

Health Care Expenditure and Economic Growth in Nigeria: An Empirical Study

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Abstract

This paper investigated the relationship between health care expenditures and economic growth in Nigeria. The ordinary least square multiple regression analytical method was used to examine the relationship between health care expenditures and economic growth. The data analysis showed a significant and positive relationship between health care expenditures and economic. The study thus recommended that Nigerian policy makers should pay closer attention to the health sector by increasing its yearly budgetary allocation to the sector. Nevertheless the key to good results lies not in ordinarily increasing particular budgetary allocation but rather in implementing a public finance system that, to the extent possible, links specific expenditure and revenue decisions and ensure the usage of the allocated fund as transparently as possible.

Keywords: health care expenditure, economic growth, budgetary allocation, world health organization, life expectancy

INTRODUCTION

Better health care is a primary human need. According to the World Health Organization (WHO, 2005), fifty percent of economic growth differentials between developed and developing nation is attributable to ill-health and low life expectancy. Developed countries spend a high proportion of their Gross Domestic Product (GDP) on Health Care because they believe that their resident health can serve as a major driver for economic activities and development. To this end, Governments in Nigeria, over the years have been making frantic efforts at ensuring that there is an increase in the level of public expenditure on health. In 1970, recurrent expenditure on health was N12.48 million. This figure rose astronomically to N52.78 million and N132.02 million in 1980 and 1985 respectively. This trend continues as the expenditure rose steadily from 575.3 million in 1989 to N68.20 millions in 1991 and further to 72290.07 million and 98.200 million in 2007 and 2008 respectively. The aforementioned scenario clearly underscores the fact that health care expenditure in Nigeria has been on the increase over the years.

However, in spite of all these increase, much impact has not been made in the area of reduction of infant, under five and maternal mortalities since 1970. For instance, the Nigeria's rate of infant mortality (91 per 1000 live births) is among the highest in the world, and the immunization coverage has dropped below thirty percent while the mortality rate for children under age five is 192 deaths per one thousand. By year 2007, it was reported that more than one hundred and thirty four thousand women died from

pregnancy complications. In addition, the life expectancy ratio on the average has been on the decline over the study period. It should however be noted that despite the increase in government expenditure in health care in Nigeria, the contribution of this to health is still marginally low whereas the extent and magnitude of its impact on economic growth is undetermined. This is particularly worrisome as several questions have been raised on the situation. What has been the trend of expenditure on health in Nigeria? How has the expenditure profile impacted on health? Is there any relationship between the pattern of health expenditure and the rate of economic growth in Nigeria? Against this background, this paper seeks to examine the trend of health expenditure in Nigeria and its impact on economic growth. Following this introduction, the remaining parts of the paper is organized as follows: Section two covers the literature review and the theoretical underpinnings. Section three present the methodology of the study. Data analysis and interpretation of result is the main thrust of section four while section five draws up policy recommendation and conclude the paper.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

LITERATURE REVIEW

The interactions between health care expenditure and economic growth have received a lot of attention of researchers. Baldacci (2004) explore the role played by health expenditures. He constructed a panel data set for one hundred and twenty developing countries

form 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. 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 analysed 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 defence, but allocations to education and health sectors are inadequate when related to the benchmark and the performance of other countries.

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. Odusola (1998) studied the nexus between investment in human capital and growth of economic activities. Using Nigerian data, he estimated three models. It was discovered from the result of the three models that human capital formation is a crucial determinants of the growth process. 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. This study fills this gap by studying the extent and magnitude of health expenditures' contributions to the growth of Nigerian Economy.

THEORETICAL FRAMEWORK

Wagner's Law of Increasing State Activities

Adolph Wagner (1835-1917) was a German economist who based his law of increasing state activities on historical facts, primarily of German. According to Wagner, there are inherent tendencies for the activities of different layers of a government (such as central and state governments) to increase both intensively and extensively. There was a functional relationship between the growth of an economy and the growth of the government activities

so that the governmental sector grows faster than the economy. In the original version, it is not clear whether Wagner was referring to an increase in (a) absolute level of public expenditure (b) the ratio of government expenditure to GNP, or (c) proportion of public sector in the total economy. Musgrave's interpretation is that Wagner was thinking of (c) above. F.S. Witt not only supported Wagner's thesis but also concluded with empirical evidence that it was equally applicable to several other governments which differed widely from each other. All kinds of governments, irrespective of their levels, intentions and size had exhibited the same of increasing public expenditure as a result of the understated points.

Foremost as the traditional functions of the state were expanding, defence was becoming more expensive than ever before. Within the country, administrative set up was increasing both in coverage and intensity. The government machinery had to be manned by experts in their field. Administration justice and so on was becoming more extensive and cumbersome as the society progressed. An additional force pushing up public expenditure here is the fact that various complexities of social and economic nature develop which made an efficient administration also more complex and expensive.

Secondly, the state activities were increasing in their coverage. Traditionally, the state was limited to only defence, justice, law and order maintenance of the state and social overheads. But with the growing awareness of its responsibilities to the society, the government was expanding its activities in the fields of various welfare measures. These include the measures to enrich the cultural life of the society and also those design to provide social security to the people. State activities were also increasing on account of its effort in redistributing income and wealth.

Thirdly, the need to provide and expand the sphere of public goods was being increasingly recognized. The state was trying to shift the composition of national product in favour of public goods and this necessitated the expansion of the investment activities of the government. Wagner's law was based on historical facts. It did not show the inner compulsions under which a government has to increase its activities and public expenditures as time passes. His law was applicable to modern progressive governments only; in which the state was interested in expanding the public sector of the economy and undertakes other activities for the general benefit. This general tendency of expanding state activities has a definite long term trend, though in the short run, financial difficulties could come in the way. "But in the long run, the desire for development of a progressive people will always overcome these financial difficulties".

METHODOLOGY OF THE STUDY

This section address the issues that relate to the methodology of the study with emphasis being laid on the choice of the research design and strategies, data requirement and sources, the nature and types of data collected, the data processing and the parameters to be estimated. The section also specifies the model. Vital concepts and terms used were equally defined and described for the purpose of giving the reviewers and readers a deep insight into the phenomena under study.

The Data

Given the nature of the model, it is important that the data that will permit the estimation of the stochastic equations representing the impact of health care expenditure on economic growth has to be collected. These include the Gross Domestic product, the health expenditure, Gross capital formation and Labour force data. Time series data were used in the study and they are entirely secondary data. The data series covered the periods between 1970 and 2008. The data were obtained from the central Bank of Nigeria (CBN) bulleting and the Federal Bureau of statistics. The secondary data used for the study shall be estimated by the ordinary least square multiple regression analytical method.

The Hypothesis

This study verifies the null and the alternative hypothesis stated below:

Ho: There is no significant relationship between health care expenditure and economic growth in Nigeria.

Hi: There is a significant relationship between Health care expenditure and economic growth in Nigeria.

The Model

The economic growth model used in this study is based on the neo classical Solow production function but with little modification. According to solow's formulation, economic growth is a function of capital accumulation, an expansion of labour force and "exogenous" factor, technological progress which makes physical capital and labour more productive. That is:

$$Y_t = (K_t, A_t, L_t) \quad (1)$$

Where

Y_t = Aggregate real output.

K = Capital stock

A = Efficiency factor

t = Time dimension

L = Labour

But according to Odusola (2002), 'human capital influences economic growth and hence the model can be modified by adding Human capital ($H_{t-1-\beta}$), such that:

$$Y_t = K_t^\alpha H_t^\beta (A_t L_t) \quad (2)$$

The reduced equation for the above will appear as:

$$\text{Log } Y_t = \alpha \text{Log } K_t + \beta \text{Log } H_t + \beta \text{Log } (A_t, L_t) \quad (3)$$

Where

$\text{Log } Y_t$ = log of real output proxied as Log of Gross Domestic Product (IGDP)

$\text{Log } K_t$ = log of capital stock proxied as Log of Gross Capital Formation (LGCF)

$\text{Log } H_t$ = log of human capital proxied as Log of Health Care Expenditure (LHCE)

$\text{Log } L_t$ = Log of labour proxied as Log of Secondary School Enrolment (LSSE)

Based on the above formulations, the model can be re-written as:

$$\text{LGDP} = \alpha_0 + \alpha_1 \text{LGCF} + \alpha_2 \text{LTHE} + \alpha_3 \text{LSSE} \quad (4)$$

The *a priori* economic expectations are:

$$\alpha_0 > 0, \alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0$$

Equation (4) shall be estimated in the course of this study.

The Theoretical Proposition of the Model

In line with economic theory, it is expected that public health expenditure, the level of capital formation and labor productivity determine in part the level of economic growth in Nigeria. Public health expenditure is expected to have positive sign since an increase in public health expenditure is expected to improve the health of the labour force and consequently increase their productivity. An increase labour productivity will inevitably increase gross domestic output. 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 national output. The effect of labour force productivity is expected to be positive. This is because increase in labour force productivity will mean that greater output will be produced. At the same time, it enhances aggregate supply and sustainable development.

DATA ANALYSIS AND DISCUSSIONS

The Profile of Public Expenditure on Health in Nigeria

The financial commitments of government to the health sector are shown on table2. The table shows both the recurrent and capital expenditure on health. The capital expenditure of government decrease from N7.3 million in 1970 to N4.88 million in 1972 before it rose again to 126.75 in 1987. It dropped sharply to N79.2 million in 1982. From 1982 to 1987, capital expenditure on health decline from 72.9 to an all time low of 17.2. This development is occasioned by the fact government was more preoccupied in the business of paying workers salaries with less attention being paid to capital expenditure. In 1988 there was a significant rise to N297.96m. By 1991, the statistic dropped to N137.3m but plummeted to N33.72 in 1992. 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 stood at N64922.9 in 2008.

The recurrent expenditure on health also follows a similar trend. It rose gradually from N12.48m in 1970 to N59.47 in 1977 but fell to N40.48 in the successive year. The pattern of health expenditure at this period is a reflection of both the product of the disposition of government policy towards health issue and the determination of the federal government to inject the economy with the wind fall of oil revenue. Recurrent expenditure nose dived into N15.32m in 1979 before it rose to N52.79m, N84.46m N82.79 million in 1979, 1987 and 1983 respectively. From 1984 to 1986, recurrent expenditure rose from N101.55m to N134.12 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 N72, 290.07 in 2005, 2006 and 2007 respectively. Recurrent expenditure on health stood at N18200.0 million in 2008.

REGRESSION RESULTS AND DISCUSSIONS

The result of the equation estimated to verify the impact of Health care expenditures on economic growth is presented in the table 1 below:

Dependent Variable: LOG(GDP)

Method: Least Squares

Date: 03/15/11 Time: 15:22

Sample(adjusted): 1974 2008

Included observations: 35 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.425431	2.232189	2.878533	0.4375
LOG(GCF)	0.842972	0.205906	4.093965	0.0322
LOG(THE)	0.695571	0.053639	12.96760	0.0000
LOG(LABF)	0.448486	0.229408	1.954971	0.0713
R-squared	0.752337	Mean dependent var	12.88120	
Adjusted R-squared	0.746329	S.D. dependent var	2.252176	
S.E. of regression	0.630725	Akaike info criterion	2.023316	
Sum squared resid	12.33223	Schwarz criterion	2.201070	
Log likelihood	-31.40804	F-statistic	34.72832	
Durbin-Watson stat	1.983072	Prob(F-statistic)	0.000231	

The Theoretical Significance of the Parameter Estimate

Table 1 reported the ordinary least square multiple regression results. According to the results, gross capital formation has positive coefficients and it is significant at the 3% level. This result suggests a direct relationship between capital formation and gross domestic output in Nigeria. It indicates that a unit increase in the gross capital formation will increase the GDP by about 84 percent. This result is consistent with our a priori proposition. The health

expenditure has a positive sign and it is significant at 1% level. This result suggests a direct relationship between health expenditure and gross domestic output in Nigeria. It implies that the increase in health expenditure over the years has boosted national income. It shows that 1 percent increase in the health expenditure leads to about 69 percent increase in the real Gross Domestic product. Thus, other things being equal, the enhanced public expenditure policy of Nigeria may have contributed positively to real output growth in Nigeria. Labour force has positive coefficients and it is significant at 7% level. This variable appears to be relatively the least factor that contributes to output growth in Nigeria. This is, however, supported by the low magnitude of its coefficient. A 1% increase in this variable increases output by 44 percent.

The Statistical Significance of the Parameter Estimate

The statistical significance of the parameter estimate is verified by the adjusted R squared, the standard error test; the F-statistic and the Durbin-Watson statistics.

- (i) The value of the adjusted R-squared (R^2) for the model is very high, pegged at 74%. It implies that total health expenditure, the gross capital formation and Labour force explained about 74% systematic variations in real Gross Domestic Product (GDP) over the observed years in the Nigeria economy while the remaining 16% variation is explained by other determining variables outside the model. This result shows a goodness of fit of the regression.
- ii) For the model, when compared half of each coefficient with its standard error, it was found that the standard errors are less than half of the values of the coefficients of the variables. For instance the standard error of the total health expenditure which is 0.03639 is less than half coefficient of the variable which is 0.695571. Hence the variable is statistically significant. Again, the standard error for capital formation (0.205906) is less than half coefficient of the variable (i.e. 0.842972). Finally the standard error for labour force is 0.229408 and this is less than the value of its coefficient which is 0.448486. This shows that the estimated variables are all statistically significant.
- iii) The F statistic of 34.72 is significant at 5% level and this shows that the explanatory variables are important determinants of economic growth.
- iv) The value of Durbin Watson is 1.983072 for the model. This falls within the determinate region and implies that there is a negative first order serial autocorrelation among the explanatory variables in the model.

In summary, since all the econometric test applied in this study show a statistically significant relationship

between the dependent and independent variables from the model, thus, we accept the alternative hypothesis which states that: There is a significant relationship between Health care expenditure and economic growth in Nigeria.

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

This paper investigated the trend and impact of health care expenditure on economic growth in Nigeria between 1970 and 2008, using ordinary least square technique. The study found that the government of Nigeria had placed emphasis on the recurrent expenditure more than the capital expenditure on health in the period under study. The findings show a positive relationship between Health care expenditure and economic growth which is in conformity with our a priori expectation. The same relationship holds for the Gross Capital Formation and economic growth as well as labour force and economic growth. It was also discovered that gross capital formation has the greatest impact on output growth in Nigeria.

It can be concluded that public expenditure has vital relationship to the growth and development of any nation. It normally improves the health, the life expectancy, the efficiency and productivity of labour. The major policy recommendation that emerges from the study is the need for Nigerian policy makers to pay more attention to the health sector and increased its yearly budgetary allocation to it. Nevertheless the key to good results lies not in ordinarily increasing particular budgetary allocation but rather in implementing a public finance system that, to the extent possible, links specific expenditure and revenue decisions and ensure the usage of the allocated fund as transparently as possible. On a serious note, more emphasis should be placed on the capital expenditures on health as this will facilitate rapid development of the sector.

Finally, there should be training and retraining of health workers so that they can be more efficient and more workers (labour) should be recruited into the health sector so as to bring about growth not only in the sector but in the whole economy.

REFERENCES

- Agenor, P.R (2007): "Health and Infrastructure in a model of Endogenous Growth" *Journal of Macroeconomics* Vol. 28, 768-774.
- Baldacci, E.B. (2004). "The impact of poor Health on Total factor productivity". *The Journal of Development Studies* 42 (6). 918-938.
- Bloom, D.E., D Canning and J Sevilla (2004). "The Effect of Health on Economic Growth: A production function approach". *World Development*, 32(1): 1-13.

Chete and Adeoye (2002): "Human Resources Development in Africa". *The Nigerian Economic Society Selected Papers for the 2002 Annual Conference*. pp 79-102.

Greiner, A. (2005): "Fiscal policy in an Endogenous Growth Model with Public capital and pollution" *Japanese Economic Review*. Vol. 56, 67-84.

Martins, G.M. (2005): "On the concept of Health Capital and the demand for Health" *Journal Political Economy*. 80(2): 223-255.

Olaniyi O.O. and Adams A.A. (2002): "Public expenditures and Human Development in Nigeria" *Human Resource Development in Africa. 2002 Annual Conference papers*, NES, U.I. Ibadan pp 157-198.

Odusola, A.E. (1998): "Rekindling Investment and Economic Development in Nigeria. *NES Selected Papers for the 1998 Annual Conference*.

Strauss, J.E. and Thomas D. (1998): "Health Nutrition and Economic Development" *Journal of Economic Literature* 36(2): 766-817.

World Health Organization (2005). *World Health Development Indicators*. Washington, DC.