



The Impact of Government Expenditure on Health Outcome in Nigeria for the Period of 1995-2017

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Abstract

This study examine the impact of government expenditure on health outcome in Nigeria for the period of 1995-2017. Annual time series data were used on Real Gross Domestic Product (RGDP), Total Government Expenditure on Health (TGEH), and Health Outcome (HOC) proxy by under-five mortality rate and Out-of-Pocket Health expenditure sourced from world Development Indicator 2018. Augmented Dickey unit root test to check the stationary of the variables and the result shows that only HOC that is stationary at level while RGDP, OPE and TGEH are stationary at first different order of 5% level of significant. Ordinary Least Square were also, conducted to examine the impact Government Expenditure on Health Outcome the result revealed that Total Government Expenditure (TGEH) has positive impact on Health Outcome (HOC) with coefficient 0.15627 and R^2 0.99627 which shows the 99% variation of health outcome was as the result of RGDP, TGEH, OPE. While, the remaining 1% were not captured in the model and Durbin-Watson statistics is 1.567135 shows the absence of serial autocorrelation in the model. Granger Causality result shows bidirectional causality between health outcome (HOC) and real gross domestic product (RGDP) similarly, real gross domestic product (RGDP) and out-of-pocket expenditure (OPE). Finally, the study recommends that the government should Increase it expenditure on public health to improve the desirable health outcome in Nigeria.

Keywords: *Government Expenditure; Health Outcome.*

Introduction

Health is a very important aspect of an individual's wellbeing and since individuals make a nation, therefore, healthcare could be regarded as one of the necessary conditions to achieving a sustainable long-term economic development. Health can be defined to mean general physical condition i.e. condition of the body or mind especially in terms of the presence or absence of illness, injuries or impairments. The issue of health is a very sensitive one because it deals with not just humans but with human body. Without a good health condition it is almost impossible to carry out any economic activity and if at all there is any it will certainly not be efficient and so we really have to take this subject seriously. It has been established in the literature that improvement in health care is an important prerequisite for enhancing Human Capital Development (HCD) in any every economy (Isaac, Sunday & Adelaye 2017)

The issue of health is one of the most critical development facing our world today, because it permits us to fully develop our capacities and if this asset erodes or it is not developed completely, it can cause physical and emotional weakening, causing obstacles in the lives of people.

Nowadays, it is possible to say that every person could expect to live a long and healthy life. We could say its economic value is huge and health gains had the economic consequences of widespread economic growth and an escape of ill-health traps in poverty. Also, health problems could be reflected as reductions and obstacles for economic progress. [Jacobs,2002]. The role of healthcare spending in stimulating economic growth has been suggested in Mushkin's health-led growth hypothesis. According to this hypothesis, health is a type of capital; thus, investment on health can increase income and lead to overall economic growth. In fact, health can affect economic growth through its impact on human and physical capital accumulation (Elmi & Sadeghi, 2012). Since healthcare is a core component of human capital investment, rising national healthcare spending would tend to raise labor productivity, quality of life and general welfare. Healthcare spending has also been credited for prolonging life expectancy, and reducing morbidity and infant mortality rates (health outcomes) (Murthy & Okunade, 2009). Therefore, it can be stated that health is a significant form of human capital and there is a close

relationship between the health level of society and its economic development. However, with the development of a country's economy, its people tend to place greater value on the quality of life and, therefore, have a higher expectation of medical services – particularly in developed countries with higher national income (Wang, 2011). After World War II, there was an increase in the importance ascribed to the health sector in the national macroeconomic. Increasing health care expenditures (HCE) in a country causes increases in social security, tranquility, safety and welfare, which leads to improved labor efficiency. HCE helps people with acute conditions to recover and return to work quickly. In general, healthier people can work harder and longer, and also think more clearly (Amiri, & Ventelou, 2012).

Although, healthcare expenditures are ordinarily hypothesized to be a function of real per capita gross domestic product (GDP), there are some reasons to suggest this could be a bilateral relationship, as it can be reasoned that population health is an input to the macroeconomic production function (Elmi & Sadeghi, 2012). There are some reasons why a bilateral relationship between healthcare expenditures and real per capita income could exist. First, by definition, health expenditures are a function of resources available (income or wealth). Second, a reverse causation – income as a function of health expenditures – also has a theoretical basis due to the fact that the latter is a determinant of human capital, labor supply and productivity. If health expenditure can be regarded as an investment in human capital (Muskin, 1962; Fuchs, 1966; Grossman, 1972; Zon, Adrian & Muysken, 2012), and given that human capital is an “engine” of growth (. Lucas, R. E. Jr (1988)) increase in health expenditure must ultimately lead to higher income achievements. Similarly, rises in health expenditures make possible higher labor supply and productivity, which eventually must give way to a higher income according to Erdil & Yetkiner (2009).

However, It is possible to identify three different concepts of sustainable development: the economic, the ecological and the socio-cultural (Munasinghe, 1993). A socially sustainable system must achieve distributional equity, adequate provision of social services including health and education, gender equity, and political accountability and participation (Harris, 2000). So, it can be thought that health care expenditures have implications both for current value of human capital and for the long-run sustainable growth.

Statement of the Problem

Human and social capital accumulation is the main factor for the endogenous growth model. In the case of human and social capital accumulation, the significance of innovative strategies (innovation) as well as education and healthcare politics increases day by day. In this context, generating proper education and healthcare policies is essential both for sustainable growth and as a social state principle. Many theoretical and empirical studies indicate that human and social capital investment should be enhanced health outcome. In this regard, there is a wide range of literature examining the relationship between healthcare expenditure and health outcome, and this literature can be classified within different contexts in terms of its methodology, data, country group, period and results. For these reasons, studies have examined the relationship between public health care expenditure and health outcome, the determinants of health expenditure and the unit root properties of health expenditure (McCoskey & Selden, 1998; Carrion-I-Silvestre, 2005 ; Narayan, 2000).

Although studies have been conducted by different researchers across the globe trying to investigate the relationship that exists government expenditure and health outcome, they fail to reach a consensus as to a definite relationship between health expenditure and economic growth that can be generalized for all economies of the world. For instance, Odubunmi, Saka & Oke (2012) Mehrara and Musai (2011), Taban (2006) among others studied the relationship between Government expenditure and health outcome in different countries at different times. Some of the found it to be positively correlated and some negatively correlated. However, to the best knowledge of the researcher, none of the research work done previously on this topic covered the impact of government expenditure on health outcome in Nigeria from 1995 to 2017 using rigorous econometrics tools for data analysis which is the information gap that this research is undertaken to bridge.

Objectives of the Study

The main objective of the study is the assessment of the impact of Government expenditure on health outcome in Nigeria from 1995 to 2017. The specific objectives are to;

- i. Determine the impact of government expenditure on health outcome in Nigeria

- ii. Examine the causal relationship that is there in existence between government expenditure and health outcome in Nigeria.

Research Questions

This research work will seek to answer the following research questions raised in respect of the objectives of the study;

- i. What is the impact of government expenditure on health outcome in Nigeria from 1990 to 2017?
- ii. What are the causal relationship between government expenditure and health outcome in Nigeria?

Research Hypotheses

The hypotheses for this research work are formulated in consonance with the objectives of the study and are in a null form. However, the researcher will proffer an alternative hypotheses in the course of this work should the null hypothesis be rejected. The hypotheses are stated below;

H₀: Government expenditure does not have positive and significant impact on Health outcome in Nigeria

H₁: Government expenditure have positive and significant impact on Health outcome in Nigeria.

Scope of the Study

This study investigates the impact of government health expenditure and health outcome in Nigeria from 1990 to 2017 using econometrics tools of data analysis. The study will dwell on such variables as infant mortality rate as proxy for health outcome, health insurance, Gross Domestic Product (GDP per capita) and total government expenditure on health.

Significance of the study

This study will be significant as it will bring to light the type of relationship that exist between government expenditure and health outcome in Nigeria which will serve a great deal for policy makers in designing befitting policies that will guarantee speedy growth and development in the economy.

It will also be of immense importance to future researchers who may wish to undertake a research work on the same or similar topic because it will serve as a good stronghold for founding their own research work.

Ultimately, the outcome of this research work will reveal the most effective public health expenditure among capital and recurrent health expenditure which will direct government's decisions towards health budget annually.

Organization of the Study

This study is organized in such a way that section one being the preamble of this research covers background to the study, statement of the problem, research questions, objectives of the study, research hypotheses, significance of the study, scope of the study vis-à-vis organization of the study. Section two being literature review focuses on conceptual clarification, theoretical literature review, empirical literature review, and gap in the literature as well as theoretical framework.

Section three, methodology dwells on description of the study area, sources and type of data, model specification, estimation technique as well as contribution to knowledge. Section four centres on data presentation, data analysis and interpretation of result as well as discussion of findings. Ultimately, Section five covers summary, conclusion and recommendations of the study.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Introduction

This section dwells on reviewing relevant literatures on health expenditure and economic growth as well as the relationship that exists between them. However, it will cover such things as conceptual clarification, theoretical literature review, empirical literature review, gap in literature as well as theoretical framework.

Theoretical Literature Review

This aspect of the research in this chapter shall focus on the discussion of relevant literatures and major concept on the relationships between educational and health expenditure and economic growth in an economy which will be discussed under the following subheadings;

Concept of Government Expenditure

Public expenditure is the expenditure incurred by public authorities like Federal, state and local governments for the provision of public goods to satisfy the collective social wants of the people. It can be referred to as the funds expended

by local, state and federal government and its agencies and distinct from that of households and firms (Kalu & Raphael, 2016).

Accordingly, Anyafor (1996) referred to expenditure as an actual payment or the creation of obligation to make a future payment for some benefits, items or service received. Expenditure can be classified into two broad groups: Capital Expenditure and Recurrent expenditure. Capital expenditure are expenses on capital goods/projects like roads, airports, education, telecommunication, electricity generation, etc., while recurrent expenditure are government payments on administration in the form of wages and salaries, interest on loans maintenance, transfer payments and so on.

Public expenditure is an important instrument for government to control the economy. It plays an important role in the functioning of an economy whether developed or underdeveloped. Public expenditure was born out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of the government (Kalu & Raphael, 2016).

Broadly speaking, public expenditure affects aggregate resources use together with monetary and exchange rate. Specifically public expenditure refers to the value of goods and services provided through the public sector. In the Nigerian economy public expenditure can broadly be categorized into capital and recurrent expenditure. The recurrent expenditure are government expenses on administration such as wages, salaries interest on loans, maintenance etc., whereas expenses on capital projects like roads, airports, health, education., telecommunication, electricity generation etc., are referred to as capital expenditure (Obinna, 2003).

The size of government expenditures and its effect on economic growth, and vice versa, has been an issue of sustained interest for over decades now. The relationship between government expenditure and economic growth has continued to generate series of debate among scholars. Government performs two major functions- protection (and security) and provisions of certain public good (Al-Yousif, 2000).

Concept of Health Expenditure

Public health expenditure is the expenditure incurred by the public authorities like Federal, state and local governments for the provision of public health centers-maternities, general hospitals, teaching hospitals; immunizations etc. so

as to get satiated the health needs and aspirations of the populace in order to have a healthy population (Obinna, 2003).

Concept of Economic Growth

According to Kalu and Raphael (2016), economic growth is a long-term expansion of the productive potential of the economy. It means an increase in Real GDP, in other words, an increase in national output and national income. The real GDP is the market value of all goods and services produced in a nation during a specific time period. Real GDP measures a society's wealth by indicating how fast profits may grow and the expected return on capital. It is labelled "real" because each year's data is adjusted to account for changes in year-to-year prices. The real GDP is a comprehensive way to gauge the health and well-being of an economy.

Types of Government Expenditure

Government expenditure is typified into two viz; capital expenditure and recurrent expenditure. The former encompasses all the expenses government incurs on capital projects ranging from building and constructing bridges, schools, hospitals etc whereas the latter has to do with government expenditure on salaries, pensions, running cost of administrative responsibilities etc. (Jhingan, 2010).

Importance of Government expenditure

The role of public expenditure in the determination of level of income and its distribution is now well recognized. Keynesian macroeconomics provides a theoretical basis for recent developments in public expenditure programmes in the developed countries. The public expenditure can be used as a lever to raise aggregate demand and thereby to get the economy out of recession. On the other hand, through variation in public expenditure, aggregate demand can be managed to check inflation in the economy (Jhingan, 2010).

Public expenditure can also be used to improve income distribution, to direct the allocation of resources in the desired lines and to influence the composition of national product. In the developing countries also, the role of public expenditure is highly significant, the variation in public expenditure is not only to ensure economic stability but also to generate and accelerate economic growth and to promote employment opportunities. The public expenditure

policy in developing countries also plays a useful role in alleviating mass poverty existing in them and to reduce inequalities in income distribution. In what follows, we shall study the types of public expenditure, the causes of growth of public expenditure and its effects on production, distribution and economic growth in both the developed and the developing countries (Jhingan, 2010).

Health and Economic Growth relationship

The connection between health and economic growth has long been established in the literature, for instance Bloom and Canning (2005) stated that health is an important form of human capital and it can enhance workers' productivity by increasing their physical capacities, such as strength and endurance. The importance of health and investment in healthcare are major components of the development goals pursued by developing and developed countries around the globe. The increasing attention healthcare delivery is receiving worldwide has further emphasized the importance of health and healthcare expenditure on economic growth.

Higher expenditure on health alone cannot meet a given nation's development goals. However, in conjunction with other social investments, it can drive economic growth. A healthy person is full of life and energy and a healthy society tends to be energetic and actively involved in productive ventures. The work of Baldacci (2004) elucidates the importance of health expenditures. His panel data analysis based on about one hundred and twenty developing countries from 1975-2000 indicated that spending on health affects growth within that same period, while *lagged* health expenditures appear to have no noticeable effect on growth.

Governance and Health Outcome

On the issue of the relationship between governance and health outcome, Kaufmann, Bhargava, Jamison, Lau & Murray (1999) and Kaufman, Bhargava, Jamison, Lau & Murray (2004), show that governance indicators such as voice, accountability, political stability and violence, government effectiveness and graft among others, have a strong direct negative impact on infant mortality. In the same vein, Gupta et al. (1999) find that countries with high corruption have high child and infant mortality rates. De La Croix & Delavallade (2006) find that countries with high corruption invest more in housing and physical capital

in comparison with health and education with the associated rent seeking in physical capital which hampers economic growth.

Rajkumar & Swaroop (2004), while contributing to the debate, explain that public spending often does not yield the expected improvement in outcomes and that the differences in the efficacy of public spending can be largely explained by the quality of governance. Overall, the empirical evidence have largely support a poor link between public health care spending and health outcomes on one hand, as well as poor link between governance and development outcomes on the other hand especially in developing countries. This paper links the two issues by examining the link among public health spending; governance and health outcomes such as life expectancy, infant mortality and under - 5 mortality rates.

Empirical Literature Review

Freeland and Schendler (1983) examined health expenditures and economic growth between 1971 and 1981 using the regression technique as a tool for data analysis. During this period, according to the authors, health expenditures rose threefold from \$83 million to \$287 million. Expenditure growth in the health sector has increased faster than and outpaced that in the gross national product. Arora (2001) investigated the effects of health on economic growth for ten industrialized countries using a panel data for the periods 1980 to 2010. Panel regression was run as well as Granger causality to determine the line of causation between the investigated variables. The result revealed that health expenditure has a negative impact on economic growth for these countries put together.

Bhargava et al. (2001) studied the impact of health indicators for the period 1965-90 for developed and developing countries using Ordinary Least Squares (OLS) regression technique as a tool for data analysis. They reported that economic performance in developing countries increases with the improvement of public health.

Van Zon and Muysken (2003) investigated whether health is one of the determinants of economic growth in Netherland between 1978 and 2009 using Autoregressive distributed Lag Model as a tool for data analysis. They concluded that high growth leads to investments in human capital and thus, health advances.

Adelowokan (2012) examined the effect of education and health expenditures on economic growth in Nigeria between 1970 and 2010 using a static regression model. He also established the long relationship between human capital spending and economic growth using the Engle-Granger two-step cointegration procedure. The study found that public investment and public consumption (in education and health) exerted positive influence on economic growth, while, private investment exerted negative effect on economic growth in Nigeria. Similarly, the study showed that there was long-run relationship between economic growth and expenditure on education and health in Nigeria. However, the study did not cover the years (2011, 2012, 2013, 2014, 2015 and 2016) and did not also use out-of-pocket health expenditure as an independent variable in the model adopted for the research.

Sen, Kaya and Alpaslan (2015) empirically analyzed the possible existence of Granger causality among education expenditure, health expenditure and economic growth for the selected developing countries – Argentina, Brazil, Chile, India, Indonesia, Mexico, South Africa, and Turkey from 1995 to 2012 in a Bootstrap Panel Granger Causality framework. The result shows a positive and significant causality running from both education and health expenditures to economic growth only in Brazil and Mexico. However, the study is limited to this research because it did not use Nigeria as a case study as such, the result arrived at by the researchers cannot be generalized for Nigeria.

Ogundipe and Lawal (2011) analyze the effects of health expenditure on the Nigerian economic growth using data on life expectancy at birth, fertility rate, capital and recurrent expenditures between 1985 and 2009. OLS technique was used for data analysis. The result revealed that, health has positive but insignificant impact on economic growth in Nigeria during the period reviewed. However, the study did not cover the years (2010, 2011, 2012, 2013, 2014, 2015 and 2016) and did not also use out-of-pocket health expenditure as an independent variable in the model adopted for the research.

Gap in Literature

From the reviewed literatures so far, the gap indentified by the researchers is in terms of the time scope of the study as well as the variables used by other researchers. Most of the researchers none of the researchers took in to cognizance the effect of out-of-pocket health expenditure, government current and capital expenditure on health discretely on economic growth but went ahead

to use total government health expenditure on economic growth which is not a true measure of the impact of health expenditure on economic growth.

Similarly, none of the study examine the impact of government expenditure on public health outcome in Nigeria for the period of 1995-2017. Therefore, this gives the researcher a courage to carryout the study on this topic the impact of government expenditure on health outcome proxy by under-five mortality rate in Nigeria.

Theoretical framework

The Endogenous Growth Models

The endogenous growth models emphasize technical progress resulting from the rate of investment, the size of the capital stock and the stock of human capital. The Romer Model in his first paper on endogenous growth in 1986 presented a variant on Arrow's model which is known as learning by investment. He assumes creation of knowledge as a side product of investment. He takes knowledge as an input in the production function of the following form

$$Y=A(R) F (R_i, K_i, L_i)$$

Where Y is aggregate output; A is the public stock of knowledge from research and development R, R_i is the stock of the results from expenditure on research and development by firm i, and k_i and L_i are capital stock and labour stock of firm I respectively. He assumes the function F homogeneous of degree one in all its inputs R_i , k_i and L_i and treats R_i as a rival good. Romer took three key elements in his model, namely externalities, increasing returns in the production of output and diminishing returns in the production of new knowledge. According to Romer, it is spillovers from research efforts by a firm that leads to the creation of new knowledge by other firms, new research technology by a firm spillover instantly across the entire economy. In this model, new knowledge is the ultimate determinant of long run growth which is determined by investment in research methodology. Research technology exhibits diminishing returns which means that investments in research technology will not double knowledge. Moreover, the firm investing in research technology will not be exclusive beneficiary of the increase in knowledge. The other firms also make use of the new knowledge due to the inadequacy of patent protection and increase their production. Thus the production of goods from increased

knowledge displays increasing returns and competitive equilibrium is consistent with increasing aggregate returns owing to externalities. Thus Romer takes investment in research technology as endogenous factor in terms of the acquisition of new knowledge by rational profit maximization firm.

Wagner's Law of Expending State Activity

Wagner's Law is named after the German political economist Adolph Wagner (1835-1917), who developed a "law of increasing state activity" after empirical analysis on Western Europe at the end of the 19th century. Wagner's Law as cited in Likita (1999) argued that government growth is a function of increased industrialization and economic development. Wagner stated that during the industrialization process, as the real income per capita of a nation increases, the share of public expenditures in total expenditures increases. The law cited that "The advent of modern industrial society will result in increasing political pressure for social progress and increased allowance for social consideration by industry." Wagner (1893) designed three focal bases for the increased in state expenditure. Firstly, during industrialization process, public sector activity will replace private sector activity. State functions like administrative and protective functions will increase. Secondly, governments 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 out technological change and large firms that tend to monopolize. Governments will have to offset these effects by providing social and merit goods through budgetary means. Adolf Wagner pointed out that public spending is an endogenous factor, which is determined by the growth of national income. Hence, it is national income that causes public expenditure. The Wagner's Law tends to be a long-run phenomenon: the longer the time-series, the better the economic interpretations and statistical inferences. It was noted that these trends were to be realized after fifty to hundred years of modern industrial society.

Musgrave Theory of Public Expenditure Growth

This theory was propounded by Musgrave as he found changes in the income elasticity of demand for public services in three ranges of per capita income. He posits that at low levels of per capita income, demand for public services tends

to be very low, this is so because according to him such income is devoted to satisfying primary needs and that when per capita income starts to rise above these levels of low income, the demand for services supplied by the public sector such as health, education and transport starts to rise, thereby forcing government to increase expenditure on them. He observes that at the high levels of per capita income, typical of developed economics, the rate of public sector growth tends to fall as the more basic wants are being satisfied.

METHODOLOGY

Introduction

This chapter focuses on the sources and method of data collection, model specification and estimation technique.

Sources and Measurement of Variables

Out-of-pocket health expenditures: Out-of-pocket payments are spending on health directly out-of-pocket by households. Measured in Naira and sourced from World Development Indicator (2018).

Health Outcome (HOC) proxy under-five mortality rate: Probability of dying between age 5-14 years of age expressed per 1,000 children aged 5, if subject to age-specific mortality rates of the specified year. (WDI, 2018).

Total Government Expenditure on Health (TGEH): Share of current health expenditures funded from domestic public sources for health. Domestic public sources include domestic revenue as internal transfers and grants, transfers, subsidies to voluntary health insurance beneficiaries, non-profit institutions serving households (NPISH) or enterprise financing schemes as well as compulsory prepayment and social health insurance contributions. They do not include external resources spent by governments on health (WDI, 2018).

Real Gross Domestic Product (RGDP): GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant local currency (WDI, 2018).

Econometric Model Specification

This study adopted the specified by Bakare (2011) and modified by substituting Real Gross Domestic Product (RGDP) to determine the impact of health

expenditure on health in Nigeria from 1995 to 2017. There are two models in this study. The first model is the ADF unit root test model, Ordinary Least Square (OLS) model to. These variables in the model are Health Outcome (HOC) proxy by under-five mortality rate, Total Government Expenditure on Health (TGEH), Real Gross Domestic Product (RGDP) and out-of-pocket expenditure on health (OPE).

Model I: The Augmented Dickey Fuller Unit root Model

The ADF unit root model specification for Health Outcome (HOC), Total Government Expenditure on Health (TGEH), Real Gross Domestic Product (RGDP) and out-of-pocket expenditure on health (OPE) can be seen below;

$$\Delta HOC_t = \beta_1 + \beta_2 t + \delta_3 HOC_{t-1} + \sum \alpha_3 \Delta HOC_{t-i} + \varepsilon_t \dots \dots \dots (1.1)$$

$$\Delta RGDP_t = \beta_1 + \beta_2 t + \delta_1 RGDP_{t-1} + \sum \alpha_1 \Delta RGDP_{t-i} + \varepsilon_t \dots \dots \dots (1.2)$$

$$\Delta TGHE_t = \beta_1 + \beta_2 t + \delta_2 TGHE_{t-1} + \sum \alpha_2 \Delta TGHE_{t-i} + \varepsilon_t \dots \dots \dots (1.3)$$

$$\Delta OPE_t = \beta_1 + \beta_2 t + \delta_5 OPE_{t-1} + \sum \alpha_5 \Delta OPE_{t-i} + \varepsilon_t \dots \dots \dots (1.4)$$

- Where; δ = drift parameter
- Δ = first difference
- ε_t = white noise residuals
- t-1 and t-i = lag length

Model II: Estimating the impact of health expenditure on Health outcome from 1995 to 2017.

$$HOC_t = \beta_0 + \beta_1 TGHE_t + \beta_2 RGDP_t + \beta_3 OPE_t + U_t \dots \dots \dots (2.1)$$

- Where: HOC= Health Outcome proxy by under-five Mortality rate
- TGHE = total Government health expenditure
- RGDP = Real Gross Domestic Product
- OPE = out-of-pocket expenditure on health
- $\beta_0 \dots \beta_3$ = Regression coefficients
- U_t = Error term

A priori expectation $\beta_1 \dots \beta_3 > 0$

Base on a priori expectation total government expenditure on health (TGHE) have positive impact on health outcome (HOC) proxy by under-five mortality rate an increase in government expenditure on public health care the infant mortality rate will be decrease and vice-versa. Similarly, real gross domestic product (RGDP) and out-Of pocket expenditure on health (OPE) has positive impact on health outcome (HOC).

RESULTS AND DISCUSSION

This chapter center on data presentation, data analysis, interpretation of the results and discussion of findings. As well as unit root test, Ordinary Least Square result and Pairwise granger causality. These tests were carried out respectively in order to achieve the objectives of the study.

The augmented Dickey-Fuller test has been employed for the purpose of the Unit root test. The log of some of these variables were found to be non-stationary at level but stationary at first different order.

ADF Unit Root Result

Variables	ADF Stat	5% Critical Value	Probability Value	Status	Order of Integration
At Level Variables					
LHOC	-5.468725	-3.020686	0.0003	Stationary	I(0)
LOPE	-2.380308	-3.065585	0.1619	Non-Stationary	Unknown
LRGDP	0.765497	-3.004861	0.9908	Non-Stationary	Unknown
LTGEH	-2.623462	-3.004861	0.1035	Non-Stationary	Unknown
AT FIRST DEFERENCE					
LOPE	-4.683347	-3.081002	0.0026	Stationary	I(1)
LRGDP	-3.394104	-3.012363	0.0231	Stationary	I(1)
LTGEH	-4.345816	-3.020686	0.0032	Stationary	I(1)

Source: Authors's Computation Using eview 9.5

The result of unit root test in the figure above reveals that all the variables Health Outcome (HOC) proxy by under-five mortality rate, Out-of-pocket Expenditure on health (OPE), Real Gross Domestic Product (RGDP) and Total Government Expenditure on Health (TGEH) are non-stationary at level except Health Outcome (HOC) proxy by under-five mortality rate is stationary with p-value 0.0003 at 5% level of significant. Thus, the non-stationary of some variable make us to proceed to first difference order and the result confirms that OPE, RGDP and TGEH are all stationary at first difference order as reveals their p-value less than five percent level of significant.

Linear Regression Analysis

The study were employed ordinary least square (OLS) regression analysis to determine the impacts of Out-of-pocket expenditure on health (OPE), real gross domestic product (RGDP) and total government expenditure on public health. On health outcome (HOC) proxy by under-five mortality rate.

Ordinary Least Square (OLS) Result

Dependent Variable: HOC

Method: Least Squares

Date: 10/13/18 Time: 08:04

Sample (adjusted): 2001 2017

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPE	-0.591119	0.255311	-2.315292	0.0376
RGDP	-1.71E-12	4.66E-14	-36.79722	0.0000
TGEH	0.156271	0.163454	0.956053	0.3565
C	264.1144	19.79900	13.33978	0.0000
R-squared	0.992899	Mean dependent var		142.5588
Adjusted R-squared	0.991260	S.D. dependent var		26.93051
S.E. of regression	2.517714	Akaike info criterion		4.886904
Sum squared resid	82.40546	Schwarz criterion		5.082954
Log likelihood	-37.53868	Hannan-Quinn criter.		4.906391
F-statistic	605.8711	Durbin-Watson stat		1.567135
Prob(F-statistic)	0.000000			

Source: Authors's Computation Using *eview* 9.5

The result in figure above show that Government Expenditure on Health (TGEH) has positive impact on Health Outcome (HOC) in Nigeria with coefficient value 0.156271. Therefore, one percent increase in total government expenditure on health (TGEH) the health outcome (HOC) will improve by 15% respectively, while out-of-pocket expenditure on health (OPE) has negative impact on health outcome (HOC) as result shows -0.591119. Therefore, one percent decrease in out-of-pocket expenditure on health (OPE) the health outcome (HOC) will be reduce by 50%. Similarly, real gross domestic product (RGDP) has negative impact on Health Outcome (HOC) during the period of study 1% decrease in RGDP it affect HOC negatively by 1.7% respectively. And also, the R^2 is 0.99260 means 99% variation of health outcome in Nigeria were captured in the model while the remaining 1% is stochastic variable and Durbin-Watson statistics is 1.567135 shows the absences of autocorrelation in model.

Granger Causality Test

Granger causality test were conducted to examine the direction of causality between total government expenditure on health (TGEH), out-of-pocket health

expenditure (OPE), real gross domestic product (RGDP) and health outcome (HOC) proxy by under-five mortality rate in Nigeria for the period of study.

Pairwise Granger Causality Result

Pairwise Granger Causality Tests

Date: 10/13/18 Time: 08:07

Sample: 1995 2017

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OPE does not Granger Cause HOC	15	0.89799	0.4379
HOC does not Granger Cause OPE		4.65286	0.0373*
RGDP does not Granger Cause HOC	21	0.83104	0.4535
HOC does not Granger Cause RGDP		7.20518	0.0059*
TGEH does not Granger Cause HOC	21	0.06231	0.9398
HOC does not Granger Cause TGEH		2.25825	0.1368
RGDP does not Granger Cause OPE	15	5.78571	0.0214*
OPE does not Granger Cause RGDP		3.38760	0.0753
TGEH does not Granger Cause OPE	15	2.23546	0.1576
OPE does not Granger Cause TGEH		1.94189	0.1938
TGEH does not Granger Cause RGDP	21	1.34231	0.2891
RGDP does not Granger Cause TGEH		1.56593	0.2393

Source: Authors's Computation Using eview 9.5

The granger causality result reveals that there is bidirectional causality between health outcome (HOC) and real gross domestic product (RGDP) with p-value 0.0059, the null hypothesis is rejected means HOC has a statistically significant on RGDP during the period of study. However, there is existence of bidirectional causality between real gross domestic product (RGDP) and out-of-pocket health expenditure (OPE) the null hypothesis were rejected at 5% level of significant as shows the p-value 0.0214 means RGDP is statistically significant on HOC in Nigeria during the period of study.

CONCLUSION AND RECOMMENDATION

This section center on conclusion and policies recommendation base on the objectives of the study.

This study examined the impact of government expenditure on health outcome proxy by under-five mortality rate for the period of 1995-2017. Time series data

were used on real gross domestic product (RGDP), health outcome proxy under-five mortality rate (HOC), out-of-pocket health expenditure (OPE) and total government expenditure on health (TGEH) all were sourced from World Bank data base 2018. Augmented Dekey Fuller unit root test were conducted to check the stationary of variables and the results shows that only health outcome (HOC) that is stationary at level. While, total government expenditure on health (TGEH), real gross domestic product (RGDP), out-of-pocket expenditure (OPE) are stationary at first different order.

However, linear regression analysis were conducted to determine the impact of government health expenditure on health outcome in Nigeria and result revealed that total government expenditure on health (TGEH) has positive impact on health outcome (HOC) proxy by under-five mortality rate for the period of 1995-2017. Furthermore, Granger causality test were conducted to determine the causal relationship between total government expenditure on health (TGEH), real gross domestic product (RGDP), out-of-pocket expenditure (OPE) and health outcome (HOC). The result shows that the bidirectional causality is running between health outcome (HOC) and real gross domestic product (RGDP). Similarly, bidirectional causality was existing between real gross domestic product (RGDP) and out-of-pock health expenditure (OPE) means RGDP statistically is significant on OPE and HOC during the period of study.

Finally, based on the findings the study are recommends that the government should:

- i. Increase it expenditure on public health to improve the desirable health outcome in Nigeria.
- ii. Provide a suitable monetary and fiscal policies that will stabilize economic growth.
- iii. Organize the sensitization on health insurance to encourage the people patronize for betterment of their health outcomes.

REFERENCES

- Amiri, A. & Ventelou, B. (2012). Granger causality between total expenditure on health and gdp in OECD: evidence from the Toda-Yamamoto approach, *Economics Letters*, Vol.116, 541-544.
- Anyafo, A. M. O. (1996). “*Public finance in a developing economy: The Nigerian case*”, Enugu, Nigeria: *IBS*.
- Anyanwu, J.C., E.O. Andrew and A. Erhijakpor (2007). “Health expenditures and health outcomes in Africa”, African Development Bank Economic Research Working Paper Series No 91.

- Bakare A.S & Olubokun S. (2011). Health Care Expenditure and Economic Growth in Nigeria: An Empirical Study. *Journal of Emerging Trends in Economics and Management Sciences* (JETEMS), 2 (2): 83-87.
- Baldacci, E.B. (2004). "The impact of poor Health on Total factor productivity". *Journal of Development Studies* 42 (6):918-938.
- Barro, R.J. (1996). Determinants of Economic Growth: A Cross-Country Empirical Study. National Bureau of Economic Research, working paper no.5698, August. 11; 2012.
- Bhargava, A. Jamison, D.T. Lau, L.J & Murray, C.J. (2001). Modeling the effects of health on economic growth. *Journal of Health Economics*, 20(3): 423-440.
- Biagi, F. & Lucifora C. (2008). Demographic and education effects on unemployment in Europe, *Labour Economics*, 15(5):1076-1101.
- Bleaney, M.; Gemmell, N. and Kneller, R. (2001). "Testing the Endogenous Growth Model: Public Expenditure, Taxation, and Growth over the long-run", *The Canadian Journal of Economics*, 34(1): 36-57.
- Bloom, D. E. & Canning, D. (2005). Health and Economic Growth: Reconciling the Micro and Macro Evidence. *American Economic Review*, 23(8): 87-105.
- Carrion-I-Silvestre, J.L. (2005). Health care expenditure and gdp: are they broken stationary?, *Journal of Health Economics*, 24: 839-854, 2005.
- Central Bank of Nigeria (2017). Statistical bulletin, Abuja. CBN.
- Chude, N. P. & Cude D.I. (2013). Impact of Government Expenditure on Economic Growth in Nigeria. *International Journal of Business and Management Review*, 1(4):64-71.
- Devaragan, S.; Swaroop, V. and Zou, H. (1996). "The Composition of Public Expenditure and Economic Growth", *Journal of Monetary Economics*, 37: 313-344
- Dickenson, T. D. I. (1996).
- Eggoh, R.T., Houeninvo, H. & Sossou, M. (2015). The long term impact of health on economic growth in Africa. *World Development*, 29(6): 1025-1033.
- Ehrlich, I. & Lui ,F. T. (1991). Intergenerational Trade, Longevity, and Economic Growth. *Journal of Political Economy*, 99(5): 1029-1059.
- Elmi, Z.M. & Sadeghi, S. (2012). Health care expenditures and economic growth in developing countries: panel co-integration and causality, *Middle-East Journal of Scientific Research*, 12 (1): 88-91.
- Erdil, E. & Yetkiner, I.H. (2009). A panel data approach for income-health causality, *The Economics of Health Reforms* (Eds. Yfantopoulos, J. N.), ISBN: 960-88672-0-7, Chapter 38, 701-724.
- Federal Ministry of Health (2006). Health Facility Report Survey, Federal Ministry of Health, Abuja, Nigeria.
- Filmer, D. and L. Pritchett (1999). "The impact of public on health: does money matter?" *Journal of Social Science and Medicine*, 49(10):1309-1323.
- Fuchs, V. R. (1966). The contribution of health services to the American economy, *Milbank Memorial Quarterly*, 44: 65-101.
- Gemmell, N. and Kneller R. (2001). "The Impact of Fiscal Policy on Long Run Growth, European Economy", London.
- Grossman, M. (1972). On the concept of health capital and the demand for health, *Journal of Political Economy*, 80:223-255.
- Gupta, S, Verhoeven, M. & Tiongson, E. (2003). Public spending on health care and the poor, *Health Economics*, 9 (12):685-96.

- Gupta, S., Verhoeven, M. and Tiongson, E. (1999). Does higher government spending buy better results in education and health care? *IMF Working Paper 99/21*. Washington: International Monetary Fund.
- Harris, J.M. (2000). Basic principles of sustainable development, Global Development and Environment Institute Working Paper: 00-04, 1-25.
- Jaiyeoba, B. (2015). Relationship between investment in education and health in Nigeria. *International journal of business and Finance*, 21(2):26-36.
- Kalu, I.A. & Raphael, O.M. (2016). An empirical analysis of the effect of government expenditure on economic growth in Nigeria. *Research Journal of Finance and Accounting*, 7(20):34-43.
- Lucas, R. E. (1988). On Mechanics of Economic Development. *Journal of Monetary Economics*, 70(23): 65- 94.
- Lucas, R. E. Jr (1988). On the mechanics of economic development, *Journal of Monetary Economics*, 22: 3-42.
- Lucian, U., Straciuc o., Maghiar, T. And Ciprian, T. (2010). Relationship and causality between economic growth rate and certain diseases in the European Union. *International Journal of Business and Management Review*, 1(4):64-71.
- McCoskey, S.K. & Selden, T.M. (1998). Health care expenditures and gdp: panel data unit root test results, *Journal of Health Economics*, 17: 369-376.
- McKinsey Global Institute (2014). Nigeria's renewal: Delivering inclusive growth in Africa's largest economy. Retrieved from <https://omjuwa.com/2015/02/nigerias-health-sector-challenge-and-solutions-that-work-nasir-el-rufai/>.
- Medical Tourism Association: retrieved from <http://www.medicaltourism.com/en/facts-statistics.html>
- Mehra, M. & Musai, M. (2011). Granger causality between economic growth in oil exporting countries, *Interdisciplinary Journal of Research in Business*, 1(8): 103-108.
- Meltzer, D. (1995). Mortality Decline, the Demographic Transition, and Economic Growth. Unpublished, University of Chicago.
- Munasinghe, M. (1993). Environmental economics and sustainable development, World Bank Environment Paper, Number 3:1-114.
- Murthy, V.N.R & Okunade, A.A. (2009). The core determinants of health expenditure in the African context: some econometric evidence for policy, *Health Policy*, 91:57-62.
- Musgrave, R.A. (1969). *Fiscal Systems*, London: Yale University Press
- Musgrave, R.A. and Musgrave, B. (1988), *Public Finance in Theory and Practice*, New York: McGraw-Hill Book Company.
- Mushkin, S. J. (1962). Health as an investment, *Journal of Political Economy*, 70: 129-157.
- Narayan, P.K (2000). Examining structural breaks and growth rates in international health expenditures, *Journal of Health Economics*, 25: 877-890.
- Neelankavil, J.P., Stevans, L.K. & Roman, L. (2012). Correlates of economic growth in developing countries: a panel cointegration approach, *International Review of Applied Economics*, 26 (1):83-96.
- Obinna, O. E. (2000). *Public Finance*, Nsukka, Ap and P Press Ltd. 210p.
- Odunmi, A. S., Saka, J.O., and Oke, M. D., (2012). Testing the Cointegrating Relationship between Health Care Expenditure and Economic Growth in Nigeria. *International Journal of Economics and Finance*; 4(11): 69-781.
- Odunmi, A.S, Saka, J.O & Oke D.M. (2012). Testing the cointegrating relationship between health care expenditure and economic growth in Nigeria, *International Journal of Economics and Finance*, Vol. 4 (11), 99-107.

- Olugbenga, A. O, Owoye, O. (2007). Public expenditure and economic growth: New evidence from OECD countries. Retrieved from http://iaes.confex.com/iaes/Rome_67/techprogram/S1888.HTM on September 5th, 2017 at 9:25pm.
- Quang, H.V. (2012). Determinants of educational expenditure in vietnam. *International Journal of Applied Economics*, 9(1): 59-72.
- Report of the World Commission on Environment and Development: Our common future, 1-300, 1987.
- Romer, P. (1990). Endogenous Technological Change. *Journal of Political Economy*, 98(5):129-50.
- Romer, P.M. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94(5): 1002-1037.
- Schultz, T. (1961). Investment in Human Capital. *American Economic Review*, 45(57).
- Schultz, T. W. (1960) Capital Formation in Education. *Journal of Political Economy*, 68(4): 571-83.
- Sen, R., Kaya, Y., & Alpaslan, L. (2015). Causal relations among education expenditure, health expenditure and economic growth of selected developing countries. *International Journal of Economics, Finance and Management*, 2(4): 303-312.
- Solow, R. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics* 22(3):2-42.
- Solow, R. M. (1956). "A contribution to the theory of Economic Growth", *Quarterly Journal of Economics*, 70(3):33-45.
- Stark, O. and Rosenzweig, M.R. (2006). *Handbook of population and family economics*. North Holland: Elsevier.
- Taban. S. (2006). Türkiye’de sağlık ve ekonomik büyüme arasındaki nedensellik ilişkisi, *Sosyo Ekonomi*, 2; 31-46.
- Wang, K.M. (2011). Health care expenditure and economic growth: quantile panel-type analysis, *Economic Modelling*, 28: 1536-1549.
- World Bank (1993). *World development report 1993: Investing in health*. Washington, D.C.: World Bank and Oxford University Press.
- World Bank World Development indicators (2016). Retrieved from World Bank database <http://data.worldbank.org/indicator/SH.MED.BEDS.ZS>
- World Health Organisation (2002). Health, economic growth and poverty reduction. Retrieved from <http://whqlibdoc.who.int/publications/9241590092.pdf> [Accessed 1 May, 2014].
- Yesufu, M.T. (2000). *The Human Factor in National Development*, Ibadan: Spectrum Books.
- Z. M. Elmi, S. Sadeghi. Health care expenditures and economic growth in developing countries: panel co-integration and causality, *Middle-East Journal of Scientific Research*, Vol.12 (1), 88-91.
- Zon, Z., Adrian, A. & Muysken, J. (2012). Health and endogenous growth, *Journal of Health Economics*, 20: 169-185.