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GOVERNMENT HEALTH EXPENDITURE AND LIFE EXPECTANCY IN NIGERIA: EMPIRICAL ANALYSIS

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Abstract

This study has examined the nexus between government health finance and life expectancy in Nigeria. The study employs unit root test to determine the stationary state of the variables with the aid of Augmented Dickey-Fuller Test. It also employs the vectorauto regressive model (VAR) statistical technique to determine the dynamic relationship between the endogenous and exogenous variables. The findings emanating from the study indicate government recurrent expenditure on health engenders life expectancy. Premised on this, it is therefore recommended that the government of Nigeria should on yearly basis set aside greater proportion in the budget for health sector given that health persons (citizens) economy implies economy. Grants should be extended to medical practitioners for further training such that they can readily compete with their international counterparts.

Keywords: Government health finance, life expectancy, per capita income, registered medical doctors.

Introduction

There is no doubt a correlation exists between health and life expectancy of people in a country whether developed or developing ones. The well-being of people naturally would mean higher life expectancy, better productivity, output and economic improvements. Apart from the fact that better health engenders higher life expectancy, it could also enhances per capital income and economic welfare of a nation. While life expectancy may be very high in advanced countries like the US, Japan, Canada, Germany, amongst others, the same cannot be said in developing countries like Nigeria.

As noted by Bloom and Canning (2001), health is not just a basic human right, but improved health lowers mortality, morbidity and level of fertility as well as contributes significantly to increased productivity.In recognition of the importance of health as a public good, the World Health Organization (WHO) came up with a proposal at the 2010 World Health Assembly with certain vital outline that will address financing of health; the primary aim is to ensure qualitative and affordable health care services (Ataguba&Akazili, 2010).

Ritman (2012), surmises that the pattern of health financing is closely and indivisibly linked to the quality of health outcomes (health status), which often come by way of higher life expectancy with a view to achieving the long term goal of enhancing a nation's economic development. Given the correlation between health and life expectancy, governments all over the world have been taking varying steps for a better improvement. For instance, Muftandeen and Bello (2014), point out that as an evidence of its commitment towards the restructuring of the health sector in its fiscal operation, the Nigerian government has taken up the responsibility of providing good health care facility for its citizens by improving on the amount of its expenditure on health. Mordi (2007) reports that on the average, about 2.1% to 5.8% of total government expenditure was expended on health within 2000 and 2007. This is with the belief that it will improve the health of the citizenry and further translate into higher life expectancy.Despite this improvement in health spending, Nigeria still lagged behind compared to other countries in the continent.Graphically, Muftandeen and Bello (2014) compared the level of government financial commitment on health expenditure and outcome in terms of life expectancy rate of some countries in sub-Saharan African such as Ghana and Cote D'Voir that are believed to have achieved certain level of development with Nigeria. The startling figures lucidly indicate that between 2006 – 2011 excluding 2010, the country's (Nigeria) total expenditure on health remained the highest among the three countries, but in terms of outcome, Nigeria has continued to be at per with Cote D'Voire that has investment value in term of government health expenditure. They surmise further that infant mortality rate (IMR), the probability of dying before age one and under-five (child) mortality (U5MR), the probability of dying between birth and age five years expressed per 1000 live births have continued to be on the ascendancy.

There appears to be dearth of empirical positive evidences on the association between government health expenditure and life expectancy. Similarly, there are no studies that have considered exactly how government health expenditure impact positively on life expectancy in Nigeria to the best of our knowledge. Even some of the studies that have examined government health expenditure and outcomes have yielded mixed results (Rahman, Bassey, &Edu, 2011; Olayinka&Olanrewaju, 2013); Imoughele, 2013; Anyawu& Andrew, 2007). These existing gaps prompt the need to empirically investigate the relationship between government health expenditure and life expectancy in Nigeria.

Hardly do studies consider the correlation between total numbers of yearly trained registered medical doctors/ specialists and life expectancy. In developing countries like Nigeria, there have been series of chronic health cases referred abroad for further medical examination by experts/ specialists due to the under supply of needed health experts, given all other factors are held constant. There is no doubt this serves as threats to health status, specifically life expectancy. There are claims that some of the best doctors/ health experts in some developed countries are Nigerians. It is worrisome and one is apt to know the rationale behind it; although some studies as pointed out in this paper have emphasized fewer of the problems. Albeit, some of the reasons

advanced by them are either not satisfactory or sufficient condition, given the outcome of the analyses. Hence attempt is made as part of the objectives of this paperto empirically examine the association between the yearly numbers of trained doctors/ experts and life expectancy in Nigeria. These intended gaps to be filled succinctly spells out the novelty of this study in developing countries like Nigeria.

Against this background, this paper empirically examines the nexus between government health expenditure and life expectancy in Nigeria. Subsequently, section two is centered on the review of existing literature; section three is an explanation of the model and estimation procedure – section four is analysis and interpretation of the empirical results; section five is conclusion and recommendations.

Review of Related Literature

Conceptual Clarification

Health used to be viewed as an end product of the growth process; people with higher income were healthier because they had more power/command on the goods and services promoting health (Rengin, 2012). Wealth undoubtedly leads to health but health could be seen as a form of human capital and therefore it is seen as an input for the growth process; the countries with educated and healthy populations are in a better situation regarding welfare especially in a favourable policy environment (Alleyne& Cohen, 2002).

According to Idowu (2014), low life expectancy at birth, high infant and maternal mortality rates, malaria and tuberculosis afflictions are some of the characteristics features of the Nigeria's health status.

According to WHO(2004) note that lifeexpectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout Its Life.

Mohammad, Ezatollah and Sahar (2012), opine that the cost of government health expenses serve as government's spending cost on education and human resources will improve quality and increase life expectancy and longevity.

Ananya (2015) stresses that life expectancy refers to the number of years a person is expected to live based on the statistical average. Life expectancy varies by geographical area and by era. In the Bronze age, for example, life expectancy was 26 years, while in 2010, it was 67 years.In mathematical terms, life expectancy refers to the expected number of years remaining for an individual at any given age. The life expectancy for a particular person or population group depends on several variables such as their lifestyle, access to healthcare, diet, economical status and the relevant mortality and morbidity data. However, as life expectancy is calculated based on averages, a person may live for many years more or less than expected.

Theoretical Framework

Theories linking government health expenditure with life expectancy particularly are relatively scanty. This has actually led to researchers finding out an exact theory, and even this very attempt has further snowballed into diverse opinions. In other words, there is no one fix all theory. However, in the context of this study, we choose to link the nexus between government health expenditure and life expectancy, starting with economic growth oriented theory by Filmar and Pritchett (1999). The belief is that economic growth theory of health expenditure and health life expectancy emanates from the well-being (health) of the citizens of a country which has a positive

spiral effects, including influencing the overall economy. Particularly, Filmar and Pritchett (1999) point of view of economic growth theory link with health expenditure is that, macro- economic conditions explain most of the differences for instance on child and infant mortality rate. This obviously, falls within socio-economic status purview. The socio-economic status is believed to influence the proximate determinants of health and risk of diseases, which in turn directly influences health and mortality outcomes, e.g. by way of life expectancy (Muftaudeen & Bello, 2014).

Empirical Review

Several studies have been undertaken on the relationship between public (government) spending and health outcomes, not so much specifically with regard to life expectancy. Even the few studies done as regard public health expenditure on health outcomes have showedmixed result, hence inconclusive. Study by Gupta, Verhoeven and Tiogbon (2001), used cross-country data to show that the relationship between public spending on health and health status is significant and stronger for the poor people and argued that public health policy matters more to the poor.

Rajkumar and Swaroop (2008) in their study argue that it is not simply true that public health expenditure per se does not have any significant positive impacts but government efforts and bureaucracy, quality determined whether public spending could have a significant impact on the final health outcomes in terms of life expectancy.

Furthermore, a growing literature in recent years has tried to examine the link between governmenthealth expenditure and health outcomes especially as it affects life expectancy. The available studies so far document a range of effects – from no impacts, to limited impacts, and to impacts on only specific interventions.Early studies by Musgrove (1996) find no evidence that total spending on health has any significant impact on life expectancy by way of child mortality. Filmer and Pritchett (1999) ascertain that government health expenditures account for less than one-seventh of one percent variation in under-five mortality across countries, although the result was not statistically significant. They conclude that 95 percent of the variation in under-five mortality can be explained by factors such as a country's per capita income, female educational attainment, and choice of region. A number of other studies have linked changes in mortality rates in terms of resource use at hospital, managed care, educational status of parents, females and children, technological change.

Burnside and Dollar(1998) found no significant relationship between health expenditure spending and the change in infant mortality in low-income countries.Wagstaff and Cleason (2004) study showed that the impact of government expenditures on under-five mortality remains not significantly different from zero. A World Bank report includes an analysis of infant mortality and health expenditure using a panel of data for the Indian states during 1980-99 (World Bank, 2004). This study finds no effect of health expenditure on mortality rates once state fixed effects and alinear time trend are included in the model.Usingdata for 50 developing and transition countries observed in 1994, Gupta, VerhoevenandTiongson (1999) find that health expenditure reduces childhood mortality rates.

Some other studies at different times have found a positive relationship between spending on health and health outcomes (Berger & Messer, 2002), but others didnot find a significant relationship between the two variables (Filmer& Pritchett, 1999; Thornton, 2002). Still others, such as Baldacci et al. (2002), found that their results depend on the data set and/or estimation methods

used. All these studies, however, did find a positive and significant relationship between health outcomes and real per capita income.

Similarly, a number of other studies find that the contribution of health expenditure to health status—as measured by infant mortality or child mortality—is either small or statistically insignificant (Kim and Moody (1992), Musgrove (1996), Filmer and Pritchett (1997)

Nixon and Ulmann (2006) show that although health expenditure and the number of physicians have made significant contribution to improvements in infant mortality, health care expenditure has made relatively marginal contribution to the improvement in life expectancy in the EU countries over the period of the analysis covering 1980-1995. Also in a cross-sectional data covering 117 countries for the year 1993, Zakir and Wunnava (1997) find that government expenditure on health care as a percentage of GNP does not play a major role in determining infant mortality rates.

Anderson (1975), Leu (1986), Babazano and Hillman (1994) provide some evidence of a positive impact of public financing of medical care on overall mortality and morbidity rates.

Using pooled cross-country time-series data, a small negative relationship between health expenditure and mortality rates is found in a study by Hitiris and Posnet (1992). But their study controls for few factors other than health expenditure.

Hadley (1982) shows a positive relationship between health expenditure and health using county-level mortality data in the United States. In Europe, there is also some evidence pointing to a positive relationship between health care input and health outcomes (Forbes& McGregor, 1984; Elola et al., 1995).

The result from Gupta et al. (1999) show that health expenditure reduces childhood mortality rates, though the evidence is not so robust. Non-robustness as the authors acknowledged may be linked to the fact that the data on public health expenditure and mortality are unlikely to be comparable across countries.

A study of 81 countries covering mainly low income and middle income countries conductedby Gottret and Scieber (2006) find that a 10 percent increase in government health expenditure has alarger impact in reducing under-five mortality and maternal mortality than a 10 percent increase in education, roads and sanitation. Government health expenditure has as large an impact as income on under-five mortality but a smaller impact on maternal mortal. In addition, for a 10 percent increase in government health expenditure the decrease in maternal mortality is typically 1 percent point more than decrease in under-five morality.

Also Bokhari et al. (2007) provide econometric evidence linking a country's per capita income to two health outcomes: under-five mortality and maternal mortality. Their findings show that, the elasticity of under-five mortality with respect to government expenditures ranges from -0.25 to -0.42 with a mean value of -0.50. According to the authors, for developing countries, the result implies that while economic growth is certainly an important contributor to health outcomes, government spending on health is just as important a factor.

Ssewanayana and Younger (2004) found that, in Uganda, increase in health care expenditures, particularly on vaccination, will impact positively on infant mortality in Uganda by 2015. According to them, increasing vaccination rate to 100 percent would have the largest and probably most cost effective, impact, reducing infant mortality by 16 deaths per thousand birth. They, however, observe that given the strong impact of basic health care services on infant mortality rates, and the provision of public health services stagnated in the 1990s.

Day and Tousignant (2005), among others, examine the relationship between health outcomes and health spending in Canada for the periods 1960-1997, 1950-1997 and 1926- 1999 and conclude that although some causal relationships between a measure of the health status of the population and real per capita health expenditures were statistically significant, these relationships were not very strong. The authors indicated that their finding may be due to model misspecification or may reflect the fact that at high levels of population health, the returns to increases in health spending are small.

Yaqub, Ojapinwa and Yussuff (2012) empirically examined the relationship between public health expenditure and health outcome in Nigeria through the inclusion of governance variables. Governance variable for instance, was measured using corruption perception index. The result they obtained showed that public health expenditure has negative effect on infant mortality and under-5 mortalities, proxies for life expectancy when the governance indicators were included in the regression model. This further serves as a gap for investigation in this study. They stress further that the Nigeria's rate of infant mortality (91 per 1000 live births) is among the highest in the world.

Additionally, the result they obtained further reveals that life expectancy equation, and per capita incomes were rightly signed and significant. However, the coefficient of the variable was small. Similarly, public health expenditure was ascertained to have a negative and insignificant relationship with life expectancy. Population as a variable used was wrongly signed though significant. Furthermore, in Nigeria, for example, despite the huge government expenditures on health provision, the health status of Nigerians is consistently ranked low; the Nigerians rate of infant mortality (91 per 1000 live births) is among the highest in the world (Yaqub, et al, 2012).

Methodology

This study uses time series data for the period 1990 to 2014. One of the adduced reasons for the choice of this period is that the Nigerian health sector witnessed varying reforms and different regimes of government with policies affected it through health expenditures. It is therefore necessary to draw an influence as to what extent the life expectancy of the Nigerian citizens has been affected. The data for this study were collected from secondary sources such as World Health Organization (WHO), World Bank data base and the Central Bank of Nigeria (CBN) statistical bulletin for various issues. The study employs Vector Autoregressive (VAR) model to determine the response of life expectancy to its principal determinants, namely, government health expenditure, per capita income, literacy rate, trained number of doctors / health experts and savings. Vector Auto regressive model was used principally in the estimations of the parameters owing to its superiority to ordinary least squares model. Prior to the application of these methods, unit root test was carried out to determine the stationarity of the seriesso as to avoid spurious result through the use of Augmented Dickey-Fuller test. The estimation exercise was effectuated using E-views 7.0 package.

The model with which this study is undertaken is mathematically stated as follows:

LEXP = F(GREXH, PC, LITR, RHMP). The model is further stated in econometric (VAR estimation) form as:

$$LEXP_t = \beta_0 + \beta_1 \sum_{i-1}^{k} LEXP_{t-1} + \beta_2 \sum_{i-1}^{k} GREXH_{t-1} + \beta_3 \sum_{i-1}^{k} PC_{t-1} + \beta_4 \sum_{i-1}^{k} LITR_{t-1} + \beta_5 \sum_{i-1}^{k} RHMP_{t-1+} \mu t \ldots\ldots (1$$

$$GHEXP_t = \beta_0 + \beta_1 \sum_{i-1}^{k} LEXP_{t-1} + \beta_2 \sum_{i-1}^{k} GREXH_{t-1} + \beta_3 \sum_{i-1}^{k} PC_{t-1} + \beta_4 \sum_{i-1}^{k} LITR_{t-1} + \beta_5 \sum_{i-1}^{k} RHMP_{t-1} + \mu t \ldots\ldots (2)$$

$$PC = \beta_0 + \beta_1 \sum_{i-1}^{k} LEXP_{t-1} + \beta_2 \sum_{i-1}^{k} GHEXP_{t-1} + \beta_3 \sum_{i-1}^{k} PC_{t-1} + \beta_4 \sum_{i-1}^{k} LITR_{t-1} + \beta_5 \sum_{i-1}^{k} RHMP_{t-1} + \mu t \ldots\ldots (3)$$

$$LITR_t = \beta_0 + \beta_1 \sum_{i-1}^{k} LEXP_{t-1} + \beta_2 \sum_{i-1}^{k} GHEXP_{t-1} + \beta_3 \sum_{i-1}^{k} PC_{t-1} + \beta_4 \sum_{i-1}^{k} LITR_{t-1} + \beta_2 \sum_{i-1}^{k} RHMPt - 1 + \mu t \ldots\ldots (4)$$

$$RHMPt = \beta_0 + \beta_1 \sum_{i-1}^{k} LEXP_{t-1} + \beta_2 \sum_{i-1}^{k} GHEXP_{t-1} + \beta_3 \sum_{i-1}^{k} PC_{t-1} + \beta_4 \sum_{i-1}^{k} LITR_{t-1} + \beta_5 \sum_{i-1}^{k} RHMP_{t-1} + \mu t \ldots\ldots (5)$$

Where μ is the stochastic error term which is assumed to have zero mean and constant variance therefore, the parameters to be estimated include

$$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4,$$

Where

LEXP represents Life Expectancy, $\beta_1 - \beta_4$ represent coefficient of the explanatory variables. GREXP represents government recurrent health expenditure, PC represents per capita, LITR represents literacy rate and RHMP represent trained number of medical doctors on yearly basis whileu_t is the error term; t represents the time period of the variables in the construct.

The a-priori expectation of the study is$\beta_1 - \beta_4 > 0$. The implication of this is that all the exogenous variables are expected in line theory to positively influence or enhance life expectancy. In other words, our proposition is that increased government expenditure is a correlate with higher life expectancy.

EMPIRICAL ANALYSIS

Premised on the methodology specified in the section three above, all the variables in the construct were subject to stationarity test. The Augmented Dickey Fuller (ADF) test was employed to effectuate this. The result of this test is presented in the table below:

Table A: Augmented Dickey Fuller (ADF) Test for Variables Stationarity

Variables	ADF statistics	Test critical value	Decision Rule
LEXP	-3.866817	-3.012363	Stationary at second level
GREXH	5.042671	-3.029970	Stationary at level
LITR	-6.722574	-3.004861	Stationary at first difference
RHMP	-4.691146	-2.998064	Stationary at first difference
PC	-5.087660	-3.234177	Stationary at first difference

Source: Authors' computation using E-view 7.0

From the table above, it can be observed that all the variables are integrated at varying orders and at 5% significant level. Government recurrent expenditure on health is stationary at second difference; expectancy is stationary at second difference while both literacy rate, per capita income and registered medical practitioners are stationary at first difference. This assist to use the estimation technique specified earlier.

Table B: Vector Autoregressive Estimates

Vector Autoregression Estimates
Date: 01/20/16 Time: 05:26
Sample (adjusted): 1992 2014
Included observations: 23 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LEXP	GREXH	PC	LITR	RHMP
LEXP(-1)	1.382594	17510.27	172.8914	0.246841	-6154.499
	(0.17526)	(17595.5)	(307.212)	(5.18550)	(20608.3)
	[7.88877]	[0.99516]	[0.56278]	[0.04760]	[-0.29864]
LEXP(-2)	-0.318351	-8920.462	-64.44280	-1.782462	7628.505
	(0.18559)	(18632.3)	(325.315)	(5.49106)	(21822.7)
	[-1.71536]	[-0.47876]	[-0.19809]	[-0.32461]	[0.34957]
GREXH(-1)	1.33E-05	0.435858	0.001690	1.58E-05	0.090922
	(2.4E-06)	(0.23871)	(0.00417)	(7.0E-05)	(0.27958)
	[5.58672]	[1.82593]	[0.40555]	[0.22437]	[0.32521]
GREXH(-2)	-3.95E-06	-0.268227	-0.002263	4.03E-05	-0.068520
	(2.5E-06)	(0.24697)	(0.00431)	(7.3E-05)	(0.28925)
	[-1.60616]	[-1.08609]	[-0.52484]	[0.55393]	[-0.23688]
PC(-1)	-0.000171	104.3889	0.721976	0.007060	17.51640
	(0.00017)	(17.2992)	(0.30204)	(0.00510)	(20.2613)
	[-0.99344]	[6.03431]	[2.39034]	[1.38471]	[0.86452]
PC(-2)	-0.000948	-82.13541	0.037654	0.000576	-1.586710
	(0.00027)	(27.5416)	(0.48087)	(0.00812)	(32.2574)

	[-3.45397]	[-2.98224]	[0.07830]	[0.07101]	[-0.04919]
LITR(-1)	0.002792	-2128.852	-42.81281	-0.166644	-2590.833
	(0.01018)	(1021.78)	(17.8400)	(0.30113)	(1196.74)
	[0.27437]	[-2.08347]	[-2.39982]	[-0.55341]	[-2.16491]
LITR(-2)	0.025539	1131.474	34.12297	-0.204636	946.1494
	(0.01379)	(1384.72)	(24.1768)	(0.40809)	(1621.82)
	[1.85164]	[0.81711]	[1.41139]	[-0.50146]	[0.58339]
RHMP(-1)	1.70E-06	0.103379	0.003172	1.89E-05	0.645875
	(2.5E-06)	(0.25020)	(0.00437)	(7.4E-05)	(0.29304)
	[0.68393]	[0.41318]	[0.72608]	[0.25635]	[2.20402]
RHMP(-2)	7.48E-07	0.215961	0.001806	-6.73E-05	-0.193092
	(2.1E-06)	(0.21527)	(0.00376)	(6.3E-05)	(0.25213)
	[0.34893]	[1.00321]	[0.48060]	[-1.06110]	[-0.76584]
C	-4.190269	-339512.1	-4437.418	144.8249	28471.45
	(2.19519)	(220387.)	(3847.90)	(64.9495)	(258124.)
	[-1.90884]	[-1.54052]	[-1.15320]	[2.22981]	[0.11030]
R-squared	0.999013	0.984274	0.974315	0.761161	0.829741
Adj. R-squared	0.998190	0.971168	0.952910	0.562128	0.687859
Sum sq. resids	0.173329	1.75E+09	532570.3	151.7335	2.40E+09
S.E. equation	0.120184	12065.93	210.6677	3.555904	14131.94
F-statistic	1214.522	75.10456	45.51932	3.824296	5.848103
Log likelihood	23.57707	-241.3111	-148.2103	-54.33184	-244.9463
Akaike AIC	-1.093658	21.94009	13.84437	5.681030	22.25620
Schwarz SC	-0.550596	22.48316	14.38744	6.224092	22.79926
Mean dependent	48.05391	63592.69	1029.327	59.16087	28103.04
S.D. dependent	2.825212	71059.92	970.8112	5.373736	25294.53
Determinant resid covariance (dof adj.)		2.64E+18			
Determinant resid covariance		1.02E+17			
Log likelihood		-613.5648			
Akaike information criterion		58.13607			
Schwarz criterion		60.85138			

Source: E-VIEWS 7.0

From the result above, the adjusted R-squared indicates that about 99% of the total variation in life expectancy (LEXP) was explained by the exogenous variables in the model, leaving the 1% uncounted for due to the presence of stochastic error term. This portrays a good fit and the f-test indicates further that the model was well specified. It also suggests that all the explanatory

put together contribute towards enhancing life expectancy in the period observed. The minimum value of the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) are –1.093 and –0.550 respectively which clearly shows that the model is partially free from autocorrelation problems.

The individual explanatory variables reveal varying influences on the endogenous variable, life expectancy. The first lag of LEXP, GREXH, LITR and RHMP significantly enhance the current level of life expectancy in Nigeria in the period under examination and is statistically significant at 1 percent level. This suggests that the previous year levels of life expectancy, government recurrent expenditure on health, literacy rate and registered health medical practitioners were positive and significantly improved life expectancy particularly in the long-run. This is consistent with the stated apriori expectation of the study. Only the lag of per capita income (PC) is negatively signed and is not statistically significant towards the current level of life expectancy in model. Similarly, the second lag of LEXP, GREXH, and PC were negative and statistically significant at 95% and 99% levels on the current level of life expectancy. This implies that these variables majorly contribute to life expectancy rate in Nigeria. It can be observed that two period lag of literacy rate and registered medical practitioners (doctors) improve life expectancy rate and were statistically significant at 1% level. About 99% systematic variation in life expectancy is explained by the model; thus indicating goodness of it.

The estimated model 3.2 shows that Government recurrent expenditure on health is the endogenous variable. The individual explanatory variables which include life expectancy, one year lag of government expenditure on health, per capita income, and registered health manpower positively determine government on health. They were statistically significant at 1% level except literacy rate which shows a contrary sign and is not statistically significant. The second lag of LEXP, GREXH and PC contribute negatively to GREH in Nigeria and were not statistically significant at the 95% and 99% levels. Only the second lag of LITR and RHMP contribute positively to government expenditure on health. About 97% systematic variation in government expenditure on health is explained by the model.

About 95% total systematic variation in per capita income was explained by the model, leaving 5% unexplained due to the presence of stochastic error term. The past lag of GREXH, LEXP, and RHMP enhances per capita income. They were not statistically significant at 9% level. The second lag of LEXP, GREXH, LITR and RHMP had negative signs on current level of per capita income.

The coefficient of determination of LITR is 0.562128, implying that approximately 56% systematic variation in literacy rate is explained by the regression model. The remaining 44% is unaccounted for due to stochastic disturbance term. The first lag of LEXP, GREXH PC and RHMP were positively sign towards literacy rate and were statistically significant at 95% level. This connotes that the prior year level or value of these variables assist to improve the literacy rate. The second period lag of RHMP, LITR and LEXP are negative and do not significantly improve literacy rate at 1% level.

About 68% systematic variation in registered health medical practitioners was explained by the model, thus leaving by about 32% unaccounted for as a result of the presence of error term. In a nutshell, it can be adduced that government recurrent expenditure on health; per capita income, literacy rate and registered health medical practitioners (doctors) significantly contribute to life expectancy in Nigeria. The empirical validation is quite consistent with the apriori expectation of the study and existing theory.

Discussion of Findings

The importance of adequate government budgetary allocation to recurrent expenditure on health towards the improvement of life expectancy cannot be over emphasized. A lot of variables have

been used by prior researchers alongside with government health expenditure to determine health outcome. This study contributes to the frontier of knowledge though inclusion of registered health medical practitioners is to examine how it significantly contributes to life expectancy in Nigeria.

The study found that government recurrent expenditure on health contributes to life expectancy and is statistically significant under the period observed. It is an indication that improvements in life expectancy should engender better life expectancy and consequently improve the overall growth of the economy.The finding is consistent with that of Ritman (2012); Rajkumar and Swaroip (2008), Berger and Messer (2002). It is however contrary to Bhunside and Dollar (1998), Musgrove (1996); Kim and Moody (1992); Filmar and Pritchett (1997).

Per capital income as revealed by this study improves life expectancy and statistically significant. The attainment of macro-economic goal through relevant fiscal policy most often causes better income redistribution, promote industrialization and significantly reduce poverty level. This in turn enhances good standard of living and further influence better life expectancy. The finding is tandem with Bokharl et al (2006).Registered health medical practitioners contribute to life expectancy and are statistically significant. It is a suggestion that higher and quality medical practitioners and expects in the medical field, given the availability of medical facilities, adequate government finding will promote life expectancy. It helps to minimize capital outflow and consequently the growth of the economy. The finding correlates with Nixon and Ulmann (2006).

Conclusion and Recommendations

This study has robustly determined the impact of government health expenditure on life expectancy in Nigeria. The variables employed indicate that better life expectancy can be achieved in Nigeria given improved per capita income, literacy rate, government health finance and adequate supply of medical practitioners and experts in specialized medical field.

It is therefore suggested thatthe government of Nigeria should on yearly basis set aside greater proportion in thebudget for health sector given that health persons (citizens) economy implies economy. This will further assist in income redistribution, increase in per capita income, high standard of living, and consequently the growth of the economy. This again could also lead to the achievement of macro- economic stability and the vision 20;20:20. The current administration of government should make it a priority to avoid the incessant occurrence of industrial strike action particularly in the health sector. Furthermore, grants should be extended to medical practitioners for further training such that they can readily compete with their international counterparts. This will encourage medical research institutes in the country and much more foreign investors.

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APPENDIX

DATA USED FOR REGRESSION ANALYSIS

YEARS	LEXP	GREXH	PC	LITR	RHMP
1990	45.2	500.7	359	52.2	19125
1991	45.64	618.2	332	54	20210
1992	45.53	150.16	313	54	21325
1993	45.42	3871.6	309	55	21739
1994	45.29	2093.98	277	55	0
1995	45.18	3320.7	275	55	0
1996	45.12	3023.71	287	56.8	24536
1997	45.13	3891.1	294	56.8	23128
1998	45.25	4742.27	298	57	24538
1999	45.49	16638.77	297	57	25950
2000	45.83	15218.08	375	57	27617
2001	46.27	24522.27	348	57	0

2002	46.79	40621.42	455	57	634
2003	47.35	33267.98	508	57	643
2004	47.92	34198.48	644	62	711
2005	48.47	55663	803	62	715
2006	49	62253.62	1015	53	708
2007	49.51	81909.37	1133	56	55376
2008	50	98219.32	1381	64	56526
2009	50.48	90202.6	1090.75	53	58325
2010	50.95	99119.92	2310.86	60.1	61770
2011	51.41	231803.5	2507.68	68	60048
2012	52.65	197900	2742.22	68	60909
2013	53.1	180000	3005.51	70	60478
2014	53.1	180000	3005.51	70	60694

Source: Extracted From Cbn Bulletin and National Bureau of Statstics, Various Issues.