

The Contribution of Nigeria Health Sector Recurrent Spending on Its Output (1961-2012)

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Abstract

Health sector in any country has been recognized as the primary engine of growth and development. This study makes a modest contribution to the debates by empirically analyzing the contribution of Nigeria Health sector recurrent spending on its output using time series data from 1961 to 2012, obtained from the Central Bank of Nigeria. It employs the Ordinary Least Square (OLS) regression technique and Pair wise Granger Causality tests. The estimation reviews that Political Stability (PSB) and Consumer Price Index (CPI) in Nigeria have positive effect on Total health output (HGDP) while Total Government Recurrent Expenditure on Health (TGREH) has a negative effect on Total health output (HGDP). On the contrary, rising Government recurrent expenditure on health does not results to an increase in Total health output. Based on the result of granger causality, the paper concludes that a very weak causality exist between the two main variables used in this study. The authors therefore advised that there should be a reduction in government recurrent expenditure in the health sector. Also there should be a high degree of transparency and accountability in government spending.

Introduction

Government expenditures play key roles in the operation of all economies. It refers to expenses incurred by the government for the maintenance of itself and provision of public goods, services and works needed to foster or promote economic growth and improve the welfare of people in the society. Over the past decades, the public sector spending has been increasing in geometric term through government various activities and interactions with its Ministries, Departments and Agencies (MDA's), (Niloy et al. 2003).

Government (public) expenditures are generally categorized into expenditures on administration, defense, internal securities, health, education, foreign affairs, etc. and has both capital and recurrent components. Capital expenditure refers to the amount spent in the acquisition of fixed (productive) assets (whose useful life extends beyond the accounting or fiscal year), as well as expenditure incurred in the upgrade/improvement of existing fixed assets such as lands, building, roads, machines and equipment, etc., including intangible assets. Expenditure in research also falls within this component of government expenditure. Capital expenditure is usually seen as expenditure creating future benefits, as there could be some lags between when it is incurred and when it takes effect on the economy. Recurrent expenditure on the other hand refers to expenditure on purchase of goods and services, wages and salaries, operations as well as current grants and subsidies (usually classified as transfer payments). Recurrent expenditure, excluding transfer payments, is also referred to as government final consumption expenditure. The annual budget spells out the direction of the expected expenditure, as it contains details of the proposed expenditure for each year, though the actual expenditures may differ from the budget figures due, for example, to extra-budgetary expenditures or allocations during the course of the fiscal year (Aigheyisi, 2011).

Government expenditure is a major component of national income as seen in the expenditure approach to measuring national income: $(Y = C+I+G+(X -M))$. This implies that government expenditure is a key determinant of the size of the economy and of economic growth. However, it could act as a two-edged sword: It could significantly boost aggregate output, especially in developing countries where there are massive market failures and poverty traps, and it could also have adverse consequences such as unintended inflation and boom-bust cycles (Wang and Wen, 2013).

The effectiveness of government expenditure in expanding the economy and fostering rapid economic growth depends on whether it is productive or unproductive. All things being equal, productive government expenditure would have positive effect on the economy, while unproductive expenditure would have the reverse effect.

The health sector in any country has been recognized as the primary engine of growth and development. But despite the laudable contributions of the health sector to economic development, the Nigerian health sector has witnessed various turbulence that has negatively revised the progress recorded at various times.

Some of the factors that affect the overall performance of the health system include; inadequate health facilities/structure, poor human resources and management, poor remuneration and motivation, lack of fair and sustainable health care financing, unequal economic and political relations, the neo-liberal economic policies of the Nigerian state, corruption, illiteracy, very low government spending on health, high out-of-pocket expenditure in health and absence of integrated system for disease prevention, surveillance and treatment, inadequate mechanisms for families to access health care, shortage of essential drugs and supplies and

inadequate supervision of health care providers are among some of the persistent problems of the health system in Nigeria.

Among these major problems facing the health sector, poor remuneration and motivation of staff is the heart that will circulate the benefits if other problems are put in place and this major problem is normally accounted for through the recurrent expenditure. According to Obansa (2013) over the years, poor remuneration of health workers have had an adverse effect on their morale such that over 21,000 Nigerian doctors are practicing abroad, while there is an acute shortage of physicians in Nigeria. Health workers are paid meager salaries (about 75% lower than that of a doctor even in Eastern Europe) and they work in insecure areas and have heavy workloads, but lack the most basic resources, and have little chance of career advancement. Doctors complain of 'brain waste' and seek better opportunities for professional development in countries with better medical infrastructure. Nigeria is one of the several major health-staff-exporting countries in Africa. For example, 432 nurses legally migrated to work in Britain between April 2001 and March 2002, out of a total of about 2000 legally emigrating African nurses, a trend perceived by Nigeria's government as a threat to sustainable health care delivery (Lambo, 2006). India, Britain, the United States, Germany are among the preferred destinations of most Nigerians, even for ailments that could be handled by hospitals locally. According to a report credited to the NMA, over 5,000 Nigerians travel to India and other countries monthly for medical treatment, while India alone is said to be realizing between \$1bn and \$2bn from the medical tourism market that is worth over \$20bn. The Nigerian High Commissioner to India, Oyebola Kuku, underscored this fact when he stated that, out of 25,000 Nigerians given visas in 2011, 20,000 went there for medical care (Naij, 2013). Presently, the country has only 27,000 doctors (both general practitioners and specialists) to care for over 160 million Nigerians (Ovuorie, 2013).

It is rather surprising when the federal ministry of health in 2004 reported that all is not well in the health sector. Whenever health systems cannot deliver, people turn elsewhere. This has contributed greatly to poor client satisfaction, which makes clients to turn to private sector and unqualified health workers. This poor drug supply system has also led to drug resistance; the resistance to anti-malaria drugs by the disease pathogens is clear example (HERFON, 2006) financial inadequacies among other factors were responsible. The HERFON in year 2006 reported that inadequate funding has been the bane of the Nigerian health system. One question that borders one's mind is that why should government not fund the health sector properly. Again does the health sector no longer contribute to growth in Nigeria as it is elsewhere? Although some authors (Gbatogun, and Taiwo, (2010); Bakare and Olubokun, 2011; Nurudeen and Usman, 2010; Eneji, Dickson and Bisong, 2013) have studied health expenditure, its determinants and contribution to economic growth in Nigeria, the expenditure on the health sector was not decomposed and causality issue was largely neglected. Although regression analysis deals with the dependence of one variable on other variables, it does not imply causation or the direction of influence. It is the aim of this paper therefore to fill this gap by focusing on recurrent expenditure that takes care of remuneration and motivation of staff and the causality between recurrent expenditure on health and health's output in Nigeria. The result of the study will reveal the direction of causation which will provide a guide to health planners and administrators in formulating appropriate plans and strategies for the sector.

The paper is structured as follows. Section 1 is the general introduction. Section 2 presents an overview of the health sector in Nigeria. Section 3 presents the review of related literature which is followed by the empirical analysis in section 4. Section 5 concludes the paper.

Overview of the Health Sector in Nigeria

According to Enabulele (2013) it is troubling that after 53 years of Nigeria's independence, her health system is still struggling to deliver health dividends of democracy to her long suffering people. Nigerians had expected that following the Walter-Harkness Ten Year Development Plan as well as the enunciation of the first National Health Development Plan in 1960, Nigeria before half a century of her independence would have achieved Universal Health Coverage with all her citizens having access to quality and affordable healthcare. Sadly, many factors have continually conspired against the realization of this laudable objective, despite the current efforts of the Federal Government through the country's Honourable Minister of Health, Prof. Onyebuchi C.O. Chukwu, to reposition the health sector. Some of these factors include:

1. Poor governance at most levels of government;
2. Political instability, policy inconsistency and evident lack of political commitment to health by most state and local governments in Nigeria;
3. Monumental corruption and infrastructural decay;
4. Undue politicization of the health sector coupled with declining professionalism and non-adherence to best practices;
5. Poor constitutional and legal framework for health in Nigeria, particularly the absence of a National Health Act that clearly makes the health rights of the people justiciable; that defines the roles and responsibilities of healthcare professionals, as well as the roles and responsibilities of Local, State and

- Federal Governments in the management of the three levels of healthcare;
6. Poor co-ordination, integration and implementation of health policies, programs, projects and donor support;
 7. Poor funding and budgetary provisions for health, far less than the stipulated 15% of the National budget as prescribed by the World Health Organization and affirmed by the 2001 Abuja declaration of African Heads of State;
 8. Poor Health Human Resource (HHR) Development Plans and Reward System in the health sector, including poor remuneration, poor working conditions and poor motivation of the health workforce; as well as inadequate numbers and inequitable distribution of the health workforce;
 9. Worsening poverty and low level of Health Coverage for all Nigerians;
 10. Inadequate involvement of health professional associations and communities in the planning, implementation, monitoring and evaluation of health policies, programs and projects; as well as in budget monitoring;
 11. Weak private health sector coupled with inefficient utilization of healthcare resources;
 12. Pervasive quackery in the health sector with poor enforcement of extant laws;
 13. Poorly developed data base and Health Management Information System, coupled with poor use of Information Communication Technology, particularly e-Health in advancing access to healthcare;
 14. Conflicting professional regulatory laws/Acts in the health sector which has been a major factor responsible for disharmony in the health sector;
 15. Weak Primary and Secondary levels of care with a weak Referral System, attributable to evident lack of commitment to the development of the primary and secondary healthcare systems by most local and state governments; and
 16. Poor state of other social and physical infrastructure, including roads and power supply.

Lamentably, most of our health institutions are far from being life-saving centres, which they ought to be. Way back in December, 1983, the late Gen. Sani Abacha, while announcing the military coup that ousted President Shehu Shagari's government, dismissed Nigerian hospitals as "mere consulting clinics." They have remained so 30 years after; among them are the 50 federal medical centres, which include 14 teaching hospitals and the National Hospital, Abuja. A survey by SERVICOM (Service Compact with all Nigerians) affirmed that none of these hospitals could be relied upon in service delivery. This accounts for why many Nigerians with kidney, cancer and heart-related diseases are seen regularly begging public-spirited citizens for financial lifelines from their hospital beds to enable them to undergo urgent surgery in India (Naij, 2013).

Federal government recurrent expenditure on health has not been significant over the years. In the Abuja Declaration which Nigeria and other 43 other African countries signed, in 2001, they committed themselves to spending 15% of their annual budgets on public health, but this has not been achieved over the years as the Nigerian government continues to pay leap service to the funding of the nation's health services system.

Table 1 below shows Total Federal Government recurrent expenditures, Total Federal Government recurrent expenditures to the health sector the percent of health share to total and Total population between 1961 and 2012. The federal government recurrent expenditure on health were N1.81million (1.87%) in 1961, N12.48 million (1.74%) in 1970, N52.79 million (1.10%) in 1980, N500.70 million (1.38%) in 1990, N15218.08 billion (3.30%) in 2000, N62300.00 billion in 2006 (4.83%) and N197900.00 billion (5.95%) in 2012. The highest was in 2011 when it was approximately 7%. When compared with the level of inflation, you see that the difference between 1961 and 2012, recurrent expenditure on the health sector increased by only 0.98%. the average growth rate of the country's population was 2.4%. Figure 1 shows the rate of growth of recurrent expenditure to the health sector when deflated by consumer price index (CPI) which measures the level inflation.

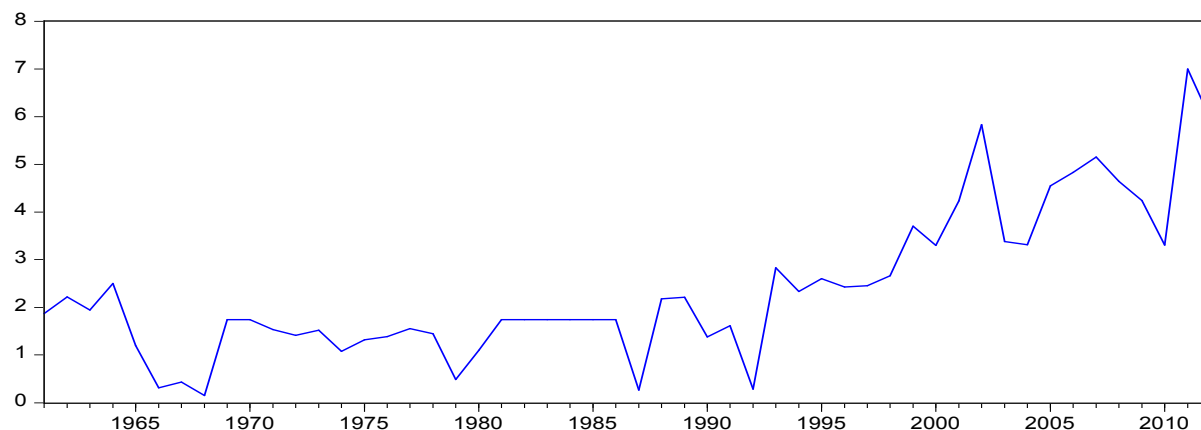
Figure 2 shows the growth rate of health output in Nigeria during the year of study. It was highest in 1992 (61.2%) and lowest in 1967 (-31.7%) at the beginning of the Nigeria civil war. During the period of study, the health sectors output during military regime of 29 years increased by 10.4 percent while that of civilian (democracy) that was 22 years grew by 12.8 percent.

Table 1: Data on Health Sector

Year	Total Recurrent ¹ Expenditure	Total Recurrent ² Expenditure on Health	% of ³ Total	CPI ⁴	Health GDP ⁶	Population ⁷
1961	96.86	1.81	1.87	0.15	14.20	46,912,820
1962	103.61	2.30	2.22	0.15	16.80	47,935,880
1963	119.64	2.32	1.94	0.2	18.20	48,992,840
1964	143.87	3.60	2.50	0.2	21.00	50,079,940
1965	156.84	1.88	1.20	0.2	23.80	51,195,700
1966	177.27	0.55	0.31	0.21	27.40	52,341,980
1967	166.73	0.72	0.43	0.21	20.80	53,524,050
1968	218.75	0.33	0.15	0.22	19.80	54,748,440
1969	433.42	7.55	1.74	0.22	24.10	56,023,500
1970	716.10	12.48	1.74	0.23	41.40	57,357,280
1971	823.60	12.64	1.53	0.23	45.40	58,745,410
1972	1012.30	14.26	1.41	0.24	56.70	60,191,510
1973	963.50	14.68	1.52	0.28	66.50	61,720,300
1974	1517.10	16.29	1.07	0.31	52.50	63,363,760
1975	2734.90	36.07	1.32	0.45	55.28	65,141,060
1976	3815.40	52.85	1.39	0.5	57.74	67,067,500
1977	3819.20	59.47	1.56	0.66	58.00	69,127,160
1978	2800.00	40.48	1.45	0.7	55.88	71,269,620
1979	3187.20	15.32	0.48	0.75	56.73	73,424,870
1980	4805.20	52.79	1.10	0.88	57.09	75,543,390
1981	4846.70	84.46	1.74	1.03	60.41	77,604,170
1982	5506.00	95.95	1.74	1.1	76.64	79,623,650
1983	4750.80	82.79	1.74	1.53	80.49	81,635,550
1984	5827.50	101.55	1.74	1.87	84.67	83,691,580
1985	7576.40	132.02	1.74	1.89	88.94	85,828,700
1986	7696.90	134.12	1.74	2.15	93.30	88,057,490
1987	15646.20	41.31	0.26	2.36	97.51	90,363,920
1988	19409.40	422.80	2.18	3.8	119.62	92,731,300
1989	25994.20	575.30	2.21	5.5	133.19	95,133,500
1990	36219.60	500.70	1.38	5.7	147.32	97,552,060
1991	38243.50	618.20	1.62	7	175.86	99,986,140
1992	53034.10	150.16	0.28	10.42	452.85	102,444,800
1993	136727.10	3871.60	2.83	18.8	659.30	104,931,600
1994	89974.90	2093.98	2.33	29.7	763.78	107,452,600
1995	127629.80	3320.70	2.60	45.03	882.52	110,014,700
1996	124491.30	3023.71	2.43	51.47	908.86	112,618,300
1997	158563.50	3891.10	2.45	56.73	984.29	115,268,700
1998	178097.80	4742.27	2.66	63.49	1613.54	117,983,400
1999	449662.40	16638.77	3.70	63.63	1851.26	120,784,400
2000	461600.00	15218.08	3.30	72.87	3660.78	123,688,500
2001	579300.00	24522.27	4.23	84.9	4624.44	126,704,700
2002	696800.00	40621.42	5.83	95.2	4856.32	129,832,400
2003	984300.00	33267.98	3.38	117.9	5342.47	133,067,100
2004	1032700.00	34197.14	3.31	129.7	5984.04	136,399,400
2005	1223700.00	55661.63	4.55	144.7	6822.22	139,823,300
2006	1290201.90	62300.00	4.83	157.1	7777.80	143,338,900
2007	1589270.00	81900.00	5.15	167.4	8738.36	146,951,500
2008	2117362.00	98200.00	4.64	192.8	9961.73	150,665,700
2009	2127971.50	90200.00	4.24	219.67	11085.85	154,488,100
2010	3109378.51	102620.00	3.30	245.4	12464.58	158,423,200
2011	3314513.33	231803.49	6.99	270.77	14238.27	162,470,700
2012	3325178.00	197900.00	5.95	303.22	16084.02	166,210,000

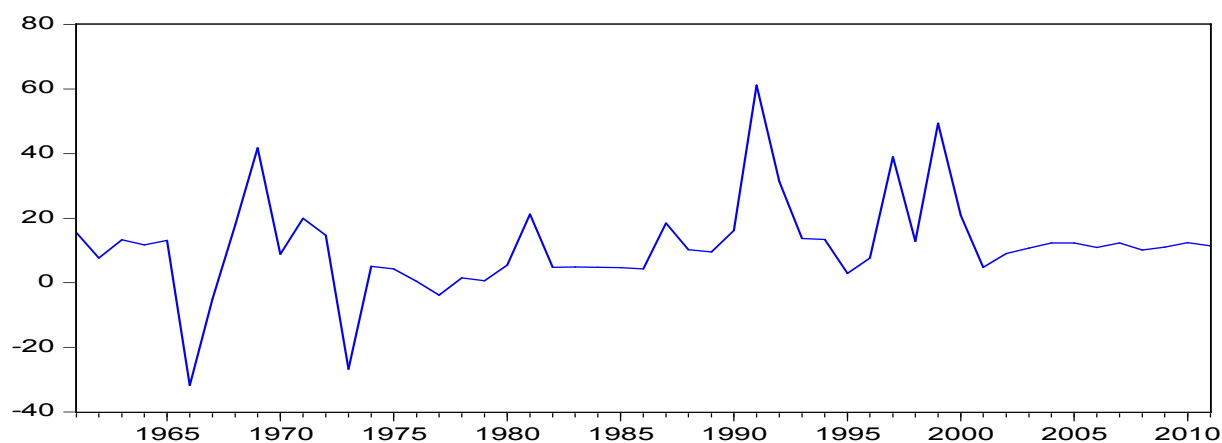
Source: ¹⁻⁶CBN Statistical Bulletin, 2010 and 2012, ⁶United Nations and WDI, 2013

Figure 1: Recurrent Expenditure to the Health Sector Growth Rate (1961-2012)



Source: CBN Statistical Bulletin 2010 and 2012

Figure 2: Health Sector Output Growth Rate (1961-2012)



Source: Computed by Authors, 2014

Review of Related Literature

The interactions between health care expenditure and economic growth have received a lot of attention of researchers. There is a link between macroeconomics and health status. A very important component of economic development of a country is its people's state of health. In fact, there is the argument as to whether it is health that causes development or economic development causes health improvements. Nurudeen and Usman, (2010) argue that rising government expenditure on health results in an increase in economic growth. They among others, suggest that government should raise its expenditure in the development of the health sector since it enhances productivity and economic growth. In the same flow, Berger and Messer (2002) view health as a form of capital, such that health care is both a consumption good that yields direct satisfaction and an investment good that yields indirect utility through increased productivity, fewer sick days and higher wages.

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. 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.

In a study to examine the growth effects of public expenditure for a panel of 30 developing countries over the 1970s and 1980s Bose et al (2007) finds that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, while current expenditure is observed to be insignificant. Similarly, Wu et al (2010) examined the causal relationship between government expenditure and economic growth by utilizing a panel data set which include 182 countries covering the period from 1950 to 2004, and their results provided evidence that strongly supports both Wagner’s law and the hypothesis that government spending favours economic growth regardless of how government size and economic growth are measured. By disaggregating the countries by income levels and the degree of corruption, their result also confirmed existence of bi-directional causality between government activities and economic growth for the different sub-samples of countries, with the exception of low income countries.

Methodology of the Study

Variables Description

Data analyzed for this study were those significant for the relationship between Nigeria health sectors recurrent expenditure and Nigeria’s Health’s output in the short and long run period. The data and their relationships are defined as follows:

1. Total Health Output (HGDP): This measures the rate of growth of the health sector i.e. health GDP.
2. Total Government Recurrent Expenditure on Health (TGREH): This is total recurrent expenditure on health.
3. Political stability (PS): This represents the dummy variable used to capture the investment climate in Nigeria. Years of military rule and civil unrest imply instability and are represented by (0), while years of civil rule that indicate stability are represented by (1).
4. Consumer Price Index (CPI): it is a proxy for inflation which measures the percentage change in the general price level of goods and services.

The study made use of annual time-series data on a number of macroeconomic variables between 1961 and 2012 inclusive both local and foreign sources are used. The data were obtained from various CBN statistical bulletin and World Bank Group- World Development Indicator (WDI).

Table 2: A priori Signs of the Variables

Explanatory Variables	Abbreviations	Expected Sign
Total health output	HGDP	Positive
Recurrent Expenditure on Health	TGREH	Positive
Total Education expenditure	DLEDUEXP	Positive
Political Stability	PSB	Positive
Consumer Price Index	CPI	Negative

Hypothesis

Based on the literature, we hypothesize that there is a significant relationship between Total health output (HGDP) and Total Government Recurrent Expenditure on Health (TGREH), Political Stability (PSB) and Consumer Price Index in Nigeria.

Specification

We specify the model based on the hypothesis as:

$$HGDP = f(TGREH, PSB, CPI) \dots \dots \dots (1)$$

Where:

- HGDP= Total health output (Health GDP)
- TGREH= Total Government Recurrent Expenditure on Health
- PSB= Political Stability
- CPI= Consumer Price Index

HGDP, TGREH and CPI are all in logarithmic values political stability is a dummy variable. In log stochastic form, this can be rewritten as:

$$HGDP_t = c_0 + c_1 \text{Log}TGREH_t + c_2 \text{Log}CPI_t + e_t \dots \dots \dots (2)$$

Where:

- HGDP= Total health output at time t
- TGREH= Total Government Recurrent Expenditure on Health at time t

PSB= Political Stability at time t
 CPI= Consumer Price Index at time t
 c0 = intercept
 c1-c6 = Intercept
 e = Error term

Table 2: Descriptive Statistics

	CPI	HGDP	PSB	TGREH
Mean	49.65038	2340.472	0.480769	21332.34
Median	2.255000	95.40500	0.000000	133.0700
Maximum	303.2200	16084.02	1.000000	231803.5
Minimum	0.150000	14.20000	0.000000	0.330000
Std. Dev.	79.96735	4130.688	0.504505	47762.78
Skewness	1.687011	1.869949	0.076980	2.934186
Kurtosis	4.839320	5.466274	1.005926	11.75628
Jarque-Bera	31.99542 (0.000000)	43.48359 (0.000000)	8.666743 (0.013123)	240.7389 (0.000000)
Sum	2581.820	121704.5	25.00000	1109282.
Sum Sq. Dev.	326133.6	8.70E+08	12.98077	1.16E+11
Observations	52	52	52	52

From table 2 above, Total health output (HGDP) has an average of 2340.472 between 1961 and 2012. It ranges from 14.20000 to 16084.02 with a standard deviation of 4130.688. Total Government Recurrent Expenditure on Health has a mean of 21332.34 for the period under study. It varies from a minimum of 0.330000 to a maximum of 231803.5 with a standard deviation of 47762.78. Consumer Price Index has an average of 49.65038. It ranges from 0.150000 to 303.2200 with a standard deviation of 79.96735. Political Stability has an average of 0.480769. It ranges from 0.000000 to 1.000000 with a standard deviation of 0.504505. All the distributions are positively skewed, with the HGDP distribution having the longest tail indicating that it has more extreme large values than others. The kurtosis of the each of the distribution is greater than 3, except PSB which is an indication that they are all leptokurtic, with the TGREH displaying the highest degree. The probability of the Jarque-Bera statistic for each of the series is very low and leads to rejection of the null hypothesis of a normal distribution, further confirming that the skewness and kurtosis of each of the sample data do not match a normal distribution, and suggesting that the data series for the variables are not normally distributed.

Data Analysis Techniques

(i) Unit root Test

In order to avoid estimating spurious regression, the stochastic properties of the series were tested. This we did by testing for unit root which involved testing the order of integration of the individual series under consideration. Several procedures for the test of order of integration have been developed in which the two most popular are the (ADF) Augmented Dickey-Fuller (1981) and (PP) Phillips and Perron (1988) Will be employed to perform the test. Table 3 reports the results of the ADF and PP unit root tests. The ADF & PP tests rely on rejecting a null hypothesis of unit root in favour of the alternative hypothesis of stationarity. The tests were conducted with or without a deterministic trend for each of the series in order to ascertain the level of their stationarity. The general form of the ADF is estimated by the following regression.

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^n a_i \Delta y_{t-i} + e_t \dots \dots \dots (3)$$

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^n a_i \Delta y_{t-i} + \rho_t + e_t \dots \dots \dots (4)$$

Where:

- y_t = time series, it is a linear time trend,
- Δ = First difference operator,
- a_0 = constant
- n = optimum number of lags in dependent variable
- e_t = random error term.

Table 3: ADF and PP Unit Root Test

Variable		ADF Test				PP Test			
		ADF	1%	5%	10%	PP	1%	5%	10%
LHGDP	Level	0.96	-3.57	-2.92	-2.60	0.96	-3.57	-2.92	-2.60
	1 st Difference	-5.45*	-3.57	-2.92	-2.60	-5.45*	-3.57	-2.92	-2.60
LTGREH	Level	-0.12	-3.57	-2.92	-2.60	0.16	-3.57	-2.92	-2.60
	1 st Difference	-5.89*	-3.58	2.93	-2.60	-16.37*	-3.57	-2.92	-2.60
LCPI	Level	0.13	-3.57	-2.92	-2.60	0.47	-3.57	-2.92	-2.60
	1 st Difference	-4.42*	-3.57	-2.92	-2.60	-4.42*	-3.57	-2.92	-2.60

Source: Authors Computation: Note that * signifies stationarity

Table 3 reveals that Total health output (LHGDP), Total Government Recurrent Expenditure on Health (LTGREH), and Consumer Price Index (LCPI) in Nigeria are stationary at first-difference (i.e. they are I (1) processes) which sets the stage for cointegration test. Table 4 shows the estimated result of the cointegrating equation (2).

Table 4: Recurrent Expenditure and Nigeria Health output 1981–2012 (Ordinary Least Squares Technique)

Dependent Variable	Explanatory Variables	Coefficients	Standard Error	t-Statistic	(Prob)
GDPGR	C	0.073036	0.052176	1.399792	0.1681
	DLTGREH	-0.011471	0.032554	-0.352372	0.7261
	PSB	0.025503	0.056043	0.455062	0.0812
	DLCPI	0.372703	0.206129	1.808107	0.0770

R-Squared = 0.52: Adjusted R-squared: 0.46: DW = 1.51: F = 0.023230

Discussion

The results show an R-square of about 52.0 percent, indicating that about 52.0 percent change in dependent variable (GDPGR) is jointly explained by the explanatory variables (DLTGREH, PSB and DLCPI); On the test of individual significance, only political stability (PSB) and Consumer Price Index (LCPI) performed well while Total Government Recurrent Expenditure on Health (LTGREH) did not perform well. It failed the t-test of significance at 1 percent, 5 percent and 10 percent levels of significance as reflected in table 4 above. This reveals the presence of multi-colinearity among the variables in the estimated model. A Durbin Watson (DW) statistic of 1.51 which falls into the acceptable zone of 1.5 and 2.5 shows the absence of serial correlation.

Meanwhile, one percent change in Total health output (LHGDP) will bring about a negative change of -0.01 percent in Total Government Recurrent Expenditure on Health (LTGREH): this is not in line with Blinder, (2002) that government investment through the injection of income resulting in greater spending in the general economy can lead to economic growth. A change in Consumer Price Index (LCPI) will bring a positive change of 0.37 percent in Total health output (LHGDP). Political stability have a positive relationship with Total health output (LHGDP): a percent increase in political stability will increase Total health output (LHGDP) by 0.02 percent which is in line with our a priori expectation and also going by the nature of what good governance brings to an economy.

Causality Test

In order to determine which variable in the model granger cause each other, Granger causality test advanced by Granger (1969) is used. The F-statistics is used to reject or accept the null hypothesis of no causation between the variables when F-statistics is greater than 2 and less than 2 respectively.

The granger causality test is estimated from the following equations

$$\Delta DLHGDP_t = \sum_{i=1}^n \alpha_i \Delta DLTGREH_{t-i} + \sum_{j=1}^n \beta_j \Delta DLHGDP_{t-j} + u_{1t} \dots \dots \dots (5)$$

$$\Delta DLTGREH_t = \sum_{i=1}^n \lambda_i \Delta DLTGREH_{t-i} + \sum_{j=1}^n \gamma_j \Delta DLHGDP_{t-j} + u_{2t} \dots \dots \dots (6)$$

(4)

Where α, β, λ and γ are the respective coefficient of the variables, t represents time while i and j are their lags, u_{1t} and u_{2t} are uncorrelated white noise error term. The null hypothesis is $\alpha = 0$ for all i_s and $\gamma = 0$ for all j_s while the alternative hypothesis is given as $\alpha_i \neq 0$ and $\gamma_j \neq 0$.

Table 5: Pair wise Granger causality test

Direction of causality	F-stat	Pvalue	Decision	Lag Length
$DLHGDP \rightarrow DLTGREH$	4.37	0.02	Do not Reject	2
$DLHGDP \leftarrow DLTGREH$	1.48	0.24	Reject	2
$DLHGDP \rightarrow DLTGREH$	2.80	0.05	Do not Reject	3
$DLHGDP \leftarrow DLTGREH$	0.88	0.46	Reject	3
$DLHGDP \rightarrow DLTGREH$	2.43	0.06	Do not Reject	4
$DLHGDP \leftarrow DLTGREH$	0.80	0.53	Reject	4

The arrow shows the direction of causality.

Since causality test is affected by number of lags included, we tested using 2, 3 and 4 lag lengths. The results in Table 5 shows that up to four lag lengths at 1% level of significance, there was no causality between the variables which is difficult to interpret since they were found to be cointegrated. However, at 5% level of significance and at 2 & 3lag lengths DLHGDP is found to granger cause DLTGREH with no reverse causality from DLTGREH to DLHGDP (no feedback). Similarly, at 10% level of significance and 4 lag lengths, a unidirectional causality running from DLHGDP to DLTGREH with no reverse causality from DLTGREH to DLHGDP was found indicating that the size of total health output (LHGDP) is a significant predictor of the size (amount) of total government recurrent expenditure on health (LTGREH). The hypothesis that the lag values of DLHGDP to DLTGREH are statistically significantly different from zero is not rejected for the fourth lag length as the p-values of the F-test indicate. Based on the result of granger causality, we conclude that a very weak causality exist between the two variables used in this study.

Conclusion

This study further brings to the fore, the role of expenditure in capital formation in economic growth and development. It also reveals the dangerous and inhibiting effect of excessive recurrent expenditures on the size of the economy of a typical developing country. Government expenditure has been a significant driver of Nigeria's economy, though the speed tends to be retarded or slowed down by the dominance of recurrent expenditure. The contribution to existing literature of this research is that it reveals that government expenditure contributes significantly to the size of Nigeria's economy, though the predominance of recurrent expenditure in the composition has tended to reduce its effectiveness.

This research work investigates the contribution of Nigeria Health sectors recurrent spending on its output from 1961 to 2012. None of the variables was stationary at zero level. This means they all have unit roots. The three variables became stationary at first difference by ADF and PP application. There exists a long-run equilibrium relationship between Total health output (LHGDP) and Total Government Recurrent Expenditure on health in Nigeria using the OLS model which indicates a change from the short-run dynamics to their long run dispositions.

The study concludes that total health output, Total Government Recurrent Expenditure on Health, and Consumer Price Index in Nigeria are cointegrated i.e. there exist long run relationship between total health output, total government recurrent expenditure on health in Nigeria. A plausible explanation for the results is that our time series is relatively long although the quality of the data is less than ideal.

One key finding suggests that Total health output declines when government recurrent spending on health increases even when this spending takes care of remuneration, motivation, training, and the running of health institutions in the country. The regression results also illustrate that a 1% increase in recurrent expenditure on health in the previous year results to approximately 0.01 percentage decrease in total health output. This might be as a result of over estimation based on remuneration, motivation, training, and the running of health institutions in the country. The health sector is a very vital and if the staff of this sector is well motivated even with the present state of our health institutions, the output (its contribution to GDP) should increase. A situation where by doctors, pharmacists, nurses etc. are not well motivated and over labored, it will go a long way to affect their efficiency and output. A situation where a doctor sees more than one twenty patients a day and nurse attends to more than 60 patients a day, you don't expect them to perform well. Most health institutions are paying a lot of ghost workers and also claim money for training that was not carried out.

The study's econometric evidence is also in line with the findings of Bose et al (2007). They found that current expenditure has no significant impact on growth; that 1 percentage increase in total recurrent expenditure in the previous one year leads to 0.005 percentage decrease in economic growth.

The study recommends, that the government should encourage the health sector through increase in capital expenditure funding and reduction in current expenditure, as well as ensuring that the resources are properly managed and used for the development of the health sector and government should increase its funding

of anti-graft or anti-corruption agencies like the Economic and Financial Crime Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC) in order to arrest and penalize those who divert and embezzle public funds.

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