Health expenditure and economic growth in South-South Geopolitical Zone of Nigeria

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Abstract
A nation with healthy population is considered a healthy nation, hence no amount of resources spent on the health sector is considered too much. This research seeks to evaluate the impact of health expenditure on economic growth in Cross River and Akwa Ibom State of Nigeria. Four objectives were formulated to guide and direct the study. The objectives were to investigate the relationship between gross fix capital formation, total health expenditure, government health expenditure, health output funding and Gross Domestic Product growth in Cross River and Akwa Ibom State of Nigeria from 1980-2019 . The ordinary least square regression analysis was employed as the estimating technique to test the impact of health funding on economic growth of Cross River and Akwa Ibom States respectively. The findings showed that there exist a significant relationship between gross fix capital formation, and gross domestic product growth, there exist a significant relationship be total health expenditure and gross domestics product growth in Cross River and Akwa Ibom State. Also government health expenditure and health output funding exert a significant impact on Gross Domestic Product growth(GDPGR) in Cross River and Akwa Ibom State of Nigeria. The study recommended that increase in health expenditure provision be expanded in order to increase productivity in both States.

Key words: *Health expenditure, Economic growth, Output and Productivity.*

Introduction

Human capital, along with physical capital, plays an indispensable role in economic development of a Nation. Human capital formation entails spending on health and training. Lucas (1988) held the view that public spending on Health promoted human capital, which in turn might contribute to economic growth. Romer (1990) highlighted the role of spending on research and development in economic growth. More specially, in respect of the endogenous growth theory, spending on health is viewed as promoting human capital, which would lead to endogenous technical progress and thus accelerated economic growth. In accordance with this theoretical proposition, policymakers very often advocate increased spending on the health sectors, particularly at the early stage of development. Some empirical studies support the view that efficient and sufficient spending on the education and health sectors fosters human capital formation and promotes economic growth (Schultz, 1961; Swaroop, 1996; Lee and Barro, 1997; Psacharopoulos & Patrinos, 2004; Gupta, Clements & Inchauste, 2004). However, the efficacy of such spending in Akwa Ibom and Cross River State remains scantly researched and documented. This research work attempt to fill in this gap by examining expenditure on health and its impact on economic growth using two states in the south-south Geopolitical zone in Nigeria as a case study

The choice of the states (Akwa Ibom and Cross River State) in this study was constrained by the availability of a continuous time series dataset of the variables concerned. Most of the States in the region of the South-South are lagging behind the regions with regard to human capital development. Acute diversity in this region is found in terms of topography, culture, politics and the state of human capital development. In order to exploit the opportunities offered by globalization and to attain balanced regional development, the States in study (Akwa Ibom and Cross River State) are expected to progress in unison. In this context, the development of human resources is of the utmost importance. Nevertheless, some states in the region have failed to give these aspects due importance in their economic development strategies.

During the last three decades, most states in Nigeria have elevated themselves from being overpopulated, low-income geo political zone to become growing economies facing many challenges. Over the years health has been seen as important indicator of measuring the standard of living in a country. The productivity of labor depends on health and educational

conditions of workers. Health expenditure carried out by the government is an important factor to accelerate human capital index. Health has become significant as the technology developed. Hence, there are more opportunities for people in terms of health issues, and improvement of living standards, which leads to productivity for work, as well the economy of the state. If workers' productivity increases, it will have an effect on the production process. Most importantly, this increase in the productivity will affect the output level. In a globalized world, people can benefit from these developments, and it will affect every part of their lives such as productivity, which will also have an effect on the output level of the state.

Objectives

The main objective of the study is to investigate the effect of health expenditure on some selected states in south-south geopolitical zone with Cross River State and Akwa Ibom as case study. The specific objective includes:

i. To evaluate the relationship between gross fix capital formation (GFCF) and Gross Domestic Product growth (GDPGR) in Cross River and Akwa Ibom State of Nigeria.

ii. To evaluate the relationship between Total health expenditure and Gross Domestic Product growth (GDPGR) in Cross River and Akwa Ibom State of Nigeria

iii. To evaluate the relationship between Government health expenditure and Gross Domestic Product growth (GDPGR) in Cross River and Akwa Ibom State of Nigeria

iv. To evaluate the relationship between health output funding and Gross Domestic Product growth (GDPGR) in Cross River and Akwa Ibom State of Nigeria

Literature review

Health is an important indicator to see the standards of living in a country. The productivity of labor depends on health and educational conditions of workers. This paper conducts an analysis that investigates the link between the health expenditures and economic growth in Nigeria for the period 1980 to 2015. Health has become significant as the technology developed. Hence, there are more opportunities for people in terms of health issues, and improvement of living standards, which leads to productivity for work and in other areas. If workers' productivity increases, it will have an effect on the production process. Most importantly, this increase in the productivity will affect the output level. In other words, as technology gets more advanced in time, and health is one of the developed areas in a very wide scope. In a globalized world, people can benefit from these developments, and it will affect every part of their lives such as productivity, which will also have an effect on the output level of the country. Therefore, countries are interested in acquiring health developments. Health has been considered as one of the remarkable elements that results in the increase in Gross Domestic Product (GDP) for a country. Thus, there have been some studies related to the relationship between health and economic growth. If we look at these previous studies, there are remarkable outcomes on this issue.

Atılgan, Kılıç and Ertuğrul (2017) states that health expenditure and economic growth have a dynamic causal relationship. This study aims to investigate whether growth and health expenditure are co-integrated or not by using bound test approach, Autoregressive-Distributed Lag Approach (ARDL) and Kalman filter modelling. Bedir (2016) explains that the relationship between economic growth and health care expenditure in emerging markets in the region of Europe and Middle East African and Asian countries. In this study, it is considered that human accumulation is very crucial for growth in a country because in endogenous growth models capital accumulation is essential, and in order to be to raise capital accumulation,

healthcare expenditure is quite influential. The author used econometric methods of modified version of the Granger (1969), Toda and Yamamoto (1995) causality test and also Dolado and Lütkepohl (1996) to explain this relation. The results of the tests suggested that if income level increases healthcare expenditures might increase as well for some developing countries.

More importantly, healthcare expenditures' differences are related to income levels for the investigated countries. In other words, economic growth in a country means an increase in the healthcare expenditure proportion in outcome of the country, which causes GDP to increase once again. Cetin and Ecevit (2010) studied on the issue of the effects of health on the economic growth in OECD countries by using panel data analysis method. In their paper, they asked the question whether there is any long run association between health expenses and growth is examined empirically. Although import, export, employment and productivity have a positive effect on economic growth, and these variables are statistically significant for this analysis, the results for the health expenditures is different from expected. It means that empirical analysis do not provide results related to the hypothesis which health growth determines economic growth.

Eggoh, Houeninvo and Sossou (2015) searched about the connection between human capital and economic growth in 49 African countries for the period between 1996 and 2010. In this study, education and health related variables are used as indicators of human capital. In addition, traditional cross-section and dynamic panel techniques are used in order to be able to investigate the connection between variables. The test results suggest that economic growth is affected by education and health expenditures in a negative way. Hence, the authors assert that since corruption, bureaucracy and underinvestment exist in these countries, and also the expenditures are inefficient, education and health expenditure can have a negative impact on the growth.

Halıcı-Tülüce, Doğan and Dumrul (2016) investigated the influence of health expenditure on economic growth. This study contains panel data analysis of low-income and high-income economies between 1995-2012 and 1997-2009. Twenty-five high-income and nineteen low-income countries data are used, and in the short-run, bilateral relationship between growth and health expenditure is analyzed, in the long run, one-way causality from economic growth to government spending on health is examined. It can be concluded that there is positive relationship between government spending on health and economic growth, which also means that public health expenditures have a role of determination of economic growth. Last but not least, by performing an analysis for the difference between private and public expenditure, it can be stated that if both private and public expenditures are raised, it also leads to an increase in the positive effect of health expenditures on economic growth because productivity of the labours depend upon their health status. The healthier the workforce, the more efficiency in the economy of the country.

Hassan and Kalim (2012) argues that if there is a long run relationship and triangular causality among education, health and economic growth for Pakistan by conducting time series analysis from 1972 to 2009, and the variables used in this study are per capita education expenditures and per capita health expenditures and real GDP per capita. The results indicate that there is no Granger causality between per capita health expenditures and real GDP per capita in the short-run; on the other hand, there is two-way causality among real GDP per capita, per capita education expenditures and per capita health expenditures in the long-run.

Maitra and Mukhopadhyay (2012) studied on the issue of government spending on education, health care and economic growth in twelve countries of Asia and the Pacific. The authors argue that whether there exists a connection between education expenditures of the

governments and health sectors, which leads to economic growth. By conducting Johansen co-integration tests for those countries, it is concluded that public healthcare expenditures, GDP and public education expenditures are co-integrated for Bangladesh, Kiribati, Malaysia, Maldives, the Philippines and the Republic of Korea; on the other hand, in Fiji, Nepal, Singapore, Sri Lanka, Tonga and Vanuatu the variables are not co-integrated.

The study of Munnell (1992) states that public policies for infrastructure, related to the investment decisions, are based on economic reasoning. It means that this investment project is determined according to an economic analysis. If the project is believed to promote economic growth for a country, then the government tends to accept the project, and as result, it is considered that investment and GDP growth rate are related in a country. Mushkin (1962), clearly points out that health has a significant effect on the economic growth. It means that health of a worker is the productivity of the worker; hence, spending on health lead to an increase in the human capital. And, this increase also results in increase in the output level. Ozturk and Topçu (2014) searched for the interaction health expenditures and economic growth. The authors employed a panel data analysis in order to be able to investigate health-growth in G8 countries. Their findings strongly suggest that there exists a one-way causality between health expenditures and economic growth, and health expenditures affect economic growth in the short-run; in contrast, economic growth affects health expenditures in the long-run.

Pradhan (2010) states that the influence of health spending on economic growth in 11 countries, which are Austria, Canada, Finland, Iceland, Ireland, Japan, Norway, Spain, Switzerland, UK and USA, within a panel framework. The analysis is performed for both long-run and short-run between 1961 and 2007. It is founded that increase in health spending leads economic growth to increase as well, and if economic growth raises, health spending also raises. It means that there is reciprocal relationship between these variables. Schultz (2005) argues that whether poor health has an impact on the total factor productivity, which is also related with the output level of a country. According to this paper, if a person's health is not good enough to work, then, this person drops out from the labor force. It will have ultimate reflections on the economic growth. If people start not work because of their health conditions, there will be a dramatic reduction in the output level, which also shows the strong relationship between health and growth. It can be considered that health is an important indicator for productivity.

Smith (1998) indicated that future income is determined by the health status of the individuals by using life cycle models; the direction of the causality was implied. This paper is also important for my work as it involves the link between health conditions and the future income. If people's health status takes a part in the determination of future income, we can improve these statuses in order to be able to have an economic growth. In this case, future output level can be increased with the developments in health issues as well. Strauss and Thomas (1998) research indicates that some evidence that is related to productivity and health because according to Strauss and Thomas (1998), there is a strong relationship between health and economic development. In this research, it is stated that there is a strong relationship between labor market and health issues. The crucial point is that economic growth is obtained from the efficiency of healthy individuals.

Sülkü and Caner (2011) made a study about long-run association between per capita GDP, population growth rate and per capita health spending. In the analysis, Johansen multivariate co-integration test is applied for Turkey the period 1984-2006. The findings provide that there is multivariate co-integration among the series of population growth, health expenditure and gross domestic product. In this study, it is concluded that long-term association

exists for these variables.

The relationship between health expenditure and economic growth of Nation

The study of the relationship between health care spending and economic growth is rather a new phenomenon in economic literature and it has received a lot of attention in recent times. Health as human capital affects growth directly through, for example, its impact on labour productivity and the economic burden of illness. Bloom and Canning (2000: 2003) describe how healthy populations tend to have higher productivity due to their greater physical energy and mental clearness. According to them, healthier individuals might affect the economy in four ways: (a) They might be more productive at work and so earn higher incomes; (b) They may spend more time in the labour force, as less healthy people take sickness absence or retire early; (c) They may invest more in their own education, which will increase their productivity; and (d) They may save more in expectation of a longer life—for example, for retirement—increasing the funds available for investment in the economy. Health is so important as both a source of human welfare and a determinant of overall economic growth. Baldacci (2004) explores the role played by health expenditures. He constructed a panel data set for one hundred and twenty developing countries from 1975-2000 and found that spending on health within a period of time affects growth within that same period while lagged health expenditures appear to have no effect on growth. He inferred from this result that the direct effect of health expenditure on growth is a flow and not a stock effect. Another study by Aguayo-Rico and Iris (2005) examines the impact of health on economic growth for 13 European countries, 12 African countries, 16 American countries, and 11 Asian countries over the period 1970-80 and 1980-90 using ordinary least square (OLS), the authors find that health capital has a significant effect on economic growth, especially with a variable that captures all the determinants of health. Some other studies on health and economic growth conducted earlier found a positive relationship between the two. Barro (1991) and Barro and Sala-i-Martin (1992); Knowles and Owen (1995) and (1997) have investigated the positive effect of health on economic development. They also found a strong effect of health in explaining income per capita differences. Other studies such as Greiner (2005), Agenor (2007), Strauss and Thomas (1998) and Martins (2005) conducted for other countries all emphasized that health expenditure is positively related to economic growth. What differ from one country to another is the extent and magnitude of its contributions. In a study of 15 states from India for the period 1973/74, 1977/78, 1983, 1987/88, 1993/94, 1999/2000, Gupta and Mitra (2003) show that per capita public health expenditure positively influences health status, that poverty declines with better health, and that growth and health have a positive two-way relationship.

Similarly, some empirical and historical studies have analyzed the relationship between health and economic growth. They establish an endogenous relationship between them and, at the same time, argue that there are exogenous factors, which determine the health conditions of a person (Hamoudi and Sachs 1999). Aurangzeb (2001) investigates the relationship between health expenditure and economic growth within an augmented Solow Growth model for Pakistan during the period 1973-2003, Johansen cointegration technique and error correction model (ECM) are applied. The author finds a significant and positive relationship between GDP and health expenditure in both short- and long-run. Haider ali shah bukhari, and Sabihuddin butt (2007) also support for the existence of a long run relationship between GDP and health expenditure and the erogeneity of GDP in Nigeria. Cuddington and Hancock (1995), used a neoclassical one sector, two factor growth model to predict economic growth in Tanzania and Malawi. They found that over the period 1985-2010, average annual G.D.P. growth would be reduced by 1.1 percentage points in Tanzania and 1.5 percentage points in Malawi. Also, should AIDS treatment costs be entirely financed from savings, the AIDS epidemic would reduce per capita G.D.P. growth by 0.3 percentage points and 0.1 percentage

points in Malawi and Tanzania respectively. Gallup, Sachs and Mellinger (1998) supported the positive relationship between health and economic growth. They find a strong relationship between initial levels of health and economic growth, using life expectancy at birth as their basic measure of overall health of the population. They conclude that improved health is associated with faster economic growth.

In his own reaction, Philips (2005) affirms that over the past 50 years, life expectancy has improved and infant mortality declined continuously in all parts of the world, except sub-Saharan African in the 1990s; Good health can reinforce economic growth by enabling people to be more productive especially in countries that have little corruption, poor health can constrain economic growth because it reduces the quality and quantity of labour. Also, in a study of India, the World Bank (2004) examines the impact of per capita GDP, per capita health expenditure and female literacy on infant mortality using state-level data over the period 1980-99. The study observes that both per capita public spending on health and per capita GDP are inversely related to infant mortality rate, but the results were observed not to be very robust to alternative specification of the model. In the same vein Lustig, (2006) in the study on the direct relationship between health and growth in Mexico uses 1970-95 data and uses life expectancy and mortality rates for different age groups as health indicators. He observed that health is responsible for approximately one-third of long- term economic growth. He considered health to be an asset with an intrinsic value as well as instrumental value. Good health according to him is a source of wellbeing and highly valued throughout the world.

By using the adult survival rate as an indicator of health status, Bhargava, et al. (2001) finds positive relationship between adult survival rate and economic growth. Results remains similar when adult survival rate is replaced by life expectancy. However, fertility rate has a negative relationship with economic growth. Due to the fact that life expectancy is highly influenced by the child mortality, growth in workforce is mostly lower than population growth. Consequently, high fertility rate reduces the economic growth by putting extra burden on scarce resources. Bloom, Canning and Sevilla (2001) in their study agreed with others on the positive and significant effect of health on economic growth. They therefore suggested that a one-year improvement in a population life expectancy contribute to a recent increase in output. In the field of health economics, the endogenous causality between health and income has been the topic of several studies whose purpose is to establish the direction of the causality. Luft (1978) gives an informal explanation of this causality: ―a lot of people who otherwise would not be poor are, simply because they are sick; however, few people who otherwise would be healthy are sick because they are poor. In order to explain the direction of the causality of the impact of health over income, Smith (1999) uses life cycles models, which link health condition with future income, consumption and welfare.

According to this, Bloom and Canning (2000) explain this direction of the causality with education, indicating healthy people live more and have higher incentives to invest in their abilities since the present value of the human capital formation is higher. The higher education creates higher productivity and, consequently, higher income. Also, Hartwig (2010) conducts causality testing for a panel of 21 OECD countries using panel Granger causality test over the period 1970-2005, the author finds that health capital formation fosters long term economic growth in all the OECD countries under study. Devlin and Hansen (2001) examined Granger causality between health expenditure and GDP and showed some (mixed) evidence that indeed there might be bi-directional (Granger) causality between health spending and income. Mehrare and Musai (2011) examines the relationship between health expenditure and economic growth for Iran over period 1979-2008 by employing Gregory-Hensen (1996) co-integration techniques which allows the presence of potential structural breaks in data. The authors find

the presence of a long run relationship between health expenditure and the income elasticity for health care spending is greater than one during the period under study. The results also suggest one-way causality relationship running from GDP to health expenditure, thereby concluding that health expenditure does not granger caused economic growth.

A more recent study by Mehrara and Musai (2011) examines the Granger causality tests between health expenditure and economic growth among 11 oil exporting countries during the period 1971-2007 by using panel unit root tests and panel co-integration techniques. The results suggest strong causality running from revenues and economic growth to health expenditure in the oil exporting states. Also, health expenditure does not have any significant effects on GDP in both short-run and long-run. Another study by Baltagi and Moscone (2010) estimates a regression equation for health care expenditure as a function of GDP and other control variables using data on 20 OECD countries over the period 1971-2004 by using maximum likelihood estimation (spatial MLE) techniques to estimate and test fixed effects and spatially correlated errors. The authors find that health care expenditure is a necessity rather than a luxury with an elasticity much smaller than that estimated in previous studies.

Moreover, some empirical evidence also emerged from Nigeria. For example, Odior (2011) conducts a study on the relationship between health and economic growth by using an integrated sequential dynamic computable general equilibrium (CGE) model over the period 2004-2015 to investigates the impact of government expenditure on health on economic growth. The findings suggest that the re-allocation of government expenditure to health sector is significant in explaining economic growth in Nigeria. Similarly, Dauda (2011) examines the relationship between health expenditure and economic growth for Nigeria spanning from 1970-2009 by employing descriptive statistics, Johansen co-integration technique and error correction model (ECM), the author suggest that health expenditure is positive and statistically significant but the coefficients of the second and third lags are negative and statistically significant. The results of error correction model are statistically significant and has expected negative sign with the coefficient of 40% implying that the speed of adjustment to is 40%.

Again, Chete and Adeoye (2002), studied the empirical mechanics through which human capital influences economic growth in Nigeria. They attempted to achieve this objectives using vector Auto regression analysis and ordinary least square to capture these influences. They however concluded that there is an unanticipated positive impact of human capital on growth which the various Nigerian governments since the post-independence have appreciated by prodigious expansion of educational infrastructure across the country; but they are quick to point out that the real capital expenditure on education and health have been rather low. In addition, Adeniyi and Abiodun (2011) used ordinary least square (OLS) to examine the impact of health expenditure on economic growth over the period 1985-2009. The authors suggest that if funds are properly channelled and appropriate expended to both the recurrent and capital projects in health, the existence of a positive relationship between economic growth and health will be more widened.

Arguing in same line, Bakare and Sanmi (2011) also used ordinary least square (OLS) multiple regression for annual time series data for Nigeria covering 1974-2008, the results show a significant and positive relationship between health expenditure and economic growth. Therefore, the study recommends that policy makers should place more priority to the health expenditure by increasing its yearly budgetary allocation to the sector. Ogundipe and Lawal (2011) examined the impact of health expenditure on economic growth in Nigeria. Using the OLS technique, they found a negative effect of total health expenditure on growth. Bloom et al (2004) estimate a production function of aggregate economic growth as a function of capital stock, labour and human capital (education, experience and health). Their main result is that

health has positive, statistically significant effects on economic growth. They however, do not consider how health is created. Olaniyi and Adams (2000) descriptively analyzed the adequacy of the levels and composition of public expenditures and conclude that education and health expenditures have faced lesser cuts than external debt services and defense, but allocations to education and health sectors are inadequate when related to the benchmark and the performance of other countries.

The effect of health on worker's productivity suggests a relationship between health and aggregate output. Healthy workers lose less time from work due to ill health and are more productive when working. Health gains had the economic consequences of widespread economic growth and an escape of ill-health traps in poverty (World Health Organization, 1999). There has been a growing interest to extend the relationship between health and economic growth, catalyzed in considerable extent by a 1993 World Bank report on health (World Bank 1993). Barro (1996) comments health is a capital productive asset and an engine of economic growth. Fifty percent of economic growth differentials between developed and developing nation is attributable to ill-health and low life expectancy (World Health Organization, 2005). Developed countries invest a substantial proportion of their budgetary allocations on provision of health care because they are convinced that their residents health can serve as a major driver for economic growth. As health is wealth, no amount spent on health by a nation is considered too much.

The United Nation (UN) recommended for a country, an average of 8 to 10 percent of the GDP as benchmark expenditure on health. Governments in Nigeria, over the years have made deliberate efforts at ensuring that there is increase in the level of public expenditure on health. For example, the capital expenditure of government rose from N7.3 million in 1970 to N126.75 in 1987. In 1988 there was a significant rise to N297.96m. The figure rose steadily from N586.2 million in 1993 to N17717.42, N33396.97 and N34647.9m in 2003, 2005 and 2007 respectively. The capital expenditure on health increased from N64922.9 in 2008 to N98211.51 in 2010. In a similar manner, in 1970, recurrent expenditure on health was N12.48 million. This figure rose significantly to N52.79 million and N134.12 million in 1979 and 1986 respectively when the recurrent expenditure percentage of total expenditure stood at 77.4% percent. The value of recurrent health expenditure reduced significantly in 1987 to N41.31m before it rose steadily from N422.80 in 1988 to N24522.27m in 2001. This figure rose again from N40621.42 in 2002 to N44551.63, N58686.56 and N72290.07 in 2005, 2006 and 2007 respectively. By 2008, recurrent expenditure increased from N73990 to N77657.43 in 2010.

The above trends clearly show that health care expenditure in Nigeria has been on the increase over the years. This is because of the importance of health to nation building and as a facilitator of economic progress. It should however be noted that despite the increase in government expenditure on health provisions in Nigeria, the contribution of this to human health is still marginally low. Moreover, the extent and magnitude of its impact on economic growth is yet to be adequately investigated probably because of the general unidirectional impression that economic growth facilitates better health. Off course, for example, economic growth could lead to increased availability of food for better healthy living; increased earning which makes health spending more affordable; and also raises demand for good health services. Higher growth could also imply higher public revenue which can translate into higher investment in health infrastructure. Therefore, there is a question of whether causality exists in the reverse direction? In other words, does improved health lead to higher growth? If yes, then to what extent and in what magnitude does health contribute to economic growth especially when one accounts for other potential factors that are empirically known to drive growth? It is therefore likely that causality exists in both directions. However, the question of which

direction dominates could be an area of interest for further studies. Therefore, this study seeks to evaluate the growth impact of health expenditure to determine the extent and magnitude of its contributions to the Nigerian economy, from 1970 to 2010.

Theoretical Framework

Keynesian Theory of Public Expenditure

Theoretical framework that the study is based on is Keynesian theory. Keynesian theory states that public expenditure on health determines economic growth. During recession a policy of budgetary expansion should be undertaken to increase the aggregate demand in the economy thus boosting the Gross Domestic Product (GDP), the employment rises, income and profits of the firms increase, and this would result in the firm's hireling more workers to produce the goods and service needed by the government.

Methodology

This study adopts the ex post facto research design. The decision was premised on the efficiency with which Ex-post facto research procedure utilizes theoretical and empirical theses simultaneously to estimate the impact of health expenditure on economic growth in Cross River and Akwa Ibom state using time series data from 1980-2014.

Model Specification

The theoretical framework of this model is based on Keynesian theory of public expenditure which states that increase in public spending on health expenditure increases economic growth in Cross River and Akwa ibom States. This model specified to examine the relationship between health expenditure on economic growth in Cross River and Akwa ibom States overtime .as extensively discussed in the theoretical framework. Therefore, based on the theoretical foundation, the empirical model for this study is specified functionally as follow.

GDPGR = f(THEXP, GXHP, HOP, GFCF)----------3.1

Where:

GDPGR = Gross Domestics Product Growth Rate
THEXP = Total heath expenditure
GXHP = Government health expenditure
HOP = Health output
GFCF = Gross Fixed capital formation

The model in equation 3.1 can be written in a linear form as follow,

$GDPGR = \alpha_0 + \alpha_1 THEXP + \alpha_2 GXHP + \alpha_3 HOP + \alpha_4 GFCF + \mu 1$-------3.2

Where $\alpha 0$ to $\alpha 4$ and $\beta 0$ to $\beta 4$ are the parameters to be estimated, $\mu 1$ is stochastic error terms.

The apriori expectations about the signs of the coefficients of the parameters are as follows: $\alpha 1, \beta 1 \leq 0$ and $\alpha 2\ \beta 2, \alpha 3\ \beta 3 \geq \alpha 4\ \beta 4 \geq 0$

Findings

Dependent Variable: GDPGR
Method: Least Squares
Date: 07/08/2020 Time: 07:57
Sample: 1980 2019
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	64.17656	399.6221	0.160593	0.8735
LOG(GFCF)	0.832066	2.971396	0.280025	0.7814
LOG(THEXP)	1.352953	2.972956	0.455087	0.6523
LOG(GHXP)	0.140945	1.453681	0.096957	0.9234
LOG(HOP)	-4.841129	24.23833	-0.199730	0.8430

R-squared	0.221333	Mean dependent var	3.705714
Adjusted R-squared	0.117511	S.D. dependent var	7.670376
S.E. of regression	7.205620	Akaike info criterion	6.919163
Sum squared resid	1557.629	Schwarz criterion	7.141356
Log likelihood	-116.0854	Hannan-Quinn criter.	6.995864
F-statistic	2.131846	Durbin-Watson stat	1.967458
Prob(F-statistic)	0.101335		

Data Analysis

Apriori criteria

Based on the theoretical values of the parameters of the research model, a positive relationship is expected to exist among the Gross Domestic Product growth(GDPGR), gross fix capital formation (GFCF), Total health expenditure (THEXP), Government health expenditure (GXHP) and health output funding (HOP).

Symbolically, the above identified economic expectations relationship are presented as follows:

$\beta 0 = 0,\ \beta 1 \geq 0 \ldots\ldots\ldots \beta 4 \geq 0$

Form the above tables, the interpretation of the results as regards the coefficient of the various regressors is stated thus: The value of the intercept C is 64.17656. This shows that Gross Domestic Product Growth Rate(GDPGR) is 64.176% if all other variables are kept constant. The estimated coefficient of investment satisfies the apriori criteria and indicates the existence of a positive relationship between the growth rate of real Gross Domestic Product and investment in Cross River and Akwa Ibom States of Nigeria.

The coefficient of Gross Fixed Capital Formation (GFCF) is 0.832066. This indicates that Gross fixed capital formation is positively related to the Gross domestic product level of Cross river and Akwa Ibom State. Thus, a unit increase in GFCF will cause GDPGR to increase by 0.832% all things being equal. The coefficient of total health expenditure (THEXP) is 1.352953. The result indicates that THEXP is positively related to the GDPGR level and that a unit increase in THEXP will cause GDPGR to increase by 1.35% .

The coefficient of government health expenditure (GHXP) is 0.140945. The result indicates that GHXP is positively related to the Gross Domestic Product Growth Rate level and that a unit increase in GHXP will cause GDPGR to increase by 0.140%. The coefficient of health output funding (HOP) is -4.841129. The result indicate that HOP is negatively related

to gross domestic product growth rate of the two states. This shows that health output productivity of the states for this period is negative by -4.841%,

Statistical criteria

t-statistics

The result shows that the level of investment, government expenditure on health sector and the health funding output are statistically significant at 5% level of significance. This means that the variables exert a significance impact on economic growth in Nigeria ***On*** the other hand, the estimated health funding output is not statistically significant at the 5% level of significance. This means that the health funding out does not have a significant impact on economic growth in Nigeria.

R^2 and Adjusted R^2

The R2 shows that 82.13 per cent of the variation in economic growth in Nigeria is explained by the variables in the model. On the other hand, the adjusted R2 indicate that 81.75 per cent of the variation in economic growth in Nigeria is explained by the significant variables in the model.

F-statistic

The f-statistic is the greater than its significant criteria value. This implies that the model is statistically significant and that the estimated parameters are statistically different from zero. This means that the results of the model can be relied on.

Durbin Watson (DW) test

The Durbin-Watson test indicated the absence of auto correlation in the estimated model.

Discussion of findings

The study model was estimated using the OLS method with the objective of providing robust results from which valid findings can be made. The findings from the estimated results are rationalized as follows:

The main funding of the study is that government health expenditure has a positive and significance impact on the growth rate of the gross domestic product in Nigeria. The finding corroborates the findings of Odusola (1998), Olaniyi and Adams (2000) and Dauda (2001). The result implies that the amount of resources so far dedicated to the health sector has produced some significant effects in the form of improvements of the health of the country's health output, a decrease in the output level lost to ill health and deficiency, increase in health output productivity and hence, improvement in the rate of growth of the economy.

The study also found that the health output has a positive and significant impact on the real gross domestic product in Nigeria. The result implies that the country health output has not been contributing significantly to the country' health productivity has not been contributing significantly to the country economic growth. This means that the health output has so not been efficiently utilized. The positive relationship between the health funding output and the growth rate of the GDP however, highlights the capacity of the country health output to significantly contribute to the growth of output when efficiently utilized through increased creation of job opportunities and increase in the level of human capital development.

An increase in health output productivity will inevitably increase Gross Domestic output. The effect of health output productivity is expected to be positive and significant. This is because increase in health output will mean that greater output will be produced. At the same time, it enhances aggregate supply and sustainable development, Bloom and Canning (2000)

according to Odusola (1998) Gross fix capital formation is expected to have positive sign mainly because increase in capital formation represents an increase in investment and this is expected to cause increase in the national output.

In other words, Odusola studied the nexus between investment in human capital and growth of economic activities. Using the Nigeria data, he estimated three models and it was discovered that human capital formation is a crucial determinant of the growth process.

Test of the hypothesis

The study hypothesis is given as:

H_0: Government health expenditure does not have a significant impact on economic growth in Nigeria.

Decisioning:
Since the estimated coefficient of government expenditure on the health sector is statistically significant at a 5% level of significance, the study rejects the null hypothesis and accepts the alternative hypothesis. The study therefore concludes that the government E impact on economic growth in Nigeria.

Conclusion and recommendations

The conduct of this study yielded several important findings. These findings including: The study found that government health expenditure has a positive and significant impact on economic growth in Cross River and Akwa Ibom. The study also found out that the level of investment has a positive and significant impact on economic growth in Cross River and Akwa Ibom states. Furthermore, the results reveal that the level of health output funding has a positive and significant impact on economic growth in Cross River and Akwa Ibom states. On the other hand, the study result revealed that the health output has a positive but insignificant impact on economic growth in Cross River and Akwa Ibom states.

Conclusion

Based on the findings obtained from the test of hypotheses of this study, the following conclusions were drawn. That there exist a significant relationship between gross fix capital formation and gross domestic product growth. Also there exist a significant relationship be total health expenditure and gross domestics product growth in the two state under study. The findings equally leads us to the conclusion that government health expenditure has a direct impact of gross domestic product and health output funding exert a significant impact on Gross Domestic Product growth in Cross River and Akwa Ibom State of Nigeria

Policy recommendations

Conclusively, the following policy recommendation will be proffers for this study:

1. Based on the findings of the results Cross River and Akwa Ibom state should increase their funding on health investment to increase life expectancy and total output.
2. Cross River and Akwa Ibom State should increase health tourism by building an ultra modern seven star health facility respectively to boost health tourism and by so doing reduce capital flight and also increasing internally generated revenue in both states respectively

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