

# Health Care Expenditure and Economic Growth in Nigeria

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**Abstract:** - The paper examined 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 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 Kwiatkowski, Phillips, Schmidt and Shin, (KPSS) unit root test preceded the GMM test in order to establish the stationarity of the variables. The descriptive statistics result revealed that RGDP has an average of N31292.50billion; health care expenditure has an average of N10322.47billion while education expenditure has an average of N45895.95billion during the period of study. 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. This will make health care expenditure to significantly impact economic growth in Nigeria.

**Key Words:** Expenditure, Health, Education, RGDP, KPSS, GMM

## I. INTRODUCTION

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, 2013). Thus, a country’s general economic health can be measured by looking at that country’s economic growth and development (Romer, 1990). Economic growth on the other hand, is a long term expansion of the productive potential of the economy.

In fact there is a mutual interaction between a population’s health level and its level of economic growth (Rajkumar and

Swaroop, 2004). Maintaining a sustainable level of growth and development provides people with significantly better nutrition and disease treatment opportunities along with wider access to preventive medical technology (Romer, 1990). On the other hand, because healthy individuals are more fit both physically and mentally, they are expected to contribute to production more than a sick person and increase productivity and have a positive impact on economic growth. When a person is healthy, life expectancy increases and this promotes individual savings and private investments in education.

Considering the expenditures aspect, health expenditures are an expenditure item. With its multiplier effect, increased health expenditures leads to an increase in total expenditures and aggregate demand (Harris, 2000). Apart from that, the health sector constitutes an area of employment in the economy and increased health expenditures leads to a rise in the number of those employed in the sector along with the total income of those employed, which contributes to total expenditures and increases aggregate demand. Such effects of health expenditures on total expenditures, aggregate demand, and total production are termed direct effects.

There is no doubt that health care expenditure has been on the increase over the years in Nigeria. It should however be noted that despite the increase in government expenditure in health care in Nigeria, the contribution of this to health care delivery is still marginally low; and the magnitude of its impact on economic growth is momentarily low. This is particularly worrisome as several questions have been raised on the situation. What has been the trend of expenditure on health care in Nigeria? How has the expenditure profile impacted on health care delivery and the health of Nigerians? Is there any relationship between the pattern of health care expenditure and the rate of economic growth in Nigeria? Based on these questions it is therefore necessary to investigate the impact of health care expenditure on economic growth in Nigeria from 1980 to 2016. The remaining parts of this paper were structured into literature review, methodology, results and discussion as well as conclusion.

## II. LITERATURE REVIEW

### *Theory of Increasing Public Expenditure*

A German economist, Adolph Wagner propounds the law of increasing state activities. He postulates inherent tendencies of

the activities of government to increase both intensively and extensively. The theory emphasized the functional relation between the economic growth and government activities with the effect that government sector grows rapidly relative to the economy. According to Wagner the reasons for the increasing tendency for public expenditure are categorized into; administrative and protective obligations, welfare and equitable income distribution roles and provision of public goods and services roles such as market failures which necessitate the expansion of investment activities of the governments (Bhatia, 2002).

#### *Nigeria Health Care Sector in Perspective*

The provision of health services in public sectors are at three levels namely; the Primary, Secondary and Tertiary. At the primary level, services are at the door step of communities where preventive, curative; primitive and pre-referral cares are provided. Medical personnel that provide such services are nurses, community health officers, community health extension workers (CHEWs) and environmental health officers.

At secondary level, there are general hospitals to provide medical, laboratory and specialized health services, namely, surgery, pediatrics, genecology and amongst others. Major health workers that are at the secondary level are doctors, nurses, midwives, laboratory scientists and pharmacists. The typical facility use is general hospitals. But the tertiary level of health service provision is the highest health care in the country. The facilities include specialist and teaching hospitals, and federal medical centres. They are equipped with high technology for special health services and serve as resource centres for knowledge generation.

The health status in Nigeria is ranked low among other developing country in the same category. Life expectancy is put at 52 years in 2011 (according to World Bank report). It was estimated that 124 out of 1000 new births do not survive beyond age 5. Only 39.56% of male and 42.25% of female survive up to the age of 65 years. There are close to 3 million adults (ages 15-49) living with HIV.

Meanwhile, the expenditure pattern shows that only few amounts are spent on health sector in Nigeria. In 1997, 4.6% of GDP was spent on health care. The figure rose to 6.6% in 2005 and latter fell to 5.8 in 2009. The total expenditure for 1997, 2005 and 2009 stood at 134,522, 972,921 and 1,596,573 (in million naira), respectively. The figure is an indication of poor commitment of the nation to improved health provisions and deliveries (CBN, 2016).

#### *Empirical Literature*

A critical examination of the works done by other scholars in this area of study show that there is a consensus in the result of the various scholars; Where the scholars based on the results of their findings concluded that healthcare expenditure has significant positive impact on economic growth in Nigeria (Bakare & Sanmi 2011, Nasiru and Usman 2012, Onisanwa

2014, Bedir 2016 and Maduka, Chekwube & Chukwunonso, 2016).

Bakare and Sanmi (2011) examined health care expenditure and economic growth in Nigeria. The study adopted Ordinary Least Square multiple regression analysis. The result showed a significant and positive relationship between health care expenditures and economic growth in Nigeria. Nasiru and Usman (2012) used ARDL Bounds test and Granger causality test to examine health expenditure and economic growth in Nigeria from 1980 to 2010. The results suggested that there is a long-run relationship between health expenditure and economic growth. Also, there is a unidirectional relationship between health expenditure and economic growth.

Onisanwa (2014) employed cointegration, and granger causality techniques to examine the impact of health on economic growth in Nigeria for the period of 1999 to 2009. It was revealed that health indicators have a long run impact on economic growth. Also, health indicators granger causes the per capita GDP. Similarly, Bedir (2016) examined healthcare expenditure and economic growth in developing countries from 1995 to 2013. Toda and Yamamoto granger causality test was used in selected emerging markets in Europe, Middle East, African and Asian countries. According to the analysis of the results, two way causality was found for the Czech Republic and Russian Federation. The evidence from the Egypt, Hungary, Korean Republic, South Africa, and the Philippines supports the health view over the income view, while the evidence from Greece, Poland, the United Arab Emirates, China, Indonesia, and the Korean Republic supports the income view over the health view. Thus, income is an important factor in explaining the difference in healthcare expenditures among countries.

Maduka, Chekwube and Chukwunonso (2016) used Toda and Yamamoto (TY) causality analysis to examine healthcare expenditure, health outcomes, and economic growth nexus in Nigeria during the period 1970 to 2013. The TY causality test revealed that government health expenditures do not directly influence economic growth, but indirectly through health outcomes such as mortality rate and life expectancy.

### III. METHODOLOGY

The paper used time series data obtained from CBN statistical bulletin (2016) and applied the econometrics methods of KPSS unit root test and GMM test. Meanwhile, the variables were subjected to descriptive statistics prior the KPSS and GMM econometrics test. The model for the study was stated in a log linear form in order to put the variables on the same scale.

#### *The Unit Root Test*

The Kwiatkowski, Phillips, Schemidt and Shin (KPSS) test of stationarity of the variables come first before the GMM test. The KPSS is associated with low power structural break of the

series. This general form of the unit root test model with a constant and trend is formalized below:

$$\Delta HE_t = \alpha_0 + \alpha_1 HE_{t-1} + \sum_{i=1}^m \delta_i \Delta HE_{t-1} + \varepsilon_t \tag{3.1}$$

Where:  $HE_t$  = Time series under consideration,  $\alpha_1$  and  $\delta_i$  = parameter estimates,  $m$  = lag length,  $\Delta$  = First difference operator and  $\varepsilon_t$  = Random disturbance term

*The Generalized Method of Moments (GMM)*

The GMM estimation technique is preferred in the study due to its capable of avoiding biased results due to correlation between the error term and the lagged endogenous variable. The equation of the GMM is given as

$$\sum (z (y_1 - x_1\beta)) = 0 \tag{3.2}$$

Thus, the estimated model is;

$$\text{LnRGDP}_t = \alpha_0 + \alpha_1 \text{LnHE}_t + \alpha_2 \text{LnEE}_{t-1} + U \tag{3.3}$$

Where;  $\alpha_0$  is the constant term,  $\alpha_1 - \alpha_2$  are intercept parameters, Ln is Logarithm to base ten,  $\text{RGDP}_t$  is economic growth, U is the error term at time, HE is health expenditure at current form and  $\text{EE}_t$  is education expenditure at current form.

**IV. RESULT AND DISCUSSION**

Table1: Description Statistics Results.

	RGDP	HE	EE
Mean	31292.50	10322.47	45895.95
Std. Dev.	18119.62	11511.04	55026.08
Skewness	0.908715	0.649098	0.797333
Kurtosis	2.381817	2.055966	2.161563
Jarque-Bera	5.681355	3.972125	5.004150
Probability	0.058386	0.137235	0.081915
Observations	37	37	37

Note: *RGDP is economic growth, HE is health expenditure and EE is education expenditure*

Source: Authors' Computed Result (E-view 8)

The descriptive statistics results in Table 1 indicated that RGDP has an average value of N31292.50 billion and varied from N13779.26b to N69023.93b with a standard deviation of N18119.62 billion; HE has an average value of N10322.47 billion and varied from N23.25000b to N38040.00 billion with a standard deviation of N11511.04 billion; and EE has an average value of N45895.95 billion and varied from N138.9400 billion to N164000.0 billion with a standard deviation of N55026.08 billion during the period of review. The Jarque-Berra statistic accepted the null hypothesis of normal distribution for RGDP, HE and EE at 5 percent critical value. All the variables are platykurtic in nature as their respective kurtosis values of about 2.38, 2.05 and 2.16 are less than 3, implying their distributions are higher than normal. This may

have resulted from the problem of trended data, which was examined with the unit root analysis.

Table 2: Kwiatkowski, Phillips, Schimidt and Shin (KPSS) Unit Root Test of Stationarity

Series	Levels test		First Difference test		Order of integration
	LM Stat.	Critical value (5%)	LM stat.	Critical value (5%)	
LOG(RGDP)	0.6938	0.4630	0.3594	0.4630	I(1)
LOG(HE)	0.6481	0.4630	0.1517	0.4630	I(1)
LOG(EE)	0.6615	0.4630	0.1443	0.4630	I(1)

Source: Authors' Computed Result (E-view 8)

The KPSS stationarity test of the series as presented in Table 2 showed that none of the variables was stationary at levels. This is because the LM statistics values of the variables at the levels test were higher than 5 percent critical value. The variables were then differenced once to achieve stationarity. The result showed that the variables were stationary at first difference as their respective LM statistics are less than 5 percent critical values.

Table 3: Generalized Method of Moments Result

Dependent Variable: LOG(GDP)				
Method: Generalized Method of Moments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.274021	0.219967	37.61482	0.0000
LOG(HE)	0.290791	0.172919	1.681657	0.1018
LOG(EE)	0.471668	0.153737	3.068010	0.0042
R-squared	0.71133	Mean dependent var		10.20319
Adjusted R-squared	0.69435	S.D. dependent var		0.538182
Durbin-Watson stat	1.641067	J-statistic		7.57E-44

Note: *RGDP is Economic Growth, HE is Health Expenditure and EE is Education Expenditure*

Source: Authors' Computed Result (E-view 8)

The log-linear regression result in Table 3 showed that the explanatory power of the model is 0.711. This showed that about 71.1% of the total variation in Real Gross Domestic Product (RGDP) is explained by Health Care Expenditure (HE) and Education Expenditure while the remaining 28.9% is explained by other variables which were not included in the model but determine Real Gross Domestic Product in Nigeria; but are accounted for by the random variable (U). Also, the estimated model showed that serial autocorrelation is not a serious problem as shown by the value of Durbin Watson (DW) statistic of 1.64. Thus, the model is valid for policy and forecasting.

The coefficient of health care expenditure (HE) is rightly signed (i.e positive) based on economics theory but not statistically significant at 5 percent level. Meaning that the

null hypothesis was not rejected. Thus, it was concluded that health care expenditure (HE) has positive relationship with economic growth but has no significant impact on economic growth (RGDP) in Nigeria. The coefficient of education expenditure (EE) is rightly signed (i.e. positive) based on economics theory and statistically significant at 5 percent level. This implies that the alternative hypothesis was accepted and the null hypothesis rejected. Thus, it was concluded that education expenditure (EE) has significant positive impact on economic growth in Nigeria.

## V. CONCLUSION

The paper carried out an empirical investigation of the impact of health care expenditure on economic growth in Nigeria, using Real Gross Domestic Product (RGDP) a proxy for Economic growth as independent variable. Real Gross Domestic Product (RGDP) was regressed on health care expenditure (HE) as the major explanatory variable, while education expenditure (EE) as check regressor to enhance the explanatory power of the model between 1980 and 2016. To achieve our objectives we adopted the GMM test to estimate the specified model. The overall conclusion of the study is that health care expenditure has a positive relationship with economic growth in Nigeria while education expenditure has a positive and significant relationship with economic growth in Nigeria.

Having argued that there is a mutual interaction between a population's health level and its level of economic growth in the introduction of the study, thus, maintaining a sustainable level of growth and development provides people with significantly better nutrition and disease treatment opportunities along with wider access to preventive medical technology. A sustainable growth and development facilitates better health environments, increasing the share of population of healthy individuals. In this way, loss of labour does not emerge in the society and thus, the amount of labour supply increases. On the other hand, because healthy individuals are more fit both physically and mentally, they are expected to contribute to production more than the unhealthy and have a positive impact on economic growth. When a person is healthy, life expectancy increases and this promotes individual savings and private investments in education. Thus, contributions are made to investments and 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.

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