INNOVARE JOURNAL OF SOCIAL SCIENCES

Vol 2, Issue 3 , 2014 ISSN 2347-5544

Original Article

PUBLIC HEALTH CARE EXPENDITURE IN NIGERIA: CIVILIAN VERSUS MILITARY REGIMES

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Received: 25 April 2014, Revised and Accepted:14 May 2014

ABSTRACT

The study examines the determinants of public health expenditure in Nigeria for the period of 1977 to 2008. The study employs Augmented-Dickey Fuller (ADF) test for unit root, Engle-Granger (1987) approach for cointegration. The ADF test suggests that the variables are mean reverting series at level, while some became stationary after first order difference. The result of the cointegration confirms that there is a long-run relationship between per capita health care expenditure and its economic determinants: per capita income, petroleum prices, population with age below 15 years, under-five mortality, inflation rate, unemployment rate and regime of government. The results show that public health care expenditure in Nigeria is income inelastic and positive; implying that health care in Nigeria is a necessity rather than a luxury. Medical progress, which represents the level of advancement of the health sector, is also a core determinant of public health care expenditure in Nigeria, shows that Nigerian health sector is underdeveloped and is yet to utilize modern treatment options. The results further show that military government regime spends less on health care than civilian government regime by about 75.59%. This suggests that civilian government is not only more people-oriented, but also more responsive to the health care needs of the people. Hence, government intervention (both direct and indirect) is required to improve the health status of Nigerians.

JEL Classification Code: C32, 114, 115, 118

Keywords: Health, Expenditure, Mortality, Income, Nigeria.

INTRODUCTION

Health care is a shared responsibility in all Nigerian constitutional set-ups, amongst the federal, state, and local governments. The local government is supposed to take care of the primary level (emphasizing preventive Medicare–health clinics, dispensaries, etc.), while state government is responsible for the secondary level (emphasizing curative Medicare/ first referral- general hospitals, etc). The federal government, on the other hand, is in charge of the tertiary level of care (emphasizing referral Medicare) to which teaching and specialist hospitals belong (Anyanwu, Oyefusi, Oaikhenan and Dimowo, 1997). General health status of Nigerians is measured by life expectancy at birth. The general health of the population has taken a nosedive. In other words, health indicators in Nigeria are below what would be expected from a country with its level of GDP. In 1991, the life expectancy at birth was 53.8 and 52.6 years for females and males respectively, but dropped to 48 years for females and 47 for males in 2005, six years after re-establishing democratic governance (World Health Organization, 2007). Currently the life expectancy is about 47 and 45 years for females and males respectively. These figures are slightly higher than that of Niger but lower than Cameroun, neighbouring countries to the north and east.

Government - funded public health activity is an indispensable part of the Nigerian health care system. Public health activities can be viewed as a form of investment in the overall health status of a nation. Again, public health can be described as the organized response by society to protect and promote health, and to prevent illness, injury and disability. The starting point for identifying public health issues, problems and priorities, and for designing and implementing interventions, is the population as a whole, or population subgroups. Public health is distinguished from other roles of the health system by its focus on the health and wellbeing of populations rather than individuals. Public health programmes are usually aimed at addressing the factors that determine health and causes illness, rather than their consequences, with the aim of protecting or promoting health, or preventing illness (Australian institute of Health and welfare, 2008). Public health expenditure is commonly defined to include such costs along with expenditure from public budgets (Musgrove, 1996).

According to federal ministry of health, the decline in life expectancy could be attributed to a sharp rise in mortality among people infested with HIV/AIDS. While only 50,000 persons died of AIDS in Nigeria in 1995, by 2000, the figure had risen to 209,000 (Federal Ministry of Health, 2002). In 2006 Federal Ministry of Health (FMH) reported that about 72% of deaths in Nigeria were due to communicable diseases. Infant mortality rate in 2008 was 75 deaths per 1000 live births while the overall under-five mortality rate for the same period was 157 deaths per 1000 live births. Total fertility rate for the country was 5.7 in 2008. According to 2007 Multiple Indicator Cluster Survey (MICS), 8.3% of children were underweight, while 19.4% were stunted. One million Nigerian children under five die annually (National Bureau of Statistics, 2006). There is great inequality in immunization coverage by urban and rural with one-third of urban children being immunized before their first birthday and only 10% of rural children being so. Maternal mortality is the highest in Africa with 1,100 mothers dying per 100,000 live births (WHO, 2006). Tuberculosis (TB) incidence has more than doubled in the last two decades with 311 new cases per 100,000 individuals in 2007 implying over 450,000 new cases per year. TB prevalence is equal to over 890,000 individuals infested.

Hence, in terms of government expenditure on health, according to the United Nations Development Programme (UNDP), government expenditure as a percentage of GDP was 1.3% in 2003 a decline from 2.2% in 2000. In regard to expenditure as a percentage of total expenditure on health, the Nigerian government's share were 21.7%, 21.8%, 21.9%, 26.1%, 29.1%, 33.5%, 31.4%, 25.6%, 27.4%, 30.8%, 30.9%, and 30.1% in 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005 and 2006 respectively (WHO, 2006), lagging behind many other African counties, even those similarly classified by the World Bank as low income economies. In per capita terms, public spending on health stands at less than $5, and in some parts of the country can be as low as $2, far less than the $34 recommended by the World Health Organization (WHO) for low income countries within the macroeconomics commission Report.

Apparently, this level of spending will make it extremely difficult to provide even the most basic services. However, the current United Nations Education, Scientific, and Cultural Organization (UNESCO) benchmark for public expenditure on health is 25% of the entire budget.

The public and private sectors are partners in delivering health care in the country. While public health expenditure in Nigeria is 1.3% of Gross Domestic Product, private health expenditure is 3.7% (UNDP, 2006). The decline in quality of services provided at public health facilities which, as noted earlier started in mid-1980s led to the emergence and continued growth of private hospitals and clinics in virtually all parts of the country. The surge in number of these facilities has been so rapid that it is estimated that more people receive treatment from them than from public facilities. According to WHO, private expenditure on health as a percentage of total expenditure on health were 88.3%, 84.6%, 84%, 85.9%, 76.8%, and 69.6% in 1997, 1998, 1999, 2000, 2001, and 2004 respectively, and this figure is bound to rise unless there is an urgent and significant infusion of resources to the public sector. Because no such changes have been made, the growth in the proportion of health care provided at private facilities continues to increase, resulting in escalation of cost of treatment and, consequently, diminished access as the cost is unaffordable by most people. There is no social security programme and until recently, there was no health insurance system in the country. As a result, payment for health care is directly made out of pocket in most instances there are private companies underwriting health insurance but their services are grossly under utilized due to high premiums.

The budgeting system in Nigeria has gone through several changes. Specifically, Nigeria changed from zero-based budgeting in 2005 to programme-based budgeting called Medium Term Expenditure Framework (MTEF). MTEF is a tool for linking policy, planning and budgeting over a medium term (usually three years) at the sectoral or national levels. It is worthy to note that the health care sector does not work like a normal economic sector. Government intervention is very frequent to make up for the existence of many uncertainties and negative externalities (Musgrove, 1996). Thus, governments intervene both directly through provision and funding, but also indirectly, through regulation. Governments have to balance the often conflicting goals of equity and efficiency of health provision.

Previous studies in Nigeria have not really explored the determinants of public health expenditure in Nigeria because out-of-pocket spending is still the leading source of health care financing in Nigeria in spite of its costs implications. The current overburden of the households requires an examination of alternative financing sources. There is a need to investigate these alternative sources of health care financing and their determinants, and why they are very important for the improvement of health outcomes in Nigeria. This study does a critical examination of determinants of public health expenditure in Nigeria by incorporating other core determinants of public health expenditure such as, age structure of the population with age below 15 years, medical progress, and institutional variable or factor not explicitly taken into account by previous studies. Hence, the objectives of this study are: first, to find the relationship between public health expenditure and per capita income; second, to find the relationship between public health expenditure and medical progress in Nigeria; third, to find the relationship between public health expenditure and population with age below 15years; and finally, to find the relationship between public health care expenditure and different government (military and civilian) regimes in Nigeria.

Literature Review

Public Health care expenditure growth and its determinants is one striking issue in health policy debate around the world. An important component of human capital formation is improvement in health status of a nation. This can lead to longer life expectancy, shift the labour supply curve rightward, increase labour productivity, and increase the productivity of investment and other forms of human capital, particularly education. One of the issues, which have captured most of the debate, is whether health care is a luxury good. For instance, Judge and Gan (1998) conducted a study on the effect of health care spending and welfare improvement in developed countries. The results suggest that state spending on welfare including health affect the mortality rate and infant birth through social and medical mechanisms. Di Matteo and Di Matteo (1998) examined the Canadian provincial government health expenditure from 1965 to 1991, and reported income elasticity of 0.77. This implies that health care is not a luxury good, while Getzen (2000) argued that while evidences point out that health care is a luxury good at the individual level, it is a necessary good in general.

O' connell (1996), Gerdtham, Sogaard, Macfarian and Oxley (1998), Roberts (2003), Okunade, Karakus and Okeke (2004) and Christiansen, Bech, Lauridsen and Nielson (2006), all reported a significant effect of institutions on health care expenditure. Gerdtham et. al. (1998) and Christiansen et. al. (2006) suggested that tobacco is associated with higher care expenditure. He further reported no significant effect of alcohol consumption in their study of behaviour and health effect. Murthy and Okunade (2001) used cross sectional data from forty four African countries for year 2001 to study the link between real per capita health expenditure(HEXP) and host of economic and non- economic factors. The results indicate that real per capita foreign aid resources correlate with HEXP. This empirical results suggest that healthcare in African context is technically, a necessary rather than a luxury good. Okunade (2005) conducted a study on the determinants of health care expenditure in African countries using 1995 cross-sectional data for twenty six African countries. The results suggest that income inequality dampens, while ODA and population per health personnel raise health care expenditure.

There are few reports on Nigerian economy. For instance, Imobighe and Orubu (1999) studied the determinants of government expenditure on the indicators of health in Nigeria. They employed a multivariate regression model, and reported that petroleum revenue is a significant determinant of health expenditure, but the effect is small in value to be of critical significance. Similarly, Adeniyi (2005) investigated public health expenditure and human capital in Nigeria. The results suggest that on the basis of the impulse response function, shocks (innovation) significantly reduce human capital expenditure in the short-run. Amaghionyeodiwe (2007) reported that both distance and money prices are significant factors in discouraging individuals from seeking modern health care services, but money prices is less important as a determinant of the choice of health care provider in Nigeria. In another study, Amaghionyeodiwe (2009) examined whether or not government health care spending reduces the poor-rich differences in health status in Nigeria. The results suggest that despite the increase in most components of health care spending in Nigeria, the health status of the average Nigerian and the condition of health infrastructure has not improved appreciably. Omotor (2009) examined the determinants of federal government health expenditure in Nigeria for the period of 1970 to 2003. The results suggest that health expenditure in Nigeria is income inelastic (0.475) and positive. The implication is that health expenditure in Nigeria is a necessity rather than a luxury. Similarly, Bassey, Jude, Bassey and Enya (2010) studied the relationship between levels of government health care expenditure and health status in Nigeria for the period of 1980 to 2003. The results have it that life expectancy and literacy rate are negatively correlated with health care expenditure both in the short- and long-run, income elasticity of health care expenditure is below unity both in the short- and long-run.

Methodology and Data

The data employed for the study are annual time-series over the period of 1977 to 2008. The were obtained from Central Bank of Nigeria (CBN) statistical bulletins of 2007 and 2008, United States Census Bureau (Population Division), National Bureau of Statistics (NBS) bulletin of 2009. Data transformations that were performed are: the population with age below 15years for each year was gotten by summing up these age groups: 0-4, 5-9, and 10-14. Public health expenditure was gotten by summing up capital and recurrent health

expenditures. Per capita public health expenditure was gotten by deflating public health expenditure by the total population. Also, per capita income was gotten by deflating Nominal GDP by the total population.

The Model

The study adopts the methodology employed by Di Matteo (2004) since similar variables are being considered. It is pertinent to note that the major area of divergence is in the introduction of different regime of government proxied by a dummy variable, population with age below 15 years, unemployment rate, petroleum prices and inflation rate.

Log (PUBHEX) = β_0 + $\beta_1$log (GDP) + $\beta_2$log (PP) + $\beta_3$log (POPB15) + β_4U5MR + β_5INFR + β_6UNEMPLR + β_7ROG + U_t ……(1)

where;

PUBHEX = Per capita Public health expenditure, GDP = Per capita income, PP = Petroleum Prices, POPB15 = population with age below 15 years, U5MR = under 5 mortality rate, INFR = Inflation rate, UNEMPLR = Unemployment rate and

ROG = Regime of Government (1 for military regime and 0 for civilian regime).

β_1, β_2, β_3, β_4, β_5, β_6, and β_7 are the partial slope coefficients or parameters, β_0 = intercept term, U_t = stochastic error term.

Empirical Results

Unit Root Test

First, we performed unit root test on the variables using Augmented Dickey-Fuller (ADF). The results reported in table 1 below, indicate that all variables became stationary after first difference, except PUBHEX, GDP, POPB15 and INFR that are stationary at level form at 5% level of significance. Given the unit-root properties of the variables, we proceed to Engle-Granger (1987) cointegration test to establish whether a long-run relationship exists amongst the model variables.

Table 1: ADF Unit Root Test Results

Variable	I(O)	I(I)	Critical Values at 5% level of significance
LOG(PUBHEX)	0.672072	-4.694861*	-2.9665
LOG(GDP)	2.682568*	-2.214157*	-1.9530
LOG(PP)	-0.834650	-4.246562*	-2.9665
U5MR	-4.329397*	-	-3.5670
INFR	2.034616	(-5.434191)*	-2.9705
UNEMPLR	-1.437841	-4.719768*	-2.9665
ROG	-1.790343	-4.364828	-2.9665

Note: * indicates significant at 5%.

Cointegration Test

Table 2: Engle-Granger (1987) Cointegration Test Results

ADF Test statistic	ADF critical Value	Level Of Significance
-3.629284	-2.9027	5%

The result of the cointegration test is reported in table 2. Based on the ADF statistics, we reject the null hypothesis of no cointegration between the variables. Thus, at 5% level of significance, cointegration is established.

REGRESSION RESULTS

Table 3: Regression Results

Log(PUBHEX)	-13.212	+0.667log (GDP)	-0.493log(PP)	+0.101log(POPB15)
	(0.321)	(2.326)*	(-1.709)**	(0.0445)
-0.073U5MR	-004INFR	-0.016UNEMPLR	-0.616ROG	
(-3.104)*	(-0.835)	(-0.688)	(-2.639)*	
R^2=0.966, DW = 1.924, F – stat. = 98.087				
Diagnostic checks:		Test statistic		Critical value
Heteroscedasticity:		24.14		28.8693

Note: * and ** denote significance levels of 5% and 10%. Also, the values in parenthesis are t-statistic. The base category for the dummy (ROG) is civilian government.

The signs of all the variables in table 3, except petroleum price, Inflation rate, under five -mortality and unemployment rate are in line with economic theory. The results suggest that a change in income leads to a less than proportionate change in per capita public health expenditure. The implication of this is that health expenditure is a necessity in Nigeria. This evidence is consistent with the findings of Di Matteo and Di Matteo (1998), Freeman (2003) and Omotor (2009). Per capita public health expenditure is not very responsive to changes in petroleum prices. The elasticity of per capita public health expenditure shows that per capita public health expenditure in Nigeria increases less than the increase in the dependent population which is proxied by the population with age below 15 years. The coefficient of under-five mortality which is a proxy for medical progress is negative, meaning that per capita public health expenditure in Nigeria falls by approximately 7.3% when under-five mortality rises by 100%. The coefficient of inflation rate (price level of health care) is negative. This means that per capita public health expenditure in Nigeria falls by approximately 0.35% when inflation rate, a proxy for the price level of health care rises by 100%. The coefficient of unemployment rate is negative. It shows that public health expenditure in Nigeria falls by about 1.61% when unemployment rises by 100%. The coefficient of regime of government is negative and conforms to a priori expectation. This gives -75.79%, suggesting that the military government's median per capita public health expenditure in Nigeria is lower than that of the civilian government by 75.59%.

CONCLUSION AND POLICY IMPLICATIONS

The study shows that per capita income is a core determinant of public health expenditure in Nigeria and also, income inelastic (0.67) implying that health care is a necessity rather than a luxury in Nigeria. Medical progress, which symbolizes the level of advancement of Nigerian health sector, is also a core driver of public health expenditure in Nigeria though it possesses the wrong sign which means that Nigerian health sector is underdeveloped and lacks adequate funding to match the increasing demand for health

care in Nigeria. The most fascinating result of this study is that given by the regime of government, which shows that military government spends less than civilian government by about 75.59%. This shows that civilian regime is not only more people oriented, but also more responsive to the health care needs of the people. The dependent population determines public health expenditure in Nigeria but it is not a core determinant of public health expenditure in Nigeria. Petroleum prices, inflation rate, and unemployment rate not only have the wrong signs but also, are not core determinants of public health expenditure in Nigeria.

Hence, government intervention (both direct and indirect) is needed to improve the health status of Nigerians. This study recommends that there should be public-private partnership in health care provision and funding in Nigeria. However, it is pertinent to point out areas where further studies are needed. It has been mentioned earlier that the starting point for public health activity is the population as a whole. Again, it has also been identified that the dependent population needs more funding than other age groups, as a result of this, there is the need to further investigate which age group among the dependent population needs more funding or attention than others. Furthermore, there is the need to investigate the role of the private sector in health care provision and funding in Nigeria in terms of whether they play a complementary or substitute role to the public sector.

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