public expenditure will overshoot the proportional increase in the national income which is income elastic wants and will eventually results in a relative expansion of the public sector. This reflects in the happenings to the health sector in Nigeria because as the year roll by, there is need for government to increase expenditure on health due to population increase leading to expansion of health care delivery services in the economy.

Empirical Literature

The impact of government health expenditure on economic growth has been highly investigated by researchers both in developed and developing countries but the researchers do not come to a general conclusion.

Onisanwa (2014) examines the impacts of health on economic growth in Nigeria for the period 1995-2009 using time series data and the variables- GDP, health expenditure, life expectancy at birth, fertility rate, and gross fixed capital for measurement. The study tested the co-integration and causality. The finding shows that GDP is positively influenced by health indicators in the long-run and health indicators caused the per capita GDP in the long-run. The result of the study further shows that it is possible to achieve improved health status especially if the current status is at low ebb. However, Majdi (2012) investigates the relationship between healthcare costs and economic growth by using panel technique from 1990-2008 of 15 countries of the North and South Bank Mediterranean. The result show that health care costs impact positively on the economic growth.

Meanwhile, RimanandAkpan (2010) investigated the causal direction and long run relationship between government health expenditure, poverty and health status in Nigeria. They tested for co-integration and causality test using the variables- GDP, life expectancy and poverty. The result shows that there is a long run relationship between poverty and health status in Nigeria. Also, Olubokun and Bakare (2011) carried out an empirical study on health care expenditure and economic growth in Nigeria using variables- GDP, Gross Capital Formation, health care expenditure and secondary school enrolment. Ordinary Least Squares (OLS) multiple regression analysis was adopted and the result shows that health expenditure has positive relationship with economic growth in Nigeria.

III. Methodology

In order to investigate the impact of government health expenditure on economic growth in Nigeria, Ordinary least (OLS) multiple regression (e-views) method was adopted to analyse the secondary data generated between 1990 and 2017. The data generated for analysis were obtained from on-line Central Bank of Nigeria (CBN) Statistical Bulletin series and World Databank Online Version (2018).

The study employs the neoclassical theory of growth model as adopted by Bakare andSanni(2011)and Onisanwa (2014) with some modifications.

$Y = f(A,K,L)$…… …3.1

Where Y =output A = level of technology K= physical capital stock and L= quantity of labour.

Differentiating equation (3.1) in respect to time divide by Y and rearrange the times will obtain $\Delta Y/Y = (AA/A + (F_K AK/Y (K/K) + (F_{L\,/}AL/Y) (L/L$…….....3.2

Where; Y/K= rate of growth of output, K/K= rate of growth of capital, L/L= rate of growth of labour force, F_kF_L= social marginal product of capital and labour respectively and $\Delta A/A$= hicks neutral rate of change of technological progress.

Growth occurs from physical capital accumulation and anincrease in labour force with improved technological capabilities which will make labour effective.

Human capital development is proxied by education, health and other factors that enhance human capital efficiency for higher productivity. Odusola (2002) and Adekola (2014) conclude that human capital influences economic growth hence the formulation of the augmented Solow model using Cobb-Douglas production function modified by adding human capital ($H_{t1-\square-\square}$) such that:

$Y_t = K\alpha_t H_t^{\beta}(A,L)^{1-\beta}$……3.3

Where: Y=output; K=physical capital, H = stock of human capital; L=labour force; A= level of technology and α, $\beta < 1$, decreasing returns to capital

In considering the forgoing discussion and based on the previous studies like Solow (1957); Bakare and Sanni (2011) andOnisanwa 2014, the model is specified.The functional relationship between the dependent and independent variable is stated thus:

GDP = f (TGEH, LEPR, IFMR, MMTR) ..…….3.4

This model shows the relationship between GDP (Y),TGEH, LEPR, IFMR and MMTR. The equation establishes the impact of TGEH, LEPR, IFMR and MMTR on GDP in Nigeria.

Equation 3.4 is therefore linearised econometrically as:

$GDP = \beta_0 + \beta_1 TGEH + \beta_2 LEPR + \beta_3 IFMR + \beta_4 MMTR + \mu$ ……35

Equation (3.5) expresses the multiple regression models with different economic variables and different economic units or values. The log is added to each of the variables as shown in the following equation:

$\log GDP = \log\beta_0 + \log \beta_1 TGEH + \log \beta_2 LEPR + \log\beta_3 IFMR + \log \beta_4 MMTR + \log \mu$....3.6

Where; GDP= Gross Domestic Product, TGEH = Total Government Expenditure on Health, LEPR= Life Expectancy, IFMR = Infant Mortality Rate and MMTR = Maternal Mortality Rate. β_0 = Constant Term, β_1, β_2, β_3 and β_4 are regression coefficients of independent variables and μ = Stochastic Error term. However equation (3.6) is the econometric model for this study.The A-Priori expectation of the work is that β_1, β_2, β_3 and β_4 are greater than zero, that is (β_1, β_2, β_3 and $\beta_4 > 0$) and are positively related to dependent variable. However, the focus of this study is to determine the impact of total government health expenditure on economic growth in Nigeria. In order to analyse the study,ADF. ECM and Granger causaltyequations were adopted while the tests carried out include stationarity, co-integration, error correction and causality.

Augmented Dickey Fuller statistics model is as stated in equation 3.7;

$\Box yt = \beta_0 + \beta_1 \delta y_{t-1} + \beta_2 y_{t-2} + \beta_3 y_{t-3} + \Sigma_\beta 4 y_{t-4} + \mu$……..3.7

Where: y = variable under consideration and μ = error term.

Also, co-integration test was carried out using Johansen method.as stated in equation 3.8 as;

$\Delta X_t = \mathbb{\Gamma}_1 \Delta_{t-1} + \Delta X_{t-2} + \ldots. \mathbb{\Gamma}_{k-1} \Delta X_{t-1+1} + \ldots. \mathbb{\Pi} \Delta X_{t-4} + \mu + \varepsilon t$…….3.8

The null hypothesis for *r*co-integrating vector is $\mathbb{\Pi}$ which has a reduced rank, $r < k$ *where* $X_t = k\Box$l vector of 1 (1) 1 variableof $\mathbb{\Gamma}_1$, $\mathbb{\Gamma}_2 \ldots \mathbb{\Gamma}_{k-1}$ and $\mathbb{\Pi}$ is *kvk*matrice of unknown parameters which contains information about the co-integrating relationship. The reduced rank condition has the implication that the process ΔX_1 = stationary; X_1= non-atationary and$\mathbb{\Pi}$ (full rank), all elements of X are stattinary if the rank of $\mathbb{\Pi}$ =0, there is absence of stationarity combinations and so no co-integrating vectors.

The trace and maximum Eigen test statistics in the Johansen's approach are given by:

$\lambda_{trace} = -N\Sigma \ln(1-\lambda)$……3,9

,and$\lambda_{max}(r, r+1) = -N\Sigma \ln(1-\lambda)$…… ..4.0

where; λ_1 = estimated values of characteristics roots generated from the $\Box$matrix; r = the number of co-integrating vectors and *N* = the number of observations.

ECM-based causality tests offer the additional advantage that the source of causation can be identified, in the form of either short-run dynamics or disequilibrium adjustment.

The Granger causality test was employed for the causality test while the Akaike Information Criteria was adopted for lag selection (Granger, 1974). Granger casuality test runs according to this regression:

$Y_t = \beta_t \Sigma^m_{k=1} \beta_k Y_{t-k} + \Sigma^n_{p=1} \beta p X_{t-p} + \mu_t$ ……..22

$X_t = \alpha_t \Sigma^m_{k=1} \alpha_k Y_{t-k} + \Sigma^n_{p=1} \alpha_p X_{t-p} + \varepsilon_t$ …….23

Where:Y_t and X_t = variables which determine economic growth and human capital development, μ_t and ε_t = the mutually uncorrelated error terms, t = the time period, k and p = the number lags, β_P and α_k= 0 (Null Hypothesis) for p's and k's, βp and $\alpha k \neq 0$ (Alternative Hypothesis) for p's and k's

The variable X can Granger cause variable Y if the coefficients of βp's are statistically significant while α_k's are not. On the other hand, the variable Y can Granger cause variable X if the coefficients of α_k's are statistically significant while β_p's are not. If both variables are not statistically significant, then the causality is unidirectional but if both variables are statistically significant, it means that causality is bidirectional.

IV. Data Analysis and Results

Descriptive Statistics

The descriptive statistics results for all the variables results for the mean, a measure of central tendency, standard deviation, a measure of dispersion or variability, maximum or peak value and minimum or lowest value are as presented in Table 1.

Table 1

Summary of Descriptive Statistics

	GDP	IFMR	LEPR	MMTR	TGEH
Mean	35.11520	103.4400	47.95600	1067.560	59733.89
Median	25.65000	106.1000	46.80000	1090.000	33267.90
Maximum	67.98000	126.2000	52.50000	1350.000	231800.0
Minimum	19.56000	71.00000	45.90000	819.0000	291.3000
Std. Dev.	16.50470	19.19991	2.342022	193.5153	70388.33
Observations	28	28	28	28	28

Source: E-views 10.0 Output (2019)

Table 1 shows the summary of descriptivestatistics for the dependent variable GDP and the independent variables which areTGEH, LEPR, IFMR and MMTR for a period of twenty-eight (28) years, which is from 1990 to 2017.

The highest value for the GDP is approximately ₦68 trillion while the minimum value is approximately ₦10 trillion. GDP average value stands at ₦35.11trillion with a standard deviation of ₦16.50. Also, IFMR recorded a maximum value 126.2 with a minimumvalue of approximately 71. Its average value is 103.11 and standard deviation of 19.1 during the sample period. Going by this result, it shows that infant mortality rate has been on the increase over the years. Moreover LEPR has a maximum value of 52.5 with a minimum value of 45.90 within the period under study. Its average value stands at 47.97 with a standard deviation of 2.34.

The descriptive statistics further revealed that maternal mortality rate has average values of 1067.56 with a standard deviation of 193.51. The maximum value and minimum value stand at 1350 and 819 respectively. Moreover, total government expenditure on health has a maximum and minimum value of 231800 and 291.30 respectively, the average value stands at 59733 with a standard deviation of 70388.33.

Tests for Stationarity

The summary of the ADF unit root test is presented in Table 2.

Table 2

ADF Unit Root Test of Stationarity

Variables	ADF at Levels	ADFat First Difference	Criticalvalue(5%)	Order ofIntegration
GDP	0.9746	-3.972706	-2.981038	I (1)
TGEH	0.7281	-5.141818	-2.981038	I (1)
LEPR	0.9998	-3.203616	-2.914517	I (1)
IFMR	1.0000	-5.880000	-2.914517	I (1)
MMTR	0.7768	-4.714540	-2.914517	I (1)

Source: E-views 10.0 Output (2019)

Table 2 presents the summary of the ADF unit root test result which revealed that GDP, TGEH, LEPR, IFMR, and MMTR were all stationary at first difference. This implies that the null hypothesis of non-stationarity of the data at first difference can be rejected.

Lag Selection Criteria

Lag Selection Criteriamodeling was adopted to choose the appropriate lag length. The optimum number of lags are selectedusing the available lag length criteria as presented in table 3. The rule of thumb is to select the information criterion that gives the lowest value.

Table 3.

Model Lag Selection Criteria Table

Lag	LogL	LR	FPE	AIC	SC	HQ
1	268.6690	233.1789	7.63e-15	-18.35915	-16.90750*	-17.94113
2	302.5390	39.08074*	4.91e-15*	-19.04146*	-16.38010	-18.27508*

Source: E-views 10.0 Output (2019)

Table 3 presents the Model Lag Selection Criteria table and the test result shows that two (2) lag is selected based on the AIC because it performs better than other criteria being the criterion with the least figure at lag 1 (-19.04146)(Narayan, 2004; Pesaran, Shin & Smith, 2001).

Tests for Co-integration Relationship

The existence of long run equilibrium relationship among the variables is determinedusing Johansen and Juselius (1990) approach. The results of these two likelihood tests statistics for the two models were presented in Table 4.

Table 4

Johansen Co-integration Test

Hypothesized	Trace 0.05			Maximum-Eigenvalue 0.05			
No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob.**	Max-Eigen Statistic	Critical Value	Prob.**
None *	0.912106	117.0930	69.81889	0.0000	63.22227	33.87687	0.0000
At most 1 *	0.544765	53.87071	47.85613	0.0123	20.46045	27.58434	0.3102

At most 2 *	0.482118	33.41026	29.79707	0.0184	27.10822	21.13162	0.0170
At most 3 *	0.332824	16.30204	15.49471	0.0377	10.52222	14.26460	0.1798
At most 4 *	0.199326	5.779821	3.841466	0.0162	5.779821	3.841466	0.0162

Source: E-view 10.0 Output

Table 4 report the summary of the Johansen's co-integration test and the Trace statistics shows that there isno co-integration among the variables leading to rejection of null hypothesis of no-cointegration in favour of the alternative hypothesis at 0.05 levels. This means that there exists long run relationship among the variables. Both the Trace test and Max-Eigen test indicates three co-integrating equations. Thus, it can be concluded that there exists a long run relationship among the variables-GDP, TGEH, LEPR,IFMR, and MMTR.

Regression Result using the Error Correction Model (ECM)

The Summary of the Error Correction Model is presented in Table 5.

Table 5

Summary of Error Correction Model Regression Model

Dependent Variable: D(GDP)

	Coefficient	Std. Error	t-Statistic	Prob.
ECM(-2)	-0.394084	-0.144184	2.733200	0.0325
D(GDP (-2))	0.190946	-0.050934	-3.748869	0.0461
D(TGEH (-2))	0.201162	0.062177	3.235309	0.0145
D(LEPR (-2))	0.101046	0.034389	-2.938313	0.0307
D(IFMR (-2))	-1.256843	1.653153	-0.760270	0.4564
D(MMTR(-2))	-0.528435	0.459608	-1.149751	0.2645
C	0.134390	0.048370	2.778358	0.4459
R-squared	0.588306	Durbin-Watson stat		2.042359
Adjusted R-squared	0.555140	F-statistic		241.6344
		Prob(F-statistics)		0.000003

Source: E-views 10.0 Output(2019)

The summary of the Regression Result in table 5shows that thereexist co-integrating relationshipamong the variables with a significant p- value demonstrating that dependent and explanatory variables go a long way in explaining government total health expenditure on economic growth in Nigeria.

In the result, there exists positive and significant relationship between gross domestic product and total government health expenditure in Nigeria. This is consistent with the a-priori expectation. The study rejects the Null Hypothesis which states that Government Health Expenditure does not have a significant impact on economic growth of Nigeria within the sampled period, considering the p-value result (0.05>0.0145. This finding is in consistent with Kurt (2015) and Majdi (2012) who in their respective study concluded that Government Health Expenditure has a positive and significant impact on Economic Growth. But this is in contrast with Anyanwu, et al (1997) who noted that although Government Health Expenditure has a positive impact on economic growth but it is not significant.

However, the result is in line Wagner's law of increasing state activity states that an increase in per capital income will lead to relativeincrease in the size of the public sector which will grow the economy as it tends to industrialization leading to population increase especially in urban areas.

The value of Durbin Watson (DW) statistic is 2.04 for the model. This implies that there is absence of auto-correction among the explanatory variables in the model.

Tests for Causality

Table 6

Pairwise Granger Causality Analysis

Null Hypothesis:	Obs	F-Statistic	Prob.
TGEH does not Granger Cause GDP	26	4.33832	0.0481
GDP does not Granger Cause TGEH		2.16702	0.1540

Source: E-views 10.0 Output (2019)

Table 6 presents the results of pairwise Granger causality between GDP and TGEH. The result shows that TGEH can granger-cause GDP, while GDP does not granger cause TGEH, hence the rejection of the null hypothesis of no causal relationship between TGEH and GDP. The result is in conformity with Mohsen &Maysen(2011) who also found out that causality runs from TGEH and Gross Domestic Product GDP.

V. Discussion of Findings

In the course of the study, the tests carried out include Augmented Dicey Fuller (Unit Root Test), co-integration, vector error correction model and Granger causality. The variables used for the analysis are GDP, IFMR and MMTR. The ADF test was to determine the stationary status of the series, and it was revealed from the result that the variables are stationary as the first difference, thus, the null hypothesis of non-stationary was rejected.

The test for co-integration shows that there is co-integration among the variables since the Trace test and Max-Eigen test have values higher than their corresponding critical value,thus establishing evidence of long-run relationship among the variables.The result of goodness of fit (R^2)shows that about 59 per cent variation in the GDP is investigated by the independent variables during the period of study. The result of F-statistics (15.789) is significant with Pro. (0.000003) and this shows that all explanatory variables are important determinants of Nigeria's economic growth. Also, Durbin Watson (D.W) statistics result (2.04) shows the absence of autocorrelation among the explanatory variables in the model. The causality test carried out shows that TGEH can granger cause the real GDP, hence, the rejection of the second hypothesis which states that TGEH cannot cause GDP.

VI. Conclusion

This study examined the impact of government health expenditure on economic growth in Nigeria from 1990-2017. Ordinary Least Squares multiple regression (OLS) with Econometrics (E-views version 10.0 Software) were employed for the regression analysis. Also, ADF, ECM and Granger causality statistics were adopted for the estimation of the work. Secondary data were sourced from CBN Statistical Bulletin, Online Version on the variables- GDP and TGEH while data on LEPR, IFMR and MMTR were sourced from World Data Atlas. The result shows that all the variables are stationary and there is existence of co-integration among the variables. ECM result shows that TGEH has positive impact on GDP, hence the rejection of H_0 and that TGEH cannot Granger cause GDP.

In the light of the outcome of this study, the following recommendations are proposed in order to catalyz and significantly enhance the effectiveness of development of health sector towards substantially improving and sustaining economic growth in Nigeria.

First, policy makers should continue to favour health sector with good budgetary allocationthat promotes provision of more funds for both recurrent and capital expenditures on health which can be used to build quality medical centres and provide standard facilities like medical gadgets, equipment and well-equipped medical laboratories and running the day to day activities of the sector at any level of medicare.

There should be more awareness to the public on the ways to improve on IFMR, LEPR and MMTR through mass media communication, National Orientation Agency and health talks given in hospitals, health centres and dispensaries on why it is important to be healthy and the dangers of not living in sound health.Also, health care delivery centre should not be very far away from the people.Intensive health care services should be made available to every Nigerian citizen so as to have access to soundmedicare.

The government should continue to encourage the use of the National Health Insurance Scheme for the salary earners and try to make medical treatment affordable for the less privileged in public hospitals.

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APPENDIX I
UNLOGGED DATA

YEAR	GDP (LCU)	TGEH	LEPR	IFMR	MMTR
1990	19680406952600	2402.80	45.9	126.2	1350.0
1991	19558811442400	1256.30	45.9	126.0	1320.0
1992	19643642967100	291.30	45.9	125.6	1300.0
1993	20054269318900	8882.38	45.9	125.3	1280.0
1994	20236715708300	7382.7	45.9	124.6	1270.0
1995	20174494087100	9746.4	45.9	123.6	1250.0
1996	21181948915400	11496.1	45.9	122.2	1250.0
1997	21775521442700	3891.1	45.9	120.2	1240.0
1998	22366866252100	4742.2	46.0	117.8	1220.0
1999	22472938336300	16638.7	46.1	115.2	1200.0
2000	23668070182400	15218.0	46.3	112.3	1170.0
2001	24712084188700	24522.2	46.5	109.2	1140.0
2002	25647349633900	40621.4	46.8	106.1	1090.0
2003	28302923550900	33267.9	47.2	102.9	1040.0
2004	37851134166500	34197.1	47.7	99.8	986.0
2005	39154979623600	55661.6	48.2	96.5	946.0
2006	42369981241000	58686.5	48.8	93.2	890.0
2007	45263172340100	72290.0	49.4	90.0	884.0
2008	46101292603600	98200.0	49.9	87.0	829.0
2009	51436836336000	90202.6	50.4	83.0	883.0
2010	55469350300000	99100.0	50.8	81.0	867.0
2011	58180351900000	231800.0	51.3	78.3	824.0
2012	60670050500000	197900.0	51.7	75.7	8190;.0
2013	63942845600000	179990.0	52.1	73.3	821.0
2014	67977459219700	194960.0	52.5	71.0	820.0
2015	69780692718300		53.0	69.0	814.0
2016	68652430364700		53.4	66.9	815.0
2017	69211634637500		53.4	66.9	816.0

Sources: 1. CBN, Annual Report and Statement of Account Online (2018)
2. World Data Atlas (2018)

APPENDIX II
LOGGED DATA

GDP	TGEH	LEPR	IFMR	MMTR
30.61	7.78	4.84	4.84	7.21
30.6	7.14	4.84	4.84	7.19
30.61	5.67	4.83	4.83	7.17
30.63	9.09	4.83	4.83	7.15
30.64	8.91	4.83	4.83	7.15
30.64	9.18	4.82	4.82	7.13
30.68	9.35	4.81	4.81	7.13
30.71	8.27	4.79	4.79	7.12
30.74	8.46	4.77	4.77	7.11
30.74	9.72	4.75	4.75	7.09
30.8	9.63	4.72	4.72	7.06
30.84	10.11	4.69	4.69	7.04
30.88	10.61	4.66	4.66	6.99
30.97	10.41	4.63	4.63	6.95
31.26	10.44	4.6	4.6	6.89
31.3	10.93	4.57	4.57	6.85
31.38	10.98	4.53	4.53	6.79
31.44	11.19	4.5	4.5	6.78
31.46	11.49	4.47	4.47	6.72
31.57	11.41	4.42	4.42	6.78
31.65	11.5	4.39	4.39	6.77
31.69	12.35	4.36	4.36	6.71
31.74	12.2	4.33	4.33	#VALUE!
31.79	12.1	4.29	4.29	6.71
31.85	12.18	4.26	4.26	6.71
31.88	#NUM!	4.23	4.23	6.7
31.86	#NUM!	4.2	4.2	6.7
31.87	#NUM!	4.2	4.2	6.7

Source: E-views 10.0 Output (2019)

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